



State of Washington
DEPARTMENT OF FISH AND WILDLIFE

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June 30, 2023

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Post Office Box 40466
Olympia, WA 98504-0466

The Honorable Timm Ormsby
Chair, House Appropriations
315 John L. O'Brien Building
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The Honorable Van De Wege
Chair, Senate Agriculture, Water
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The Honorable Mike Chapman
Chair, House Agriculture and
and Natural Resources
132B Legislative Building
Post Office Box 40600
Olympia, WA 98504-0600

RE: Report to the Legislature on Potential Enloe Dam Removal Options

Honorable Members of the Legislature,

On behalf of the Washington Department of Fish and Wildlife, I am pleased present the attached report outlining some of the necessary steps and considerations associated with the potential removal of Enloe Dam, located on the Similkameen River in north central Washington. Appropriated from the general fund-state for fiscal year 2023, the allocated amount of \$250,000 was designated for the purpose of conducting a comprehensive analysis in collaboration with key stakeholders.

The report was undertaken by the Washington Department of Fish and Wildlife and Trout Unlimited (TU) in consultation with the Department of Ecology, United States Bureau of Land Management (BLM), the Confederated Tribes of the Colville Reservation (CTCR), the Okanogan Public Utility District (PUD), and other interested entities. Its primary objective is to analyze four specific elements of a potential project to remove Enloe Dam, including: the sequence of actions required, stakeholder coordination, identification and comparison of entities that could assume ownership of, and ultimately remove, Enloe Dam, and options for sediment management. We hope that this report will be helpful in informing the analysis of the feasibility of removing Enloe Dam to restore the natural flow of the Similkameen River, minimize downstream impacts, and reestablish access to over 300 miles of critical habitat for federally threatened steelhead and other native salmonids. The analysis described here is intended to be

consistent with the PUD's Resolution 1775 (2022), stating a pathway that it supports leading to potential dam removal.

Steelhead in the Okanogan Basin have declined precipitously in recent decades, and in 2022 their returns reached a historic low, with only 87 natural-origin fish documented returning to the basin. Ocean conditions, fisheries management, downstream dam construction and operation, and habitat loss have all played a role in the decline of the Okanogan populations, but increasing stream temperatures now present the most immediate threat to their persistence. Reconnecting the Similkameen River and its 1,520 miles of potential spawning and rearing habitat may be the best chance to prevent the local extinction of these fish, because the Similkameen subbasin provides higher-elevation, relatively high latitude habitat with colder stream temperatures and is more likely to remain suitable for salmonid spawning and rearing in the future.

WDFW and its partners on this report hope that it is useful in informing decision making by the legislature and others, and we would look forward to discussion of the report with interested legislators and relevant committees. Please contact WDFW's Energy, Water, and Major Projects Division Manager Michael Garrity at michael.garrity@dfw.wa.gov with any inquiries.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kelly Sussewind".

Kelly Sussewind
Director

cc: Senator June Robinson
Senator Lynda Wilson
Senator Ron Muzzall
Representative Drew Stokesbary
Representative Tom Dent

Washington Department of Fish & Wildlife

Enloe Dam Removal Feasibility

Proviso to WDFW : Sec. 308 (66), ESSB 5693 (2022)

Prepared by Trout Unlimited



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1. Introduction

1.1 Purpose

This Proviso Report provides an overview of the four assessments conducted to analyze the steps required for the potential removal of Enloe Dam situated on the Similkameen River in Washington. The allocated amount of \$250,000 from the general fund for fiscal year 2023 was dedicated to:

“analyze the steps required, including coordination and ownership, associated with the possible removal of Enloe Dam and analyze options for sediment removal in order to restore the Similkameen river, minimize impacts downriver, and allow access to over 300 miles of habitat for federally threatened steelhead and other native salmonids...”

The work under the proviso consisted of (1) the development of a dam removal road map which lays out the phases of a dam removal project including decision-making timelines; (2) recommendations for a collaborative engagement framework to ensure Tribes and interested parties are engaged throughout the phases of a potential dam removal project; (3) an assessment of potential Dam Removal Entities (DRE) who can undertake the liability, fundraising and dam removal implementation; and (4) a review of management options for sediment removal. This analysis was undertaken by the Washington Department of Fish and Wildlife (WDFW) in consultation with various entities including Trout Unlimited (TU), the Department of Ecology (ECY), the Bureau of Land Management (BLM), the Confederated Tribes of the Colville Reservation (CTCR), and the Okanogan Public Utility District (PUD). This analysis is intended to be consistent with the PUD’s Resolution 1775 (2022), stating a pathway that it supports leading to potential dam removal.

The following report summarizes for the Legislature the initial proviso work that will support the objective assessment of the feasibility of the removal of Enloe Dam.

1.2 Background

Enloe Dam is located on the Similkameen River, approximately four (4) miles northwest of Oroville, Washington (See Figure 1). The dam was completed in 1923 and has blocked access to over 1,500 miles of spawning and rearing habitat in the United States and Canada. Enloe Dam, which stopped generating power in 1958, is a concrete gravity arch structure with a central overflow spillway. The dam currently provides no flood control or

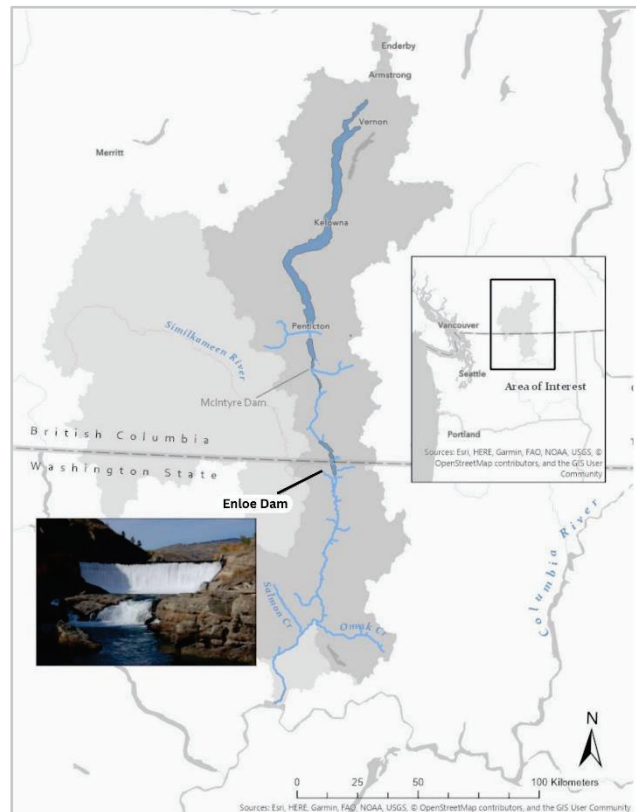


Figure 1. Location Map of Enloe

irrigation water diversion and operates as a run of the river structure. The surrounding site includes an old powerhouse, above-ground penstocks, and surge tanks.

The Okanogan Public Utility District (PUD) acquired the dam by eminent domain in 1942. It ceased power generation in 1958 when the PUD obtained cheaper power from the Bonneville Power Administration. After six decades and two proposals to restore electrification, in 2018 the PUD Board of Commissioners unanimously passed a motion to no longer pursue electrification of Enloe Dam and to allow the Federal Energy Regulatory Commission (FERC) license to terminate. The PUD's decision was based on the complexity, risk, and cost involved in restoring power generation. Although regulatory authority of Enloe Dam fell to the Washington State Department of Ecology (ECY) upon termination of the FERC license, the PUD remains committed to fulfilling its obligation to ensure the safety of the structure while minimizing the cost to its ratepayers.

The Okanogan River and its tributaries support Upper Columbia steelhead and historically supported Upper Columbia spring Chinook salmon, both of which are listed under the Endangered Species Act. The Confederated Tribes of the Colville Reservation (CTCR) and other interested parties are working to understand the potential for natural fish passage under a dam removal scenario. Restoring access to the Similkameen River's potential spawning and rearing habitat through Enloe Dam removal is seen by many as a high priority opportunity to prevent local extinction and increase steelhead and salmon population resilience.

The headwaters of the Similkameen River begin in Canada and drain the west side of the Canadian Cascade Mountains and the interior Thompson Plateau. Major tributaries from both Canada and the U.S. flow into the Similkameen upstream from its confluence with the Okanogan River just outside of Oroville, WA. Since its construction was completed in 1923, Enloe Dam has prevented the natural flow of sediment downstream, impounding sediment over time and creating a significant management consideration for any dam removal option. The most recent estimate of the volume of sediment accumulation behind Enloe Dam is approximately 2.94 million cubic yards (Anchor, 2023). Certain metals have been found to be present in the impounded sediment at elevated concentrations, likely exacerbated by historic upstream mining operations. Sediment management for the Enloe Dam will be a focal point for the future feasibility assessment and further discussed in the 'Sediment Management' section 2.4 below.

1.3 Previous Work

In recent years, Trout Unlimited contracted Interfluve to conduct fish passage modeling at Similkameen Falls and collaborated with NOAA Fisheries, Tribes and First Nations to assess upstream habitat capacity for Chinook salmon and steelhead. Preliminary sediment sampling and analysis was completed by the US Geological Survey (USGS) to determine the volume and chemical composition of sediment behind Enloe Dam. In addition, the Washington Department of Ecology conducted additional sediment sampling to gain a better understanding of the chemical composition (review of sediment work can be found in section 2.4 below).

In step with dam removal assessment, Trout Unlimited has conducted outreach, including quarterly meetings with regulatory agencies, Tribes, and stakeholders. The Enloe Working

Group (EWG) was formed among these entities to share information related to the dam and the health of fisheries in the Okanogan and Similkameen rivers. Tribal governments on both sides of the US-Canada border, as well as grassroots organizations and government agencies, have passed resolutions supporting dam removal (see Appendix A).

PUD Resolution 1775

Since the legislature approved the proviso, the Okanogan Public Utility District (PUD) has adopted its Resolution 1775, supporting a feasibility assessment process for Enloe Dam removal under certain conditions. The PUD considered a memo prepared by the Water and Power Law Group (WPLG) regarding “Enloe Dam Removal” (May 2022) (Appendix A). The resolution memorialized criteria under which the PUD would consider dam removal, including:

Any dam removal proposal would need to provide 1) a lead agency that would take all responsibility and liability for removal of Enloe Dam, 2) a firm source of funding that would pay for all costs associated with removal of Enloe Dam, and 3) a comprehensive and independent feasibility assessment that collects and evaluates scientific data for removal of Enloe Dam, including, but not limited to a comprehensive sediment analysis approved by the Washington State Department of Ecology, determination of whether anadromous fish can pass above Enloe Dam, plan for management of new fish populations, delineation of suitable habitat for fish above Enloe Dam with current data, approval from the Canadian Government to allow new fish populations, and a scoping process for the public and interested parties...

Progress Toward Feasibility Study

Trout Unlimited in partnership with the Confederated Tribes of the Colville Reservation has received funding from NOAA's Restoring Fish Passage Through Barrier Removal Program, and Resources Legacy Fund, to conduct an objective feasibility assessment, including 30% design. The Proviso analysis will serve as a foundation for engaging in the next steps of the feasibility study through 2024, which will inform next steps.

2. Enloe Dam Proviso Analysis and Recommendations

The following proviso report provides recommendations through the completion of several tasks, including 1) developing a road map for the removal of Enloe Dam, 2) assessing potential entities to own the dam with the purpose to remove it, 3) exploring management options for sediment removal and disposal, and 4) creating a collaborative engagement framework to facilitate stakeholder outreach. For the coordination of the project, Trout Unlimited and the Confederated Tribes of the Colville Reservation worked together as the project team. Their responsibilities included hiring consultants and overseeing the project management for the delivery of the report.

2.1 Collaborative Engagement Framework

Background

To ensure meaningful public participation and the exchange of technical expertise, Triangle Associates developed a Collaborative Engagement Framework and Communications Strategy (see full report in Appendix B). This proposed Collaborative Engagement Framework developed under this Proviso builds upon past work to encourage public participation, technical expertise sharing, and inclusive community outreach as work on a more detailed feasibility study proceeds between now and late 2024. In addition, effective incorporation of Traditional Ecological Knowledge (TEK) will ensure representation of Tribal cultures, experiences, knowledge, and interests.

This framework is intended to help guide the feasibility assessment process, incorporating input from the parties and progressing systematically through the assessment stages. The Feasibility Assessment is currently funded through an awarded NOAA grant. If Enloe is found feasible to remove, the framework may be adapted to meet the needs of future project phases.

To gather valuable insights, Triangle conducted interviews with 33 individuals representing local, state, and federal governments, Tribes, First Nations, subject matter experts, conservation organizations, and members of the community and landowners. The interviews documented the interviewees' priorities, experiences, concerns regarding the process or anticipated outcomes, as well as their preferences for future engagement.

This endeavor aims to actively engage all relevant parties to create a collaborative environment where diverse perspectives are valued, and the decision-making process is transparent and inclusive. Through effective and accessible communication, the primary goal is to empower individuals and communities by fostering a shared understanding and enabling them to actively contribute to the assessment process.

The framework presents various communication strategies and tools to achieve the following goals:

1. Clearly communicate the project timeline and decision-making process, ensuring that all parties have a clear understanding of how and when decisions will be made.
2. Present the process and research findings in a clear and comprehensible manner, making the information accessible and understandable to all parties.
3. Ensure that all parties receive timely, accurate, and consistent information, allowing for informed participation and decision-making throughout the assessment process.
4. Offer diverse and relevant avenues for individuals to ask questions and express concerns, providing multiple channels for engagement and ensuring that all voices are heard and considered.

RACI Responsibility Assignment Matrix

A RACI, also known as a Responsibility Assignment Matrix (see page 5 in Appendix B) is a visual tool that helps clarify and define roles and responsibilities within a project or organization.

The acronym "RACI" stands for Responsible, Accountable, Consulted, and Informed, representing the different levels of involvement and decision-making authority for each task or activity.

This RACI chart is intended to ensure that there is clarity and alignment among team members regarding their roles and responsibilities. It can prevent misunderstandings, duplication of effort, and gaps in accountability. The RACI chart promotes effective collaboration, decision-making, and overall project success by clearly defining the involvement and authority of each team member in a transparent and structured manner. Organizations and agencies may have multiple levels of engagement and responsibility as they serve in different groups within the Collaborative Engagement Framework based on policy and technical subject matter expertise.

Collaborative Engagement Framework Groups

Below are descriptions and a graphic that describe multiple collaborative groups that are part of a proposed comprehensive framework. This framework adheres to the principles of promoting equitable, science-based, and informed decision-making, ensuring that all voices are heard and considered throughout the assessment process. By actively involving these groups, the aim is to create a space where diverse perspectives are valued and contribute to robust decision-making. The proposed framework is adaptable and may shift as needed to reflect the project's evolution.

Project Team - Responsible

The Project Team, comprising Trout Unlimited (TU) and the Confederated Tribes of the Colville Reservation (CTCR), will play a central role in coordinating various parties within the Enloe Dam Feasibility Assessment.

Executive Advisory Committee - Accountable

The Executive Advisory Committee (EAC) comprises the Okanogan Public Utility District (PUD), Confederated Tribes of the Colville Reservation (CTCR), Trout Unlimited (TU), the Bureau of Land Management (BLM), the Washington Department of Ecology (ECY), and the Washington Department of Natural Resources (DNR). The executive group is responsible for making critical decisions and working collaboratively toward solutions that maintain the interests of all parties involved.

Tribal and First Nations Partners - Consulted

Tribal and First Nations partners play a fundamental role in providing critical input into decision-making processes and project development that impact their lands and resources and ensure that the project respects and addresses the concerns, needs, and long-standing vision of Tribal and First Nations communities, promoting cultural preservation, environmental stewardship, and good governance. Tribal and First Nations partners include the Confederated Tribes of the Colville Reservation (CTCR), and the Syilx Okanagan nation chiefs as represented in this project by the Upper Similkameen Indian Band (USIB), the Lower Similkameen Indian Band (LSIB), and member bands of the Syilx Okanagan nation.

Traditional Ecological Knowledge (TEK) - Consulted

The Traditional Ecological Knowledge (TEK) effort for the project consists of representatives from the Confederated Tribes of the Colville Reservation (CTCR), Upper Similkameen Indian Band (USIB), and Lower Similkameen Indian Band (LSIB). These tribes and First Nations play a vital role in incorporating traditional ecological knowledge and indigenous perspectives into the project's decision-making processes. The TEK group brings deep-rooted cultural and ecological insights, drawing upon the wisdom and experiences passed down through generations. Their knowledge helps to inform and enhance the understanding of the local ecosystem, including the interconnectedness of land, water, wildlife, and human communities.

By integrating traditional ecological knowledge, the TEK group contributes to a more holistic and culturally sensitive approach to the project, ensuring that the social, cultural, and spiritual values of the Confederated Tribes of the Colville Reservation and Syilx Okanagan Nation are respected and considered throughout the whole assessment and decision-making processes.

Consultant Team and Legal Advisors - Responsible

The Consultant Team, consisting of professional consultants and contractors, plays a crucial role in providing transdisciplinary subject matter expertise for the assessment. The Consultant Team collaborates closely with the other groups and interested parties, such as the Executive Group, Policy Team, Technical Group, Traditional Ecological Knowledge efforts, and the Project Team.

Technical Advisory Committee – Consulted/Advisors

The Technical Advisory Committee (TAC) serves as a review body for the technical deliverables produced by the consultant team. Their primary focus is to ensure that the desired outcomes and regulatory criteria are being met.

Policy Group – Responsible/Consulted

The Policy Group is a collaborative multijurisdictional body comprised of representatives from various government agencies, departments, and organizations. The focus of the Policy Group is on policy development and implementation. Members engage in research, analysis, and deliberation to identify best practices and formulate effective policies.

Coordinating Table - Inform/Input

The Coordinating Table comprises representatives from various sectors, including local, state, federal, and Canadian government regulatory agencies, private and public funding partners, interested elected officials, local landowners adjacent to the project site or potentially affected by it, community groups, underserved community representatives, and local government entities. This inclusive forum allows these stakeholders to provide input, stay informed, and contribute to the decision-making processes.

Public – Inform/Input

The term "public" encompasses a wide range of stakeholders with diverse interests and perspectives. It includes landowners, community members, and statewide interests. The public will be given the opportunity to participate in the decision-making process, provide input, voice their concerns, and contribute to shaping the future of the Enloe Dam.

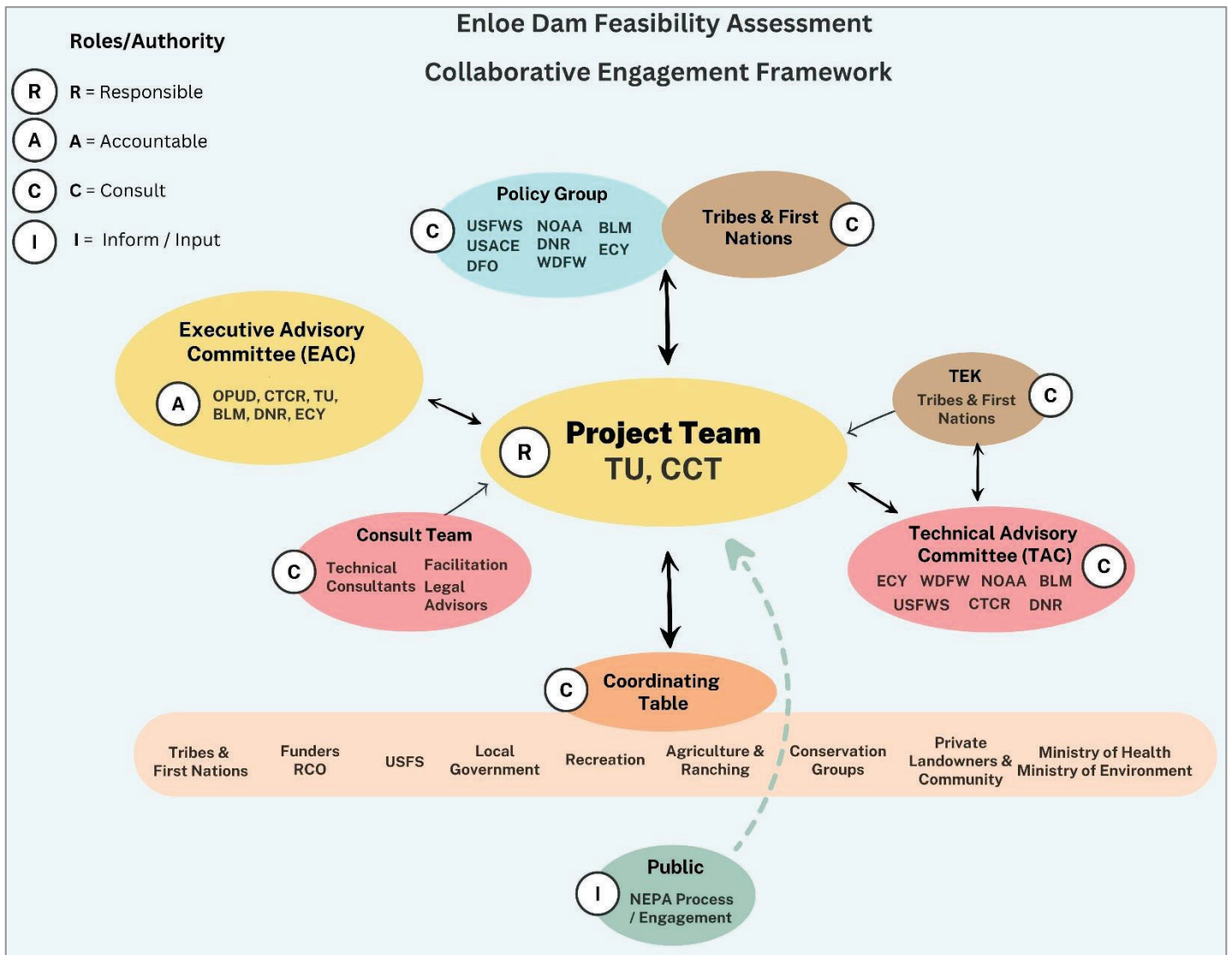


Figure 2: Proposed Collaborative Engagement Framework

Outreach and Communications Plan

During the Feasibility Assessment phase, an Outreach and Communications Plan will guide outreach activities to effectively communicate the Enloe Dam process and engage all parties involved. The objective is to increase participation and enhance understanding among the community and stakeholders, with an emphasis on being extensive, inclusive, and transparent. A central communication hub will provide up-to-date project information, research findings, and relevant data, while also addressing common questions and misconceptions to promote informed decision-making. Direct outreach efforts, including in-person meetings and public gatherings, will facilitate personal interactions and address questions and concerns.

2.2 Enloe Project Planning Roadmap

A planning roadmap developed by River Logic identifies a high-level project planning framework, project phases, and planning work sequencing necessary to achieve milestones and efficiently progress through a phased project to remove the Enloe Dam and restore the Similkameen River (see full report in Appendix C). The roadmap provides recommendations and is not a mandated FERC relicensing, decommissioning, or mitigation project.

The roadmap offers a high-level framework for project development and planning, with milestones organized within three phases (see Figure 1, Key Phases and Milestones):

- Phase 1. Feasibility Evaluation and Alternatives Analysis
- Phase 2. Design and Permitting
- Phase 3. Construction
- Post Project

Phase 1 includes elements beyond the NOAA-funded Feasibility Assessment. Progressing through the end of Phase 1 and into subsequent Phases as outlined in the roadmap graphic will require substantial financial contribution and support.

Enloe Project Management Roles and Cross-Functional Organization

Project roles are presented in the context of project administration and a collaborative project planning framework. A summary of roles is described in section 2 of the roadmap.

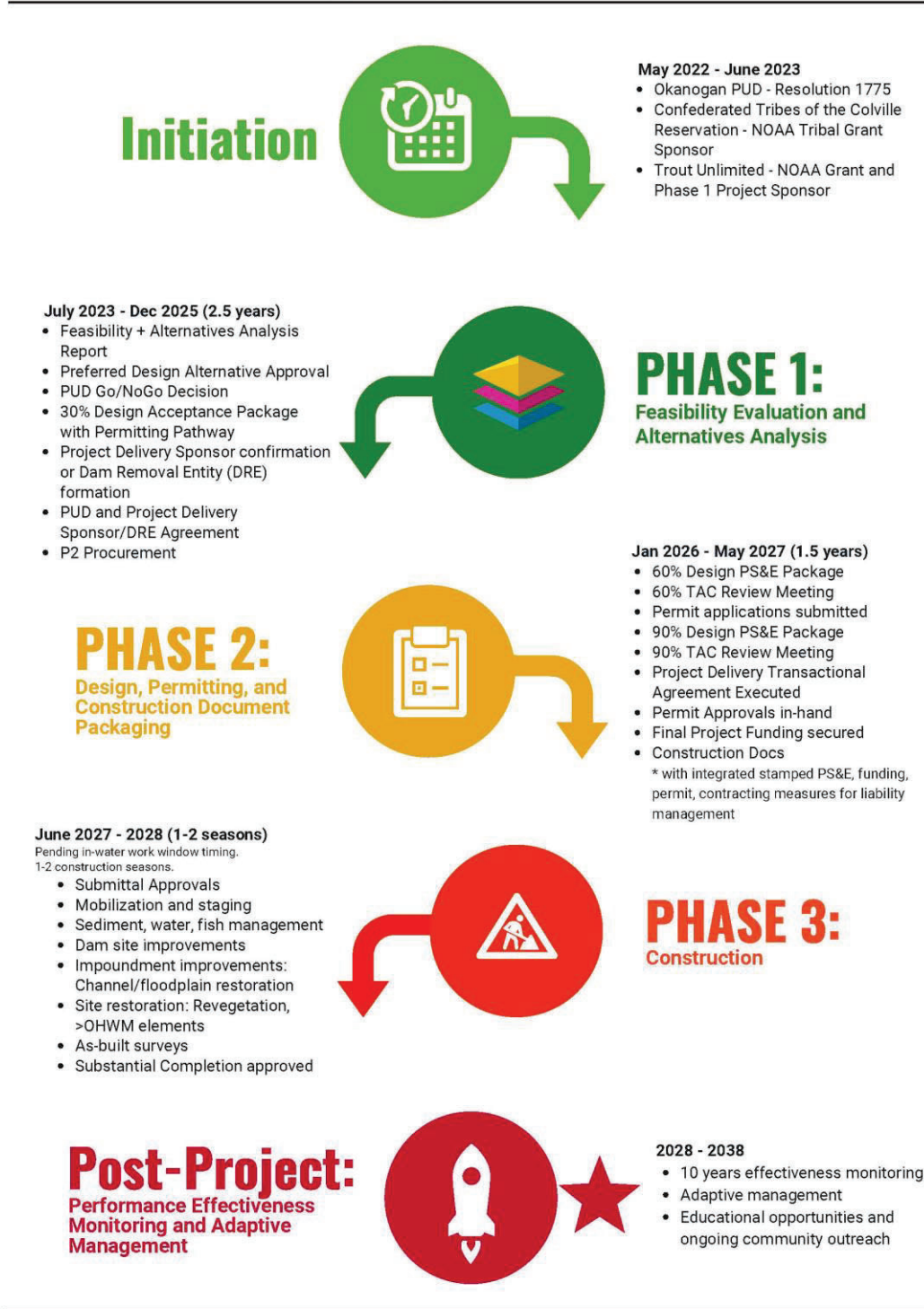
Cross-functional organization of key decision-makers, technical experts, key partners, Tribes, and stakeholders supports risk-informed decision making and effective teamwork. Detailed descriptions of the Executive Advisory Committee, Project team, key stakeholders and partners are outlined in section 2.2.1 of the roadmap.

ENLOE PROJECT PHASES AND KEY MILESTONES

Proof of concept roadmap for project progression from initiation to completion.

For each phase, a target timeframe and critical path milestones are identified.

A roadmap update is anticipated at the conclusion of Phase 1.



Draft Version: June 7, 2023

Phase 2 and 3 milestones may be updated upon Phase 1 conclusion.

Figure 3: Roadmap Phased Timeline

Phase 1. Feasibility Evaluation and Alternatives Analysis

To ensure the significance of Phase 1 in assessing feasibility and supporting decision-making for project advancement, the roadmap is further broken into risk-informed planning strategies, deliverables, and milestones. The planning objectives of this phase are to:

1. Objectively evaluate the technical feasibility of the project, aligning with the decision-making criteria established in PUD Resolution 1775.
2. Confirm a project delivery sponsor.
3. Identify a permitting pathway in collaboration with regulatory agencies and partners.

For a more detailed understanding of how these objectives are achieved through risk-informed strategies and subsequent deliverables, refer to Table 4.1 in Appendix A of the Roadmap Report.

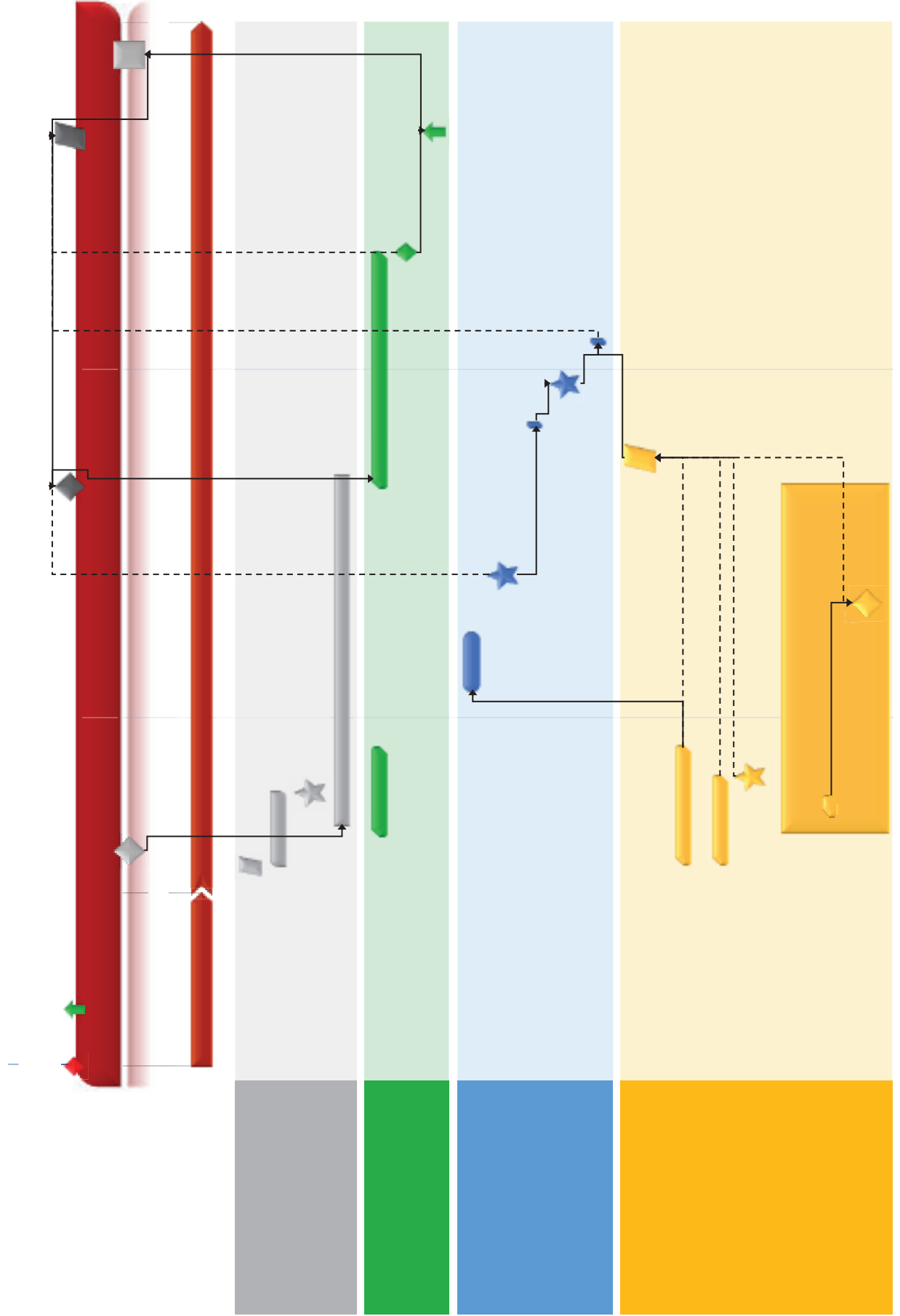
Key Deliverables and Project Milestones

The project deliverables and milestones are categorized according to the type of work involved, including administrative tasks, funding activities, design considerations, and permitting requirements. A summary of the steps involved can be found in Table 4.2 of the roadmap. Responsible parties, as currently known, have been assigned to the relevant deliverables and milestones. This ensures that decisions can be made effectively by securing executive support and funding for the project.

The deliverables and milestones recommended in the roadmap for Phase 1 include the following (See Figure 2 below):

- 1) Kickoff Meeting
- 2) Convene Executive Advisory Committee and Technical Advisory Committee
- 3) Project Management Plan
- 4) Funding Strategy
- 5) Feasibility Evaluation and Alternatives Analysis Report
- 6) Design Alternative Selection/Approval
- 7) Go/No-go decision (support for project alternative to be advanced)
- 8) Fundraising Application Submittals
- 9) Funding Award Notification
- 10) PUD and Project Delivery/ Dam Removal Entity (DRE) Agreement
- 11) Permitting Pathway
- 12) 30% Design Acceptance Package
- 13) Phase 2 Procurement

Figure 4: Phase 1 Milestones and Key Deliverables Process Map



2.3 Candidates for Enloe Dam Removal Entity

In recent years, the Okanogan Public Utility District (PUD) has received numerous inquiries and requests for the removal of Enloe Dam. In response, the PUD has outlined a set of criteria (see Appendix A, Resolution 1775) that must be addressed in a comprehensive, objective, and verifiable approach for them to engage in discussions and planning for dam removal. The criteria include 1) the identification of a partner with the means to fund dam removal, and 2) identification of a partner who can relieve the PUD of any future liability. These criteria aim to protect the interests of the PUD and its customers, with a focus on effectively managing liabilities and risks associated with the removal process.

The Water and Power Law Group (WPLG) PC developed a memorandum evaluating candidate entities to implement the removal of Enloe Dam, referred to as a Dam Removal Entity (DRE). The WPLG addresses legal authorities necessary to assume the responsibilities of a DRE, as described in their previous May 12, 2022 memorandum, “Enloe Dam Removal” (See Appendix A). Those include the authority to (1) acquire a property interest in Enloe Dam, (2) obtain permits for dam removal, (3) manage procurement and hold contracts, and (4) secure insurance. Stakeholder interest from federal, state, tribal, and private entities was also taken into consideration.

Potential candidates for the DRE include:

- Bureau of Land Management (BLM),
- Washington Department of Ecology (DOE),
- Washington Department of Natural Resources (DNR),
- Washington Department of Fish and Wildlife (WDFW),
- Confederated Tribes of the Colville Reservation (CTCR), and a
- Washington State Business Structure (non-profit or limited liability corporation).

The PUD currently holds multiple property interests in Enloe Dam, including fee title to the dam as structure affixed to various lands; a right-of-way in the riverbanks and uplands managed by BLM; and an easement or implied authorization from DNR, if the State owns the submerged lands, or a right-of-way in the submerged lands if the U.S. owns them. These would likely be transferred to the future DRE to relieve the PUD of any liability associated with ownership or dam removal. Therefore, and primarily, the DRE must have the authority to assume property interests in Enloe Dam with the intent of removing it. Second, the DRE must have the authority to obtain and implement the regulatory permits necessary for dam removal. Third, the DRE must have the authority to procure and hold a contract with a contractor to remove Enloe Dam. Moreover, it may be preferable that the DRE consider a procurement method that requires the contractor to be responsible for both design and implementation. Lastly, the DRE must have the ability to secure an insurance program (including indemnities) to defend itself against claims for damages and to name as Additional Insured the PUD.

The recommended pathway to pursue potential dam removal of Enloe Dam consists of three phases, including 1) the Design Phase, 2) the Permit Phase, and 3) the Implementation Phase, with the DRE selected at the end of the Design Phase. This overall pathway is supported by the Okanogan Public Utility District (PUD) by resolution no 1775, determining that the process is consistent with the PUD's criteria for proposals to evaluate the removal of Enloe Dam.

1. **Design Phase:** During the Preliminary Design Phase, parties should fund and undertake a Feasibility Study to develop a preliminary project design and cost estimate that meets the PUD's criteria. If the design appears feasible, Trout Unlimited (TU) and other stakeholders should secure funding for the subsequent Permit and Implementation Phases. At the end of the Preliminary Design Phase, TU, in coordination with the PUD and other stakeholders, should make a go/no-go decision based on funding availability. If approved, a new DRE will be selected to pursue the Permit and Implementation phases.
2. **Permit Phase:** In the Permit Phase, the DRE will be responsible for obtaining all necessary permits for the project's implementation. It is recommended that the DRE take charge during this phase, rather than the Project Manager who developed the preliminary design.
3. **Implementation Phase,** the DRE will secure insurance policies, bonds, and other commercial mechanisms required for the liability management program outlined in Section VII of the 2022 memo (see Appendix A). The DRE will then proceed with dam removal, including mitigation measures and habitat restoration.

The Okanogan Public Utility District (PUD) supports this pathway, as stated in resolution 1775, which deems the process consistent with the PUD's evaluation criteria for dam removal proposals.

Dam Removal Entity Conclusions

From a legal perspective, several entities are potentially eligible to become the DRE. However, the memorandum recognizes that selection of a DRE will be primarily driven by non-legal factors such as interest in assuming responsibility, preparedness of entity to negotiate a Transaction Agreement with the PUD as the basis for proceeding into the permit phase, and the ability of key stakeholders to cooperate in the governance of the project. The detailed memo outlining the possible DRE candidates in Appendix D is intended as guidance for the future deliberations of Trout Unlimited, the PUD, CTCR and other key stakeholders if a dam removal feasibility study supports a "go" decision for removal of Enloe Dam.

We have summarized the WPLG conclusions regarding legal authorities in the following table.

Entity	Authority			
	Hold property Interests in dam Only	Secure all permits	Use procurement contract to control risks (cost overruns, third party claims)	Secure insurance program (including Additional Insured)
BLM	N	N	Y	N
Ecology	N	?	Y	?
DNR	N	?	Y	?
WDFW	Y	Y	Y	?
CTCR	Y	Y	Y	Y
Nonprofit or Limited Liability Corporation	Y	Y	Y	Y

Considerations specific to State Agencies

If the Legislature is interested in a state agency becoming the DRE, then special legislation may be advisable to confirm adequate authorities to: (a) hold property interests in Enloe Dam without acquiring fee title in the submerged lands; (b) enter into a procurement contract that minimizes the risks of cost overruns and third party claims; (c) obtain a comprehensive insurance program that, among other things, names the PUD as additional insured; (d) supplement grant funding with state funds, if necessary; and (e) otherwise assume and discharge the functions of the DRE.

2.4 Sediment Removal and Management Options

Anchor QEA, LLC prepared a technical memorandum (Appendix E) that presents current findings on sediment removal and management options for the potential removal of Enloe Dam. The study aims to inform the feasibility of dam removal by addressing the critical aspect of managing the accumulated sediment behind the dam.

Sediment Characteristics

The most recent estimate of the volume of sediment accumulation behind Enloe Dam is approximately 2.94 million cubic yards (Anchor, 2023). Previous sediment characterization studies conducted by the US Geological Survey (USGS) and the Washington State Department of Ecology (DOE) indicate elevated concentrations of certain metals, such as arsenic, in the sediment. These elevated concentrations are likely attributed to historical mining and milling activities upstream in the watershed. The distribution of metals varies in depth and proximity to the dam, showing a non-uniform pattern. However, the DOE study concludes that the sediment does not meet the criteria for dangerous or hazardous waste according to state and federal regulations.

Sediment Removal Techniques

The memorandum outlines several sediment removal techniques suitable for the site conditions. These techniques include staged sediment release downstream, mechanical dredging, hydraulic dredging, and the use of traditional excavation equipment. The combination of land-based excavation equipment and a staged lowering of the impoundment water level is considered well-suited to the site and sediment conditions. This approach reduces the need for extensive sediment dewatering operations. The memo also discusses options for sediment placement and disposal, including the potential beneficial use of a portion of the removed sediment. However, further evaluation is required to identify feasible areas for the disposal of removed sediment. This evaluation includes discussions with the Bureau of Land Management (BLM) and local land and business owners.

Environmental and Construction Permitting

The memorandum addresses the environmental and construction permitting processes associated with sediment removal. It considers the regulatory classification of the sediment to be removed and discusses how permitting efforts may impact sediment management techniques. Further sampling and data collection may be necessary in future phases of the project to meet the requirements of relevant permitting and environmental agencies.

Cost Estimates

Anchor provided preliminary costs estimates for a range of sediment management options. The lowest cost alternative would remove one quarter of the accumulated sediment and place it on adjacent land, thereby allowing the bulk of the material to be passed downstream in a staged release. The cost estimate for that alternative is roughly \$30,000,000, rising to \$76,500,000 if the dredged material requires off-site transport and disposal at a commercial landfill. Alternatively, if it is determined that none of the material can be passed downstream, the cost estimate for dredging and placing all accumulated sediment on adjacent land is \$90,000,000, rising to \$290,000,000 for disposal at a commercial landfill. Ultimately, the preferred approach will be identified during the ongoing feasibility study via investigations of water quality and sediment accumulation impacts downstream and related permitting requirements.

Sediment Management Conclusion

Sediment management is a crucial factor in assessing the feasibility of dam removal at Enloe Dam. While several construction methods show promise for sediment management, further studies are needed to provide clarity on permitting processes, released sediment location and aggradation, sediment disposal location and volume removed. These studies will inform the overall assessment of the project's feasibility and ensure the effective management of sediment during any dam removal process.

3. Opportunities and Next Steps

The Proviso analysis, roadmap, and collaborative engagement framework provide valuable insights and recommendations to help understand potential next steps in the Enloe Dam project. Currently, TU and CTCR are implementing a NOAA-funded Feasibility Assessment and Alternatives Analysis to build on the Proviso findings and further inform decisions about the feasibility of removing Enloe Dam. The next steps in that feasibility study include:

1. **Implementing Roadmap and Collaborative Efforts:** Begin implementing the “Roadmap” and engage with relevant Tribes, First Nations, and stakeholders, including state and federal agencies, non-profit organizations, and community leaders, to work together to implement the feasibility assessment and additional project phases as appropriate.
2. **Communications:** Launch a communications hub and utilize various communication channels, such as social media, public meetings, and media outreach, to keep the public informed about the project.
3. **Objective Analysis of Conceptual Alternatives:** Identify and compare design alternatives via specific feasibility study elements, including biological risk assessment, hydraulic and hydrologic modeling, sediment transport and fate analysis, sediment management planning, and regulatory agency consultation and permitting.
4. **Discussions of Dam Removal Entity Options:** Assist state and federal agencies to use the conclusions and recommendations outlined in the Dam Removal Entity Memo to guide further discussions and enable the selection or formation of a Dam Removal Entity at the end of Phase 1 of the project.

Next Steps for Consideration by the Legislature:

1. **Fund State Agencies to Ensure Collaborative Engagement:** Explore and pursue additional funding sources to ensure sufficient financial resources are available to support the project. The legislature could consider allocating dedicated staff and financial resources to support agency engagement in permitting processes and technical working group participation.
2. **Legislative Funding Support:** After the completion of the feasibility assessment and the PUD's go/no-go decision on dam removal in 2024, securing legislative funding becomes crucial to support the project, particularly for a dam removal phase. Partners and project sponsors will prepare a comprehensive funding proposal that outlines the estimated costs of the dam removal phase, including associated expenses such as sediment management, restoration activities, and any necessary infrastructure modifications. To ensure the timely and effective implementation of the dam removal project, it is imperative to obtain a commitment from state agencies to efficiently execute tasks associated with the project.

3. Legislation to Facilitate a State Agency to Serve as Dam Removal Entity (DRE):

Water & Power Law Group investigated three state agencies as potential candidates to serve as DRE in the event of Enloe Dam removal. The analysis suggests that WDFW may be the best fit based on the agency's apparent authority to own and demolish infrastructure. However, some uncertainty may exist around the authority of the agency to acquire Enloe Dam solely for the purpose of removing it. That uncertainty could be removed with the passage of limited legislation to establish that specific authority. Insurance, staff capacity, and any policy concerns would also need to be addressed. Similarly, if DOE or DNR was determined to be the preferred candidate, then the legislature could pass specific legislation granting the necessary authorities, insurance, and capacity to one or both of those agencies.

By implementing these opportunities and next steps, project partners will ensure that the Enloe Dam project continues to progress effectively. Engagement by the legislature in the form of support for state agency involvement in the project, future funding appropriations, and specific legislation to facilitate state agency action as a DRE engagement, will allow the project to advance towards an objective, well-informed decision on dam removal as a means for restoration of the Similkameen River.

Appendix A: Resolutions and Agreements

Tribal and First Nations Resolutions

- [2014 Okanagan Nation Water Declaration](#)
- [2015 Lower Similkameen Indian Band Proclamation](#)
- [2017 Confederated Tribes of the Colville Reservation \(CTCR\)](#): *Whereas it is the recommendation of the Natural Resources Committee to support Lower Similkameen Indian Bands resolution BRC #10, which; opposes dam modification and electrical production, any means of artificial salmon passage, strongly supports removal of Enloe Dam, remediation of contaminated sediment behind the dam, and restoration of the Similkameen River to its historic and natural condition.*
- [2021 BC letter of support](#)
- [2021 Upper Similkameen Indian Band Resolution](#)

Okanogan PUD Resolutions and Agreements

- [Resolution No. 1775 Okanogan County Public Utility District](#): *Whereas the District has memorialized criteria under which it would consider dam removal through the Feasibility Study process described in the 2022 Memo from the Water and Power Law Group.*
- [2022 Water and Power Law Group Enloe Dam Removal Memorandum](#): *Whereas the purpose is to describe a feasible pathway to pursue removal of Enloe Dam in cooperation with the Okanogan Public Utility District*

Appendix B: Collaborative Engagement Framework

Enloe Dam Feasibility Assessment

Collaborative Engagement Framework

June 2023



Submitted By:
Triangle Associates

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Purpose

This Collaborative Engagement Framework outlines a strategic approach for Trout Unlimited, project managers, and other relevant parties to effectively communicate and engage with Tribes, First Nations, stakeholders, subject matter experts, and the public (referred to as "parties" hereafter) through the Enloe Dam Feasibility Assessment and potentially beyond. The project management team will be responsible for implementing the approach detailed in this framework.

Background

Under a proviso from the 2022 Washington State Legislature, Trout Unlimited (TU) and partners were granted funding to:

“Analyze the steps required, including coordination and ownership, associated with the possible removal of Enloe Dam and analyze options for sediment removal in order to restore the Similkameen river, minimize impacts downriver, and allow access to over 300 miles of habitat for federally threatened steelhead and other native salmonids...”

The work under the proviso consisted of a project roadmap, an assessment of potential dam removal entities, management options for sediment removal and development of a collaborative engagement framework to guide stakeholder outreach.

The work conducted under the proviso was a collaborative effort between TU, the Washington Department of Fish and Wildlife (WDFW), Confederated Tribes of the Colville Reservation (CTCR), and other partners to ensure a comprehensive, objective, and science-driven approach. The Okanogan Public Utility District (OPUD) holds ownership of the Enloe Dam and is committed to remaining well-informed about all aspects of the planning and feasibility assessment conducted by TU and its partners. As the dam owner they will be effectively incorporated into the decision-making process.

To facilitate effective public participation and the exchange of technical expertise, Triangle Associates, with support by the ECO Resource Group has been engaged to develop a Collaborative Engagement Framework and Communications Strategy. This framework is designed to guide the feasibility assessment process in a manner that is informed by Tribes, First Nations, stakeholders, land managers, and the community, while also progressing systematically through the various stages of the assessment. By adopting this collaborative decision-making process, the project seeks to bring together interested and key decision-makers to work toward goals in natural resources management, safety, liability management and financial impact. It is aligned with the philosophy of promoting equitable, science-based, and informed decision-making, ensuring that all voices are heard and considered throughout the assessment process.

Situational Assessment Interviews and Framework Development

The Enloe Dam Collaborative Engagement Framework incorporates the communication and engagement preferences identified through a comprehensive situational assessment conducted by Triangle Associates. This assessment is a standard component of the Triangle-facilitated process, involving engagement with parties or target audience members at the project's outset. Its objective is to understand the interests, concerns, roles, and decision-making authority of individuals or entities who will be involved, affected, or impacted by the project's outcome.

The situational assessment procedure emphasized engaging all parties in developing the framework. The success of the Collaborative Engagement Framework depends on effectively informing parties about the project and its processes early on, allowing for their ongoing input. Triangle interviewed 33 individuals representing diverse interests (see Appendix A). The goal of the interviews was to gather insights for the development of the Collaborative Engagement Framework and subsequent communications plan. Interviewees' priorities, experiences, concerns about the process or expected outcomes, and future engagement preferences were documented. A thematic summary of the findings is provided in Appendix B.

Communications Goals and Objectives

In any assessment or decision-making process, effective communication plays a crucial role in ensuring meaningful engagement and equitable participation. This introduction sets the stage for discussing the communication goals and objectives that drive the outreach and engagement efforts within the Enloe Dam Assessment process. By actively involving all relevant parties, this endeavor seeks to foster a collaborative environment where diverse perspectives are considered, and the decision-making process is transparent and inclusive. Through clear and accessible communication, the goal is to empower individuals and communities, promoting a shared understanding and enabling them to actively contribute to the assessment process.

Goals:

This framework outlines various communication strategies and tools to achieve the following supplementary goals:

1. Clearly communicate the project timeline and decision-making process.
2. Present the process and research in a clear and comprehensible manner.
3. Ensure that all parties receive timely, accurate and consistent information.
4. Offer diverse and relevant avenues for individuals to ask questions and express concerns.

Objectives:

Objective 1: Ensure the inclusion of all parties in the Collaborative Engagement Framework.

Strategies:

- Facilitate opportunities for all parties to share comments and insights.
- Provide clear information and relevant communication tools to all parties.
- Deliver clear, consistent, and accessible updates to all parties during the Enloe Dam Feasibility Assessment.

Objective 2: Determine the most effective methods to engage all parties.

Strategies:

- Foster relationships with all parties involved to incorporate engagement and communication preferences.
- Conduct research and collaborate with established parties to identify and engage new groups.

Objective 3: Establish unified and sensitive communication and messaging.

Strategies:

- Deliver clear, consistent, and accessible updates to all parties during the Enloe Dam Feasibility Assessment.
- Foster relationships with all parties involved to understand communication needs and sensitivities.
- Ensure a cohesive and coordinated approach to messaging among the project team.

Objective 4: Develop effective & sensitive communication tools.

Strategies:

- Deliver clear, consistent, and accessible updates to all parties during the Enloe Dam Feasibility Assessment using well-crafted communication tools that consider engagement preferences and sensitivities.

Collaborative Engagement Framework and Recommendations

The following section outlines a comprehensive Collaborative Engagement Framework and provides key recommendations for the Enloe Dam project. Drawing upon the valuable insights gathered through interviews and extensive stakeholder consultation, this framework aims to establish an inclusive and productive approach to engaging all relevant parties. By prioritizing collaboration, effective communication, and trust-building, the recommendations outlined in this section seek to foster a shared understanding, address concerns, and ensure meaningful stakeholder participation throughout the Enloe Dam project.

RACI Responsibility Assignment Matrix

A RACI, also known as a Responsibility Assignment Matrix (Table 1 below), is a visual tool that helps clarify and define roles and responsibilities within a project or organization. The acronym "RACI" stands for Responsible, Accountable, Consulted, and Informed, representing the different levels of involvement and decision-making authority for each task or activity.

Roles & Responsibilities

Responsible, Accountable, Consulted, Informed/Intput

Framework Groups	Phase						
	Feasibility Assessment	Preliminary Design	Go / No-Go Decision	Dam Removal Entity Designated	Permit Phase	Implementation	
Executive Group	A	A	I				
Project Team	R	R	I				
Tribes & First Nations	C	C	I				
Policy Group	C/A	C/A	I				
Technical Advisory	C/R	C/R	I				
Consult Group	R	R	I				
TEK	C	C	I				
Coordinating Table	I	I	I				
Public	I	I	I				

DEFINITIONS	
Responsible	The individual or team responsible for completing a specific task or activity.
Accountable	The entity that ultimately owns the outcome or result of a particular task or activity.
Consulted	The individuals or groups who possess specific expertise or knowledge and need to be consulted or provide input before a decision is made or action is taken.
Informed / Input	The individuals or groups who need to be kept informed about the progress, decisions, or outcomes related to a task or activity.

Table 1. RACI Responsibility Assignment Matrix

In this RACI chart, each phase¹ representing high-level milestones is listed vertically, while the entity or participants are listed horizontally. The phases utilized in this RACI chart and outlined in the 2022 Water and Power Law Group Memo, provide a pathway to pursue the potential and feasibility of removing Enloe Dam. The chart assigns one or more of the RACI roles for each entity or group for each phase, providing a clear and visual representation of who is responsible for completing the task, who is accountable for its outcome, who needs to be consulted for input or expertise, and who needs to be informed of progress or decisions. As a tool the RACI chart can be further broken down into tasks within each phase for future clarity and communications.

This RACI chart is intended to ensure that there is clarity and alignment among team members regarding their roles and responsibilities. It can prevent misunderstandings, duplication of effort, and gaps in accountability. The RACI chart promotes effective collaboration, decision-making, and overall project success by clearly defining the involvement and authority of each team member in a transparent and structured manner.

Collaborative Engagement Framework Groups

Project Team - Responsible

The Project Team, comprising Trout Unlimited (TU) and the Confederated Tribes of the Colville Reservation (CTCR), will play a central role in coordinating various parties within the Enloe Dam Feasibility Assessment. Working closely with the Executive Group, Policy Team, Technical Group, Traditional Ecological Knowledge efforts, Consultants, Coordinating Group, and Public Engagement, the Project Team ensures a comprehensive assessment that addresses the environmental, social, and economic aspects of the project. TU, as the Feasibility Assessment sponsor, brings expertise in habitat restoration, fish conservation, project management, grant writing and environmental assessment processes. The Confederated Tribes of the Colville Reservation contribute their extensive knowledge of the local ecosystem, fisheries, habitat restoration and cultural heritage.

Together, the Project Team works to address the needs of the Okanogan Public Utility District (OPUD) and consider the concerns of the local communities involved. By coordinating these various groups, the Project Team ensures effective communication, collaboration, and stakeholder engagement, fostering a balanced and inclusive approach throughout the dam removal feasibility assessment.

Executive Advisory Committee - Accountable

The Executive Advisory Committee (EAC) comprises the Okanogan Public Utility District (OPUD), the Confederated Tribes of the Colville Reservation (CTCR), Trout Unlimited (TU), the Bureau of Land Management (BLM), the Washington Department of Ecology (ECY), and the Washington Department of Natural Resources (DNR), with each entity playing a crucial role. The OPUD, as the dam owner provides valuable insights into the dam's infrastructure, operational history, and potential removal challenges. They have the authority to determine whether the infrastructure project should proceed based on the results of the Feasibility Assessment. CTCR contributes extensive knowledge of the local ecosystem, cultural heritage, and their interests as Native American Tribes with ancestral ties to the area. Trout Unlimited is the Feasibility Assessment sponsor and is contractually responsible for planning and delivering the project, bringing expertise in habitat restoration, fish conservation, and environmental

¹ Corresponding to Phases as outlined in Richard Roos-Collin's Memorandum on 'Candidates for Enloe Dam Removal Entity'

assessment processes. The BLM, as the landowner surrounding the dam, establishes a federal nexus in the project. Their inclusion ensures that the Feasibility Assessment accounts for the management of the surrounding lands and incorporates their expertise in land use planning, environmental regulations, and resource management. This participation guarantees alignment with federal policies and guidelines while also addressing ecological and cultural considerations of the local community. The Washington Department of Natural Resources (DNR) as the state agency responsible for managing and regulating the state's aquatic lands and natural resources, brings valuable insights into the legal and regulatory aspects of the project. The Washington Department of Ecology is involved as the primary regulatory authority for dam safety and water quality. As the state agency responsible for protecting and managing water resources, the Department of Ecology brings expertise in water quality monitoring, assessment, and restoration and can ensure compliance with water quality standards and regulations.

The executive group is responsible for making critical decisions and working collaboratively toward solutions that maintain the interests of all parties involved. The collaborative efforts of members within the executive team create a comprehensive approach that leverages their diverse perspectives, expertise, and responsibilities to effectively guide the dam removal feasibility assessment.

Tribal and First Nations Partners - Consulted

Tribal and First Nations partners play a fundamental role in providing critical input into decision-making processes and project development that impact their lands and resources. This inclusive platform ensures that the perspectives and interests of these partners are considered and incorporated into the planning and implementation of the Enloe Dam project. The Tribal and First Nations partners that are represented north and south of the 49th parallel include the Confederated Tribes of the Colville Reservation, and the Syilx Okanagan nation chiefs as represented in this project by the Upper Similkameen Indian Band (USIB), the Lower Similkameen Indian Band (LSIB), and member bands of the Syilx Okanagan nation. These partners bring their distinct knowledge, cultural heritage, language and interests as Native American Tribes and First Nations. Their involvement ensures that the project respects and addresses the concerns, needs, and long-standing vision of the Tribal and First Nations communities, promoting cultural preservation, environmental stewardship, and good governance.

Consultant Team and Legal Advisors - Responsible

The Consultant Team, consisting of professional consultants or contractors, plays a crucial role in providing transdisciplinary subject matter expertise for the assessment. They bring together a diverse range of skills and knowledge required for a comprehensive assessment. The team includes experts in dam removal feasibility assessment engineering, biological studies, policy analysis, legal advisors, insurance advisors, permitting specialists, facilitators/convenors, as well as communications and public involvement experts. Their collective expertise allows them to address the various aspects of the project, considering the technical, environmental, legal, and social dimensions.

The Consultant Team collaborates closely with the other groups and interested parties, such as the Executive Group, Policy Team, Technical Group, Traditional Ecological Knowledge efforts, and the Project Team. Their involvement ensures that the assessment is conducted with the highest level of professional competence and expertise, facilitating a well-informed decision-making process, and promoting effective communication among all parties involved.

Technical Advisory Committee – Consulted/Advisors

The Technical Advisory Committee (TAC) serves as a review body for the technical deliverables produced by the consultant team. Their primary focus is to ensure that the desired outcomes and regulatory criteria are being met. They provide collaborative input to refine project documentation at progressive design milestones, identify issues requiring resolution to progress through the feasibility, design, permitting, and construction phases, and work together to identify risks and remove planning barriers, fostering a more streamlined and efficient process. The cross-functional and transdisciplinary nature of the TAC allows for a comprehensive evaluation of the project's feasibility and facilitates concurrent progress in design, permitting, and fundraising efforts.

Members of the TAC represent key stakeholders and Tribes including the Confederated Tribes of the Colville Reservation, Bureau of Land Management (BLM), U.S. Department of Fish and Wildlife (USFWS), Washington Department of Ecology (ECY), Department of Natural Resources (DNR), Washington Department of Fish and Wildlife (WDFW), and the National Oceanic and Atmospheric Administration (NOAA). Their involvement ensures that technical aspects of the dam removal project are thoroughly reviewed, risks are identified and mitigated, and all necessary considerations are addressed for successful project development.

Traditional Ecological Knowledge (TEK) - Consulted

The Traditional Ecological Knowledge (TEK) effort for the project consists of representatives from the Confederated Tribes of the Colville Reservation (CTCR), Upper Similkameen Indian Band (USIB), and Lower Similkameen Indian Band (LSIB). These Tribes and First Nations play a vital role in incorporating traditional ecological knowledge and indigenous perspectives into the project's decision-making processes. The TEK group brings deep-rooted cultural and ecological insights, drawing upon the wisdom and experiences passed down through generations. Their knowledge helps to inform and enhance the understanding of the local ecosystem, including the interconnectedness of land, water, wildlife, and human communities.

By integrating traditional ecological knowledge, the TEK group contributes to a more holistic and culturally sensitive approach to the project, ensuring that the social, cultural, and spiritual values of the Confederated Tribes of the Colville Reservation and Syilx Okanagan Nation are respected and considered throughout the whole assessment and decision-making processes.

Policy Group – Responsible/Consulted

The Policy Group for the dam removal project is a collaborative multijurisdictional body comprised of representatives from various government agencies, departments, and organizations. This group includes the Bureau of Land Management (BLM), U.S. Department of Fish and Wildlife (USFWS), U.S. Army Corps of Engineers (USACE), Washington Department of Ecology (ECY), Department of Natural Resources (DNR), Canada Department of Fisheries and Oceans (DFO), B.C. Ministry of Environment, and the National Oceanic and Atmospheric Administration (NOAA). As a collective body, the Policy Group is responsible for addressing policy-related issues such as laws and regulations that transcend individual jurisdictional boundaries.

The focus of the Policy Group is on policy development and implementation. Members engage in research, analysis, and deliberation to identify best practices and formulate effective policies. They work together to develop policy recommendations, strategies for implementation, and evaluation frameworks. By sharing their expertise and collaborating across jurisdictions, the Policy Group ensures

that policies are comprehensive, consistent, and aligned with the goals of the dam feasibility assessment. This collaborative approach allows for the consideration of diverse perspectives and the incorporation of best practices from different agencies and organizations. Ultimately, the Policy Group plays a vital role in shaping the policy framework and ensuring its successful implementation across the project's jurisdictional landscape.

Coordinating Table - Inform/Input

The Coordinating Table for the dam feasibility assessment serves as a platform to engage key stakeholders and partners who are not represented in other groups but have significant roles in developing, authorizing, or funding the project. This inclusive forum allows these stakeholders to provide input, stay informed, and contribute to the decision-making processes. The Coordinating Table comprises representatives from various sectors, including local, state, federal, and Canadian government regulatory agencies, private and public funding partners, political project champions, local landowners adjacent to the project site or potentially affected by it, community groups, underserved community representatives, local government entities such as the Okanogan County Commissioners and City of Oroville, conservation groups, recreation stakeholders, agriculture and ranching stakeholders, private landowners, and community members.

The involvement of the Coordinating Table ensures that the perspectives and interests of these diverse stakeholders are considered, facilitating collaborative decision-making, and fostering a comprehensive approach to the dam removal project.

Public – Inform/Input

In the context of the Enloe Dam feasibility assessment, the term "public" encompasses a wide range of stakeholders with diverse interests and perspectives. It includes downstream landowners who may be directly affected by the dam and potential removal, as well as community members residing in the surrounding areas. The public also extends to statewide interests, representing individuals and organizations from across the state who have a stake in the project's outcomes and impacts. This may include environmental groups, recreational users, Indigenous communities, business owners, and other concerned citizens.

Recognizing the significance of engaging with the public, our approach ensures that all these stakeholders are given the opportunity to participate in the decision-making process, provide input, voice their concerns, and contribute to shaping the future of the Enloe Dam.

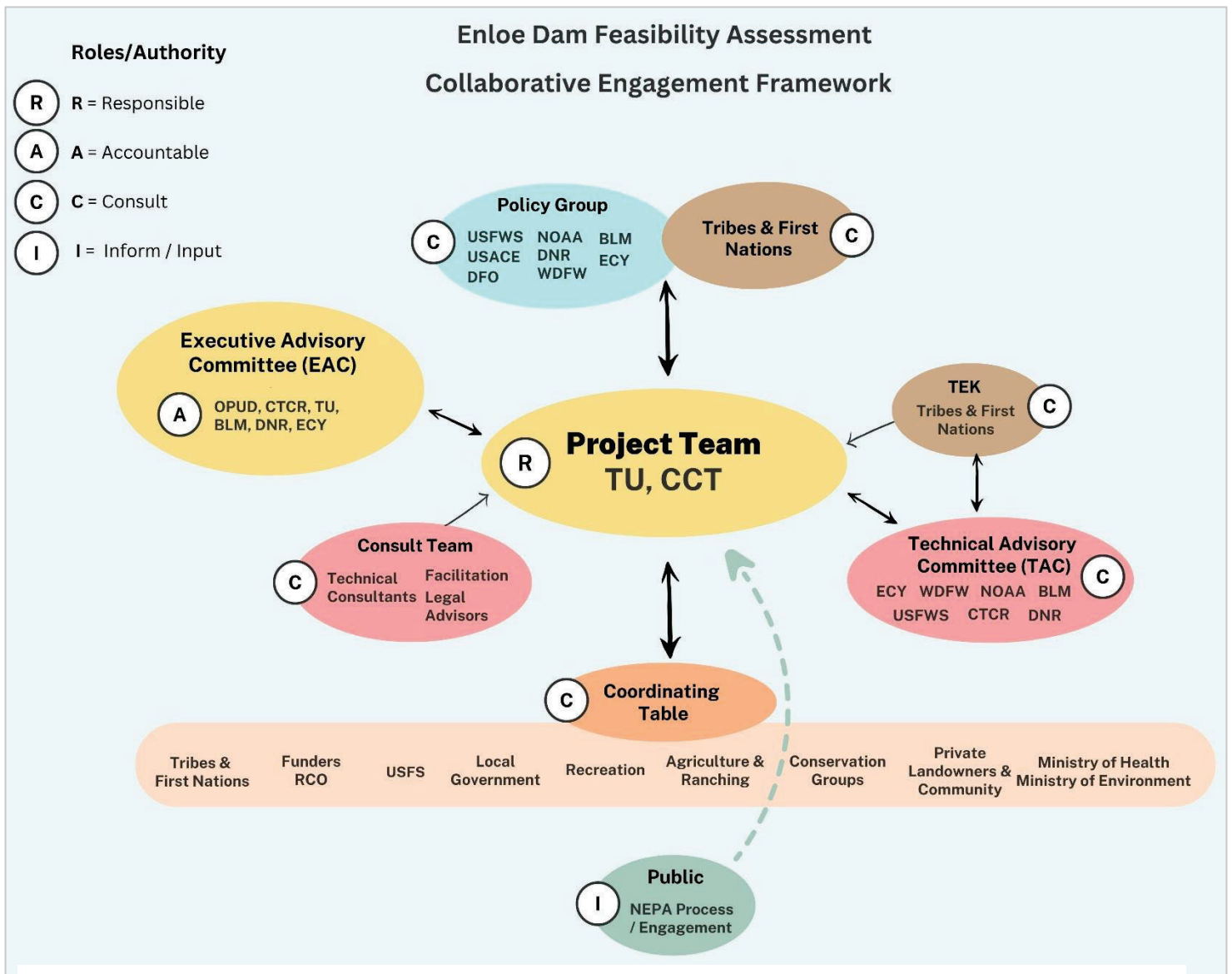


Figure 1. Enloe Dam Feasibility Assessment Collaborative Engagement Framework Graphic

Framework Graphic

The Enloe Dam Feasibility Assessment Collaborative Engagement Framework Graphic (Framework, Figure 1) is designed to provide a strategic and organized approach to the planning process of the Enloe Dam Assessment. By bringing together key decision-makers, technical experts, and stakeholders, this framework enables effective teamwork and facilitates risk-informed decision making. It recognizes the importance of comprehensive communications and engagement strategies in minimizing potential conflicts, dissatisfaction, and ensuring ongoing social and funding support. The proposed Framework, subject to updates in Phase 1, aims to establish clear roles, responsibilities, and maximize communication and collaboration among all stakeholders, Tribes, and First Nations.

Outreach and Communications Plan

During the Feasibility Assessment phase, the outreach and communications plan will serve as a guide for outreach activities aimed at communicating the Enloe Dam process and generating engagement across all parties.

The objective of the outreach and communications plan is to increase participation by partners and enhance understanding among the community and parties. The outreach efforts will be designed to be extensive, inclusive, and transparent, accommodating the diverse needs and preferences of Tribes, First Nations, and stakeholder groups.

Tiered Audiences:

Tier one audiences: These entities form the foundation and will play a vital role in making decisions and providing consultation for the Enloe Dam Feasibility Assessment.

Engagement Framework Group: Executive Group, Tribes, and First Nations

DRACI Chart Role & Responsibility Level: Accountable and Consulted

- Okanogan Public Utility District (OPUD); Dam Owner

Tier one audiences that may have multiple levels of engagement on different groups within the Collaborative Engagement Framework based on policy and technical subject matter expertise:

- Confederated Tribes of the Colville Reservation (CTCR); Fisheries Co-manager and land Co-Steward
- Bureau of Land Management (BLM); Landowner
- Department of Natural Resources (DNR); Landowner
- WA Department of Ecology (ECY); Primary Regulatory Agency
- First Nations
 - Upper Similkameen Indian Band (USIB)
 - Lower Similkameen Indian Band (LSIB)
 - Okanogan Nation Alliance (ONA)

Tier two audiences: These stakeholders will offer additional support in terms of implementing and contributing their expertise to the assessment's scientific or policy aspects.

Engagement Framework Group: Policy Group, Consulting Group and Technical Committee

DRACI Chart Role & Responsibility Level: Accountable (Policy Group) and Consulted

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Army Corps of Engineers (USACE)
- Canada Department of Fisheries and Oceans (DFO)
- National Oceanic and Atmospheric Administration (NOAA)
- Tier one audiences as listed above.

Tier three audiences: These stakeholders are likely to have existing investments in the Enloe Dam Feasibility Assessment or have been identified through the assessment interviews as potential participants in the process.

Engagement Framework Group: Coordinating Table

DRACI Chart Role & Responsibility Level: Informed / Input

Triangle Associates

- Local Government
 - Okanogan County Commissioners
 - City of Oroville
- Conservation Groups
- Recreation stakeholders
- Agriculture and ranching stakeholders
- Private Landowners and community members
- Funders
- Bureau of Indian Affairs (BIA)

Tier four audiences: The public represents community members that may have an interest in the Enloe Dam Assessment process.

Note: It's important to note that audiences categorized as Tiers Two or Three have the potential to transition to Tier One as the process progresses. Their level of involvement and influence may increase if the Enloe Dam Feasibility Assessment advances. Flexibility will be maintained to accommodate such shifts and ensure that all relevant parties have appropriate roles and engagement throughout the process.

Outreach Approaches and Strategies

The comprehensive communications approach for the Enloe Dam project integrates multiple strategies to ensure effective engagement, transparency, and information sharing. This approach encompasses the establishment of an internal file sharing site, central communication hub, direct outreach, face-to-face engagement, engagement materials, media engagement, and social media utilization.

	Convening Timeframe	Engagement Purpose	Tools/Platforms
TIER 1	Project Team	Project Team ensures a comprehensive assessment that addresses the environmental, social, and economic aspects of the project. Responsible for moving the project through the phases.	<ul style="list-style-type: none"> Internal File Sharing Site Virtual meeting platform Potential in-person meetings
	Executive Advisory Committee	High-level decision making	<ul style="list-style-type: none"> Internal File Sharing Site Virtual meeting platform
	Tribes and First Nations	Ongoing - As it works for Tribes & First Nations	<ul style="list-style-type: none"> In-person meetings Internal file sharing site Virtual meeting platform
TIER 2	Policy Group	Members engage in research, analysis, and deliberation to identify best practices and formulate effective policies. They work together to develop policy recommendations, strategies for implementation, and evaluation frameworks.	<ul style="list-style-type: none"> Internal file sharing site/Comm Hub Virtual meeting platform Potential In-person Meetings
	Technical Advisory Committee	Serves as a review body for the technical deliverables produced by the consultant team. Their primary focus is to ensure that the tasks of the Scope of Work (SOW) and regulatory criteria are being met.	<ul style="list-style-type: none"> Internal file sharing site Virtual meeting platform Potential In-person Meetings
	Consult Group	The Consultant Team collaborates closely with the other groups and interested parties.	<ul style="list-style-type: none"> Internal file sharing site Virtual meeting platform
TIER 3	Coordination Table	Platform to engage key stakeholders and partners who are not represented in other groups but have significant roles in developing, authorizing, or funding the project.	<ul style="list-style-type: none"> Comm Hub/Project Website Potential in-person meetings Virtual meeting platform
	Public	Individuals or groups who need to be kept informed about the progress, decisions, or outcomes related to a task or activity. The public are given the opportunity to participate in the decision-making process, provide input and voice their concerns.	<ul style="list-style-type: none"> Communications Hub/Project Website Traditional & Social Media Outlets Print materials for distribution Public Meetings with open house tabling

Communication Tools and Platforms

Internal File Sharing Platform: Effective communication is vital for the Enloe Dam project, and to ensure transparency and timely information sharing, a central internal file sharing platform will be established. The platform will be utilized for Tier one audiences to share documents and products in a timely manner. Internal file sharing allows users secure access to shared documents for review to increase efficiency in communications and engagement.

Next Steps: Project Team will work with the Tier One audiences (Executive Advisory Group, Policy Group, Tribes, and First Nations) to establish an internal file sharing platform that best meets the needs of the group as a whole.

1. Engage Tier One Audiences to understand access and communication needs.
2. Develop the internal file sharing platform.
3. Design and build a user-friendly interface on the platform that supports the communication and organizational needs of the various groups.

Central Communication Hub: The Communication hub will serve as a reliable source of up-to-date and accessible information about the project, addressing stakeholder concerns and providing justifications for proposed actions. Through this central communication hub, stakeholders will have easy access to project updates, research findings, and relevant data. Timely dissemination of information will help address concerns, foster understanding, and encourage meaningful engagement. By prioritizing transparent communication, the central communication hub will allow interested parties to stay informed and actively participate in the process surrounding the Enloe Dam project.

The central communication hub for the Enloe Dam project will be a comprehensive online platform designed to facilitate effective and transparent communication and will include the following:

- **Provide Updated Information:** The platform will provide information and promote virtual town hall meetings, webinars, and public forums to foster direct communication and interaction between stakeholders and project leaders. These virtual events will provide opportunities for people to voice their concerns, share their perspectives, and engage in constructive discussions.
- **Centralized Repository:** This platform will serve as a centralized repository of information, accessible to all interested parties involved or interested in the project. It will feature a user-friendly interface that allows easy navigation and quick access to key resources. The platform will provide project updates, including milestones, and any changes or developments. Parties will have access to research findings, environmental impact assessments, and feasibility studies, enabling them to stay informed about the project's status and potential implications.
- **Enhance Data Availability:** Address interested parties desire for more data to support informed decision-making. Provide access to relevant data and research findings, ensuring that people have the necessary information to actively participate in discussions and assessments.
- **Address questions:** To address concerns and provide justifications for proposed actions, the platform will feature dedicated sections for addressing frequently asked questions and addressing common misconceptions. This section will provide clear explanations, backed by

scientific evidence and expert opinions, to ensure that interested parties have accurate information to base their opinions.

- **Accessibility:** The platform will prioritize accessibility, ensuring that information is presented in a clear, concise, and inclusive manner. It will be designed to accommodate different devices and accessibility needs, making it accessible to a wide range of stakeholders, including those with disabilities.

Overall, the central communication hub will serve as a dynamic and interactive platform that facilitates transparent communication, provides timely updates, addresses concerns, and promotes meaningful stakeholder engagement throughout the Enloe Dam project.

Next Steps: Create an online platform serving as a central hub for Enloe Dam project communication. This platform will be the responsibility of the Project Team and provide up-to-date information, research findings, progress reports, and environmental assessments. Stakeholders will have easy access to key resources, interactive features, and a feedback submission portal to address concerns and foster two-way communication. Steps to establish the Central Communication Hub:

4. Develop an online platform as the central hub for Enloe Dam project communication.
5. Design and build a user-friendly website with easy navigation and access to project information, research findings, and progress reports.
6. Implement interactive features, such as a feedback submission portal, to encourage stakeholder engagement.

Direct Outreach and Face-to-Face Engagement: We will prioritize direct outreach efforts, including in-person meetings and public gatherings. These engagements will facilitate personal interactions, address questions, and enable stakeholders to better understand the project. We will utilize these opportunities to build relationships, address concerns, and interpret complex research findings.

Next Steps -

1. Organize in-person meetings and public gatherings to facilitate personal interactions, address questions, and interpret complex research findings.
2. Develop engagement materials, including project summaries, visual aids, and plain language explanations, for use during outreach activities.
3. Continue to identify key participants and schedule one-on-one meetings to understand their concerns, values, and interests.

Tribes and First Nations:

- Develop culturally sensitive and inclusive outreach materials that recognize and honor Indigenous knowledge and perspectives.
- Respect Tribal sovereignty and rights by engaging with each Tribe and First Nation individually.
 - Collaborate with Tribes and First Nations to determine their preferred methods of participation and ensure their voices are heard throughout the process.

Engagement Materials: We will develop informative and inclusive engagement materials, including project summaries, visual aids, and plain language explanations of technical concepts. These materials will be available online and in print formats, ensuring accessibility for diverse stakeholders. They will be used during outreach activities, public meetings, and virtual events to enhance understanding and promote meaningful discussions.

Next Steps – Develop Engagement Materials:

1. Create informative and inclusive engagement materials, ensuring accessibility for diverse stakeholders.
2. Produce project summaries, fact sheets, infographics, and other visual aids to convey key information effectively.
3. Develop plain language explanations of technical concepts to enhance understanding and promote meaningful discussions.

Media Engagement: Undertake proactive engagement with local, regional, and national media outlets. We will issue press releases, organize media briefings, and facilitate interviews to share updates and key milestones. This collaboration with the media will increase public awareness and understanding of the project while ensuring accurate reporting.

Next Steps:

1. Establish relationships with local, regional, and national media outlets to share updates and milestones.
2. Issue press releases, organize media briefings, and facilitate interviews to disseminate accurate information to the public.
3. Collaborate with media partners to increase awareness and understanding of the Enloe Dam project.

Social Media Strategy: We will develop a comprehensive social media strategy utilizing platforms such as Facebook, Twitter, Instagram, and YouTube. Through these channels, we will share project updates, announcements, visual content, and research findings. Social media will serve as an interactive platform for discussions, addressing FAQs, and gathering feedback from a wider audience.

Next Steps:

1. Develop a comprehensive social media strategy across platforms like Facebook or Instagram
2. Regularly post project updates, announcements, visual content, and research findings.
3. Engage with the audience through interactive posts, responding to comments and addressing frequently asked questions.

Community Partnerships and Leaders: Collaborating with local organizations, advocacy groups, and community leaders will enhance outreach efforts. These partnerships will extend our messaging reach, provide valuable insights, and help shape our communication strategy.

Next Steps:

1. Identify local organizations, advocacy groups, and influencers.
2. Establish partnerships to extend the reach of project messaging and gain valuable insights.
3. Collaborate with partners to develop joint communication campaigns, events, and initiatives.
4. Ongoing Communication and Evaluation:
 - a) Maintain regular communication with stakeholders through the central communication hub, direct outreach, and social media channels.
 - b) Monitor feedback, track engagement metrics, and conduct periodic evaluations of the communication efforts.
 - c) Use the gathered insights to refine and improve the communication strategy throughout the project.

By following this workplan, the Enloe Dam project will effectively engage stakeholders, ensure transparency, and foster a shared understanding of the project's goals, impacts, and benefits. The plan incorporates a mix of online and offline communication strategies, leveraging various channels to reach a diverse audience.

Guidelines for Messaging to the Public, Tribes, and State and Federal Governments

By following these guidelines, the messaging to the public, Tribes, and state and federal governments can effectively convey the goals, benefits, and collaborative nature of the Enloe Dam project. These guidelines promote transparency, inclusivity, and respectful engagement, fostering understanding, trust, and meaningful participation from all stakeholders involved.

1. **Be Transparent and Honest:** When communicating about the Enloe Dam project, it is essential to maintain transparency and honesty. Provide accurate and reliable information, clearly articulating the purpose, goals, and potential impacts of the project. Be open about challenges and uncertainties and emphasize the commitment to ongoing communication and collaboration.
2. **Address OPUD Criteria:** Recognize concerns related to the Okanogan Public Utility District (PUD). Understand that the PUD has a responsibility to consider the financial implications and impacts on ratepayers. Clearly communicate the steps taken to evaluate and address the PUD's criteria and concerns, ensuring that the public and stakeholders understand the commitment to minimizing any adverse effects on the PUD and ratepayers.
3. **Tailor Messaging to Different Audiences:** Recognize the diverse needs and perspectives of the public, Tribes, and state and federal governments. Tailor messaging to each audience, considering their specific interests, values, and concerns. Use language that is accessible, inclusive, and respectful, avoiding jargon or technical terms that may hinder understanding.
4. **Acknowledge Tribal Rights and Tribes and First Nations Cultural Heritage:** Show respect for Tribal rights and cultural heritage when engaging with Tribes and First Nations. Recognize their historical connection to the land and waterways, and the importance of protecting and honoring their cultural values. Understand Tribal and First Nation's governance and processes. In the case of Enloe Dam, recognize Resolutions passed that represent current position on Enloe Dam (see Appendix C). Collaborate with Tribes in decision-making processes, ensuring their meaningful participation and addressing their specific concerns and interests.

5. **Engage Government Agencies with Respect and Collaboration:** When communicating with state and federal governments, approach them with respect and a collaborative mindset. Clearly articulate the project's goals, objectives, and potential benefits, demonstrating how it aligns with relevant policies and regulations. Seek their input and involvement in decision-making processes, fostering a cooperative relationship that promotes successful project implementation.
6. **Maintain Consistent and Timely Communication:** Establish a regular communication schedule to keep all parties informed about project updates, milestones, and decision points. Provide timely responses to inquiries, feedback, and concerns, demonstrating a commitment to ongoing engagement. Utilize various communication channels, including the central communication hub, direct outreach, media engagement, and social media, to reach diverse audiences and ensure effective dissemination of information.
 - **Foster Two-Way Communication and Meaningful Engagement:** Encourage two-way communication and meaningful engagement with all stakeholders. Actively listen to their perspectives, concerns, and suggestions, valuing their input. Provide opportunities for public input, public meetings, and feedback mechanisms to ensure that all voices are heard and considered in the decision-making process.

Monitoring and Evaluation:

1. Regularly monitor and assess the effectiveness of the outreach and communication efforts.
2. Seek feedback from stakeholders, Tribes, First Nations, and the public to gauge their level of satisfaction, understanding, and engagement.
3. Adjust the outreach plan based on feedback and lessons learned to ensure continuous improvement.

In Conclusion:

By implementing this comprehensive outreach and communications plan, we aim to foster meaningful engagement, build trust, and create an inclusive process that values the input and perspectives of all stakeholders and communities involved in the Enloe Dam Feasibility Assessment.

Appendix A: Situational Assessment Interview List

During the situational assessment phase, a comprehensive range of stakeholders, Tribal representatives and First Nations Band members were engaged through interviews to gather valuable insights and perspectives. Thirty-two interviews were conducted with representatives from various tribes, First Nations, agencies, organizations, and community members. These interviews aimed to capture diverse viewpoints and expertise, ensuring a well-rounded understanding of the current situation. By engaging with a broad spectrum of stakeholders, the assessment process sought to incorporate their knowledge, concerns, and priorities into the decision-making process. The information gathered from these interviews will play a vital role in shaping the subsequent stages of the project, enabling a more informed and inclusive approach to address the challenges ahead.

Tribe, First Nation, Agency, Organization or Affiliation
 (# of interviews conducted in that category) 33 total interviews.

Adjacent Landowner (3)
American Whitewater (1)
Bureau of Land Management (BLM) (1)
Columbiana (2)
Confederate Tribes of the Colville Reservation Council (1)
County Commissioner (1)
Department of Natural Resources (DNR) (1)
Hellensdale Reclamation District (1)
Lower Similkameen Indian Band (LSIB) (1)
Methow Rafting (1)
Methow Valley Citizens Council (MVCC) (1)
NOAA (2)
Okanogan Borderlands Historical Society (1)
Okanogan Irrigation District (1)
Okanogan Nation Alliance (1)
Okanogan Public Utility District (1)
Oroville Chamber of Commerce (1)
Oroville - Tonasket Irrigation District (1)
Oroville Golf Course (1)
Pacific Northwest Trail Association (1)
Private Citizen (2)
River Logic (1)
Trout Unlimited (TU) (1)
Upper Similkameen Indian Band (USIB) (1)
U.S. Fish and Wildlife Service (USFWS) (1)
WA Department of Ecology (ECY) (2)
WA Department of Fish & Wildlife (WDFW) (1)

Appendix B: Situational Assessment Key Themes and Findings

Key Themes and Findings

The findings of the interviews conducted by Triangle offer valuable insights that inform the framework for the Enloe Dam project. These insights encompass participant inclusion, necessary information and resources, ongoing communication, and key topics to be considered. The interviews were conducted to understand the interests, values, and important topics of the stakeholders. The report below highlights the key themes and interests expressed by the interviewees.

Enloe Dam Interests and Opportunities

Tribal and First Nations Interests:

- Protection and honoring of Tribal rights and First Nation's unceded rights: Interviewees emphasized the importance of acknowledging and upholding the rights granted to Tribes and First Nations through treaties and agreements in addition to prioritizing traditional knowledge to guide the process. Many interviewees identified Tribal and First Nation's support as critical for the success of the project. Additionally, there was a strong commitment by state and federal agencies to safeguard Tribal trust responsibilities, aligning with the desires of the Confederated Tribes of the Colville Reservation (CTCR).

"We want to protect the Tribal trust responsibilities which means we will support the Colville in how they want to move forward."

- Tribal and First Nation's Preferences: A collective and collaborative approach that is transparent was identified as a high priority for Tribes and First Nations. The Enloe Dam project was viewed by many interviewees as an opportunity for a collaborative approach towards water quality and species protection for the watershed. Several interviewees reflected that engagement and integration of Traditional Ecological Knowledge (TEK) into the assessment process and beyond is a priority, recognizing that TEK brings in-depth knowledge and practical solutions. Specifically expressed was the need to protect Tribal history and the Coyote Falls Legend, recognizing its significance as an important framework in past, present, and future engagement.

"These projects offer the opportunity to reconnect and to share stories"

Natural Resources Interests:

- Habitat restoration and natural resource opportunities: Select interviewees highlighted the potential for habitat restoration and the availability of natural resource opportunities after the removal of Enloe Dam. The focus was on opening cold water refugia for fisheries, considering the impacts of climate change. Participants stressed the importance of providing access to cold-water habitat to protect and preserve the natural environment, viewing it as a win-win scenario for both the environment and the local economy.
- Recreational opportunities: Some interviewees recognized the potential for increased access to recreational opportunities such as river and trail activities. They viewed this as a significant advantage that could benefit both residents and visitors.
- Eco-tourism and economic growth: The potential for eco-tourism and economic growth in the Oroville Community was identified as an opportunity associated with the removal of Enloe Dam.

- Retained access for irrigation and grazing permits: Adjacent landowners expressed the importance of retaining access for irrigation and grazing permits, ensuring ongoing land use compatibility.

Historical and Cultural Value:

- Preservation of Enloe Dam as a historical monument: Select interviewees with generational ties to the area expressed a strong interest in maintaining Enloe Dam as a historical monument. They considered the dam to be a landmark and expressed sentimentality regarding its preservation.

“The dam is a landmark and removal is sentimental.” Landowner

Challenges and Concerns

Triangle asked each interviewee about observed challenges and concerns regarding Enloe Dam, the Feasibility Assessment and potential removal. The following report highlights the key themes of concerns expressed by the interviewees.

Potential Sediment Toxicity and Transport:

- Concerns regarding sediment impounded behind the dam: Across all interviews, questions and concerns regarding the sediment impounded behind the dam was expressed as one of the primary concerns in relation to Enloe Dam. This concern was held for both the current state and potential future state if the Dam were to be removed. The concern of potential sediment toxicity was also expressed in tandem with concerns over cost, noting the cost of sediment transport and storage.
- Potential sediment toxicity: Interviewees expressed worries about the toxicity of the sediment, considering the impact on drinking water, irrigation water, and the well-being of species relying on clean freshwater.
- Awareness of sediment studies: Many interviewees expressed an understanding that sediment studies have been undertaken to look at the potential levels of toxicity within the sediment.

Cost and Liability:

- Liability of maintaining the dam: The liability of Enloe Dam emerged from three perspectives; the liability of safely maintaining the dam over time, the liability of the process of dam removal, and the subsequent liability after dam removal.
- Cost of dam removal: Community members expressed apprehension about the financial burden on the Okanogan Public Utility District and ratepayers with three primary process connections to cost; 1. upkeep of existing structure, 2. dam removal, 3. handling of sediment and liability over time.
- Post-removal liability: Interviewees raised concerns about the liability that would persist after the dam's removal.

“There is a lot of fear that this will cost the OPUD and ratepayers a lot of money.”

Retained Access for Irrigation and Grazing Permits:

- Impacts on adjacent landowners: Agriculture and ranching stakeholders expressed concerns about potential state and federal regulations that could affect their current grazing and irrigation permits. They were particularly concerned about compliance with endangered species state and federal regulations in the river corridor.

Engagement Preferences and Framework Development

During the interviews conducted by Triangle for the Enloe Dam assessment, participants were asked about their engagement preferences, suggestions for involving others, and ensuring equitable processes.

- All interviewees expressed a strong interest in remaining engaged throughout the Enloe Dam Feasibility Assessment.
- Engagement preferences varied, with some participants desiring to stay informed while others wanted to be consulted before major decisions.
- Several interviewees with previous experience in Enloe Dam working groups highlighted the potential for increased inclusivity and productivity in future engagement efforts. They acknowledged that these groups had served as valuable communication tools and hope to build upon this experience and enhance inclusivity and productivity in upcoming engagement by incorporating diverse perspectives.

Trust and Relationship Building

A few community members expressed concerns about the overall process and information due to their perceptions of the background of leadership or government agencies/organizations, as well as a lack of communication with the public.

- Some participants noted that relationships were improving, but there was still a need to clarify the jurisdiction of decision-makers through a collaborative effort.
- In the current climate, there was a general lack of trust in the government, making it challenging to foster positive engagement. Mediation by someone with the right personality was seen as crucial.
- Being up-front and transparent was viewed as a priority among many interviewees.
- Due to the existing lack of trust among entities, over-communication was seen as necessary to build trust and promote a more collaborative approach.

Communication and Engagement

Interviewees provided recommendations for effective communication and engagement strategies to build trust in the assessment process.

- Direct Contact: Many interviewees appreciated the opportunity for one-on-one engagement during the situational assessment and expressed a preference for future direct outreach.
- In-person Outreach and Engagement: Participants emphasized the importance of face-to-face interactions to facilitate the interpretation of complex research, provide opportunities for questions, and foster relationship building.
- Public meetings were viewed as positive, and there was a desire for information to be shared earlier.
- Clear and Open Communication: Interviewees stressed the importance of timely and transparent communication from a central location.
- Access to more data was seen as necessary for making informed decisions, and creating opportunities for one-on-one conversations between individuals was seen as beneficial.

- Having a central facilitator who is trusted and provides up-to-date information was considered desirable.
- Open communication from all sides and the presentation of justifications for proposed actions were seen as essential elements of effective engagement.

“A public meeting is always a positive. If the information was put out earlier that would be helpful.”

“Everyone wants to see more data to make a sound decision. I want to do whatever everyone is comfortable with.”

In addition, the assessment interviews provided valuable insights into engagement preferences and framework development. Interviewees expressed a strong interest in remaining engaged throughout the Enloe Dam Feasibility Assessment and highlighted the importance of inclusive and productive engagement processes. Building trust and fostering relationships emerged as crucial factors in the success of the project, with a need for open and transparent communication. To address these needs, interviewees recommended strategies such as direct contact, in-person outreach, and clear and timely communication from a central source. These recommendations aim to enhance trust, facilitate better understanding of complex information, and provide opportunities for meaningful dialogue and collaboration. See recommendations below:

Recommendations

Recommendations for a Collaborative Stakeholder Framework:

1. **Inclusive and Continuous Engagement:** Increase engagement with stakeholders throughout the Enloe Dam Feasibility Assessment. Develop a framework that ensures diverse perspectives are included, allowing for meaningful input and participation from all interested parties. Consider establishing an advisory group and working groups to facilitate regular communication and collaboration.
2. **Transparent Communication:** Establish a central communication hub to provide up-to-date and accessible information about the Enloe Dam project. Ensure that information is shared in a timely manner, addressing concerns, and providing justifications for proposed actions. Foster open and transparent dialogue to build trust and promote a collaborative atmosphere.
3. **Direct Outreach and Face-to-Face Engagement:** Prioritize direct outreach efforts, including one-on-one engagement with interested parties. Arrange in-person meetings and public gatherings to facilitate personal interactions, encourage questions, and enable the interpretation of complex research findings. Utilize these opportunities to foster relationship building and address individual concerns.
4. **Early and Proactive Information Sharing:** Share information about the project at an early stage to provide a comprehensive understanding of the assessment process. Consider hosting public meetings and forums earlier in the project timeline to gather input and ensure that community members have ample time to review and provide feedback on proposals and plans.
5. **Enhance Data Availability:** Address stakeholders' desire for more data to support informed decision-making. Provide access to relevant data and research findings, ensuring that stakeholders have the necessary information to actively participate in discussions and

assessments. Consider creating user-friendly platforms or tools that allow stakeholders to access and explore data related to Enloe Dam.

6. **Trust and Relationship Building:** Acknowledge the existing lack of trust among stakeholders and take proactive steps to build trust throughout the process. Designate a trusted facilitator or mediator who can bridge gaps, address concerns, and foster positive engagement. Strive for transparency, honesty, and clear communication to overcome skepticism and foster constructive relationships.
7. **Incorporate Lessons from Previous Working Groups:** Build upon the experiences and successes of previous working groups related to Enloe Dam. Identify areas where inclusivity and productivity can be enhanced and apply these lessons to the framework development. Consider feedback from stakeholders with previous engagement experience to ensure a more inclusive and effective process.

By implementing these recommendations, the collaborative stakeholder framework for the Enloe Dam project can foster an inclusive, transparent, and productive engagement process. It will allow stakeholders to contribute their perspectives, concerns, and expertise, ensuring that the decision-making process incorporates a wide range of interests. This collaborative approach promotes trust, effective communication, and the development of mutually beneficial solutions for all involved parties.

In conclusion, the assessment interviews have provided a foundation for the Enloe Dam assessment process, highlighting key themes, interests, challenges, and concerns. By incorporating these insights into the framework and considering the preferences of stakeholders, the feasibility assessment can move forward with a comprehensive and inclusive approach that respects Tribal rights, protects natural resources, preserves historical and cultural value, addresses concerns, and fosters open communication. With these considerations in mind, the Enloe Dam feasibility assessment has the potential to create a positive and impactful outcome for all involved parties.

Engagement Best Practices for Dam Feasibility Assessment

As part of the situational assessment, Triangle and ECO Resource Group, reviewed engagement best practices reflected in successful dam feasibility and removal across the Pacific Northwest. Each successful effort had clear project management, serving as an organizational structure to manage and focus all phases of the project and provide a focal point for communication. The organizational structure has four primary features.

- 1) To promote accountability and transparency.
- 2) Organization should be as inclusive as is reasonable for the tasks, allowing all parties to have a venue for the sharing of information and perspectives.
- 3) Communications and outreach are set up as early as possible, creating consistent methods/processes for Tribes, First Nations, and stakeholders to engage and be engaged.
- 4) Communications and engagement must incorporate methods for the inclusion of diverse, local knowledge.

Outreach Considerations

- Many interviewees noted the challenge of communication pathways in the rural area with a lack of public participation and involvement.
 - Interviewees suggested direct contact, mailers, in-person meetings and social media as engagement tools.

Appendix C: Enloe Dam Resolution Statements & Key References

Tribal and First Nations Resolutions

- [2014 Okanagan Nation Water Declaration](#)
- [2015 Lower Similkameen Indian Band Proclamation](#)
- [2017 Confederated Tribes of the Colville Reservation \(CTCR\)](#): *Whereas it is the recommendation of the Natural Resources Committee to support Lower Similkameen Indian Bands resolution BRC #10, which; opposes dam modification and electrical production, any means of artificial salmon passage, strongly supports removal of Enloe Dam, remediation of contaminated sediment behind the dam, and restoration of the Similkameen River to its historic and natural condition.*
- [2021 BC letter of support](#)
- [2021 Upper Similkameen Indian Band Resolution](#)

Okanogan PUD Resolutions and Agreements

- [Resolution No. 1775 Okanogan County Public Utility District](#): *Whereas the District has memorialized criteria under which it would consider dam removal through the Feasibility Study process described in the 2022 Memo from the Water and Power Law Group.*
- [2022 Water and Power Law Group Enloe Dam Removal Memorandum](#): *Whereas the purpose is to describe a feasible pathway to pursue removal of Enloe Dam in cooperation with the Okanogan Public Utility District.*

Appendix C: Enloe Dam Roadmap

ENLOE PROJECT PLANNING ROADMAP

June 8, 2023

Prepared for:

TROUT  UNLIMITED

Prepared by

 **RIVERLOGIC**
PROJECTS

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1. Introduction

1.1. Background

In March 2022, the Washington State legislature issued a proviso that stated:

“\$250,000 of the general fund—state appropriation for fiscal year 2023 is provided solely for the department [of wildlife], in consultation with the department of ecology, the department of natural resources, the Colville confederated tribes, the Okanogan PUD, and other interested entities to analyze the steps required, including coordination and ownership, associated with the possible removal of Enloe dam and analyze options for sediment removal in order to restore the Similkameen river, minimize impacts downriver, and allow access to over 300 miles of habitat for federally-threatened steelhead and other native salmonids...”

After the proviso was issued, the Washington Department of Wildlife (WDFW) entered an agreement with Trout Unlimited to undertake the proviso report that will be submitted to the Legislature in June 2023. The primary audience of the proviso report, and the roadmap, is the Washington State legislature. Stakeholders, interested entities, or coordinating partners include the Okanogan County Public Utility District (Enloe Dam owner), Bureau of Land Management, Washington Department of Natural Resources, Confederated Tribes of the Colville Reservation, Upper Similkameen Indian Band (USIB), the Lower Similkameen Indian Band (LSIB), member bands of the Syilx Okanagan nation, Trout Unlimited, Washington Department of Ecology, Washington Department of Fish and Wildlife, National Marine Fisheries Service, United States Fish and Wildlife Service, United States Army Corps of Engineers, Canada Department of Fisheries and Oceans (DFO), and B.C. Ministry of Environment.

The roadmap¹ outlined herein identifies a logical high-level project planning framework, project phasing, and milestones. If dam removal is determined to be feasible and desired by the dam owner, the planning framework will carry forward the collaborative structure needed to efficiently reach the construction phase of a project to remove the Enloe Dam and restore the Similkameen River through the historical dam site and upstream impoundment.

1.2. Project Planning Roadmap

The Enloe Project planning roadmap was developed with the purpose of recommending a project planning process that values all perspectives and enables communication, transparency, and collaboration. An Enloe Project can be completed from initiation to completion in less than ten years, using public river restoration-related funding to avoid or offset burdens on PUD shareholders or local ratepayers. To do so requires good leadership, application of best project management and planning practices in the river restoration industry and Northwest, and sourcing of the transdisciplinary expertise and knowledge necessary to define the project and address social feasibility limitations. The economic, societal, and environmental benefits of completing the project in an efficient and collaborative manner

¹ A roadmap is a visualization of high-level strategy and milestones, the major areas of work that will be pursued, and an overview of how they will be accomplished. It is useful for communicating the overall vision to a broad audience, with different perspectives and levels of technical understanding. A roadmap is not a project management plan (PMP) but forms the basis for development of a PMP. A PMP is a comprehensive and detailed portfolio of project management and planning documentation. A PMP will be developed in Phase 1.

are extensive. The following roadmap is proposed as a high-level framework for Enloe Dam project development and planning, with milestones organized within three phases:

- Phase 1. Feasibility Evaluation and Alternatives Analysis
- Phase 2. Design and Permitting
- Phase 3. Construction

This section describes what the Enloe Project and the Enloe Project Planning Roadmap is and is not. The Enloe Project is a voluntary enterprise. It is not a mandated FERC relicensing, delicensing, decommissioning, or mitigation project. If the Okanogan PUD decides the Project should proceed beyond Phase 1 with critical partner and stakeholder support, project planning would advance through final fundraising, design, permitting, and procurement/contracting in Phase 2, and be constructed in Phase 3.

The general overarching desired outcome of the Project is to improve upon existing conditions, as will be defined by a collaboratively developed project goal and SMARTIE² objectives in Phase 1. In doing so, existing risks and liability imposed by the infrastructure and carried by the infrastructure owner, or that would be realized by responsible entities through implementation of a river restoration project at the Enloe Dam, must be addressed. Within that context, the roadmap presents a coordinated foundation for technical project development in compliance with regulatory requirements, eligible funding program requirements, and PUD Resolution 1775 to support several facets of project planning. This approach ultimately supports partnership development, administrative approvals, funding decisions, regulatory approvals, and equitable engagement of the broader community in project development. The proposed collaborative approach, alignment of deliverables to meet owner and key partner needs, clear identification of project benefits, and assurance the project will proceed will enable supportive funders to allocate public and private resources needed to complete the project.

The roadmap or planning framework presented herein:

- Identifies functional Enloe Project roles and an organizational framework for collaborative project development and iterative feedback (Section 2).
- Identifies a phased project delivery timeline and key milestones (Section 3, Figure 1).
- Maps Phase 1 deliverables and milestones according to type (administrative, funding, design, permitting) along a timeline (Figure 2).
- Describes the Phase 1 deliverables, milestones, and dependencies or steps narratively and within a risk-informed planning context (Section 4).

² SMARTIE objectives are smart, specific, achievable, realistic, time-based, inclusive, and equitable statements of the project's desired outcomes. They define the broad project goal in discrete elements and are used to guide establishment of technical design objectives, and in identifying design criteria, permitting pathway, and project constraints and risks.

2. Enloe Project Roles and Planning Framework

Project roles are discussed within the context of project administration and a functionally collaborative team-focused project planning framework.

2.1. Project Administration

Project Administration consists of ownership entities, the project sponsor(s), and project manager.

2.1.1. Ownership

For the purposes of this roadmap, ownership is discussed in terms of facility ownership or management, and the ownership or management of lands.

Infrastructure Owner: The Okanogan Public Utility District (PUD) owns and is responsible for operations and maintenance of the Enloe Dam facility, which includes the dam, powerhouse, surge tanks, penstock, and the run of river impoundment. The PUD's approval of what will happen to its infrastructure is essential for the project advancing beyond Phase 1. The land that the PUD's facility is sited upon has different ownership.

Landowners: The dam and associated facilities are sited on federal and state lands managed by the United States Bureau of Land Management (BLM) and the Washington State Department of Natural Resources (DNR). The BLM owns the banks and uplands at the dam site, while DNR owns the riverbed below the ordinary high-water mark at the dam site. A discussion of pertinent ownership, BLM right of way agreements and state easement are available in WPLG 2023³. The Enloe Dam is located on the ancestral lands of the Confederated Tribes of the Colville Reservation (CTCR). As an independent, self-governing nation, the tribes hold the inherent right to govern their lands and resources. Pertinent discussion is available in Triangle Associates 2023⁴.

2.1.2. Project Sponsorship and Management

A project sponsor is defined as the entity responsible for completing the project, or more specifically “delivering” the project to meet the project goal and objectives in compliance with all imposed conditions and requirements. That responsibility includes identifying collective partner and stakeholder desired outcomes, entering grant funding agreements to directly secure and/or cooperatively receive funding as needed to administer the project, procuring professional services consultants and contractors, applying for and securing project permits, ensuring regulatory compliance, entering partnership and contractual agreements to leverage resources, implement the project, and mitigate uncertainty. In doing so, the project sponsor is responsible for ensuring the project produces the targeted outcomes as defined by the project goal and objectives, that risk is evaluated throughout project planning and effectively avoided, minimized, or mitigated under a collaborative planning framework and through the iterative design and permitting process, and that remaining uncertainty or liability is effectively managed.

³ Water and Power Law Group. 2023. Options for Enloe Dam Removal Entity.

⁴ Triangle Associates, 2023, proviso report.

The project sponsor can either be the infrastructure/landowner(s), or a separate entity that is qualified and authorized to sponsor the project through an agreement⁵ with the owner(s). In the case of the Enloe Project, the infrastructure owner (PUD), has expressed the need for a separate entity to fulfill executive functions in sponsoring and delivering the project if they approve the Project advancing beyond Phase 1. There can be multiple sponsors for different phases of a project. For example, sometimes a 3rd party agency or entity will voluntarily sponsor project planning and design, while another entity will agree to sponsor the construction contract. Such is the approach used to initiate the feasibility evaluation phase (Phase 1) of the Enloe Project.

Phase 1 Sponsor: Trout Unlimited

The PUD Board of Commissioners issued Resolution 1775 on July 25, 2022, supporting a process to evaluate the potential removal of Enloe Dam, consistent with a memo issued by Water and Power Law Group on May 10, 2022. On August 8, 2022, the PUD Board of Commissioners provided a letter in support of two funding proposals by Trout Unlimited (TU) and the Confederated Tribes of the Colville Reservation (CTCR) seeking Enloe Project Phase 1 funding from the NOAA Restoration Center through a competitive federal grant program (Fish Passage Program). TU, with support from the CTCR and American Rivers, was awarded a \$2.3 million grant in April 2023 to perform a feasibility study and produce key deliverables⁶ such as site assessment and analysis, an alternatives analysis, and a 30% or preliminary design package. These deliverables are critical for evaluating feasibility, benefits, risk, beginning the permitting process, and pursuing additional project funding. The intent is for this evaluation to support key partner and stakeholder selection of a preferred alternative, and an administrative decision to support an Enloe Project advancing into the final design and permitting phase. TU, remaining informed and cognizant of owner, partner, and stakeholder needs, will provide Phase 1 oversight, coordinate key project partners and stakeholders in a functional project planning framework, procure professional services to facilitate project development and fundraising, perform due diligence studies and analysis, feasibility evaluation and alternatives analysis, facilitate selection and approval of a preferred design alternative, and produce a 30% design plan, specifications, and estimate (PS&E) package as described in the Phase 1 Deliverables section below. This work comprises Phase 1 and initiation of the Project.

Phase 2 – 3 Project Delivery Sponsor: Unconfirmed

A Project Delivery Sponsor, referred to as a Dam Removal Entity (DRE) in the Water and Power Law Group memo⁷, has not been confirmed. Commitment by a project delivery sponsor/DRE will be needed to advance the project to completion (through Phase 3). The Figure 1 timeline presented in this roadmap is dependent upon achieving Phase 1 administrative milestones, including a preferred design

⁵ Agreements used historically for this function include intergovernmental, cooperative, transactional and other types of contractual agreements. An Example of agreements that would be required for the Enloe Project to receive Salmon Recovery Board Funding include a Landowner Acknowledgement Form (submitted with the funding application), a Landownership Certification Form (required for funding to be awarded), a Landowner Agreement (required prior to construction beginning), and other approvals (such as DNR Aquatic Use Authorization, if applicable).

⁶ The feasibility evaluation and alternatives analysis completed in Phase 1 will provide critical information requested by the PUD in alignment with Resolution 1775, while also meeting the conditions associated with the NOAA grant that funds Phase 1 and pertinent regulations and policy.

⁷ Water and Power Law Group. 2023. Options for Enloe Dam Removal Entity.

alternative supported by the PUD, confirmation of a qualified and capable project delivery sponsor through a Transactional Agreement⁸ between the Okanogan PUD and the Project Delivery Sponsor/DRE, and securing necessary funding to advance the project beyond Phase 1. While construction procurement contracting method (traditional or alternative) provides flexibility for adapting to the uncertain timing of various project funding and administrative approval scenarios, the project delivery timeline would be most efficient if the same entity sponsoring Phase 2 is also the project delivery sponsor that will carry the project through Phase 3 to substantial completion. The project delivery sponsor must be capable of managing project funding, have the authority to hold some form of property interest in the dam facility, apply for and hold project construction permits as an authorized agent of another entity, accept procurement responsibilities, provide indemnification from liabilities associated with the project, and manage all associated contracts and agreements⁹.

Project Manager

The Project Manager is an individual or firm, with specific professional project planning and management qualifications and pertinent project expertise in Washington State. They can be a consultant of the project sponsor, or a partner of the project sponsor, as established through a contractual or collaborative agreement. The project manager represents the interests of all project stakeholders, especially the owner(s) or project sponsor, partners, and the public interest in making sure a project is set up for success, planned, and implemented in a way that will result in not just completion, but a high-quality outcome for everyone. The Project Manager's role is to identify the collective needs and desired outcomes of the owner(s), key partners, and stakeholders. That information is used to develop a vision for the project and is documented in a project goal and objectives. The project goal and objectives guide development of a project plan that identifies work that needs to be completed and defines project requirements in terms of scope, schedule, budget, and risk management. The Project Manager identifies key deliverables and project milestones and facilitates a collaborative team environment necessary to perform the work and produce required documentation and decisions with engagement and input from key stakeholders. The Enloe Project Manager will provide critical project leadership and serve as a communicator and liaison between the Project Owner, Sponsor, Project Team, Key Stakeholders, and Funding Partners. TU serves as the Project Manager and will procure project management technical assistance for Phase 1.

2.2. Project Planning Framework

An Enloe Project Planning Framework is identified that targets a collaborative team environment, effective communication, and outlines a risk-informed planning process consistent with best management planning processes and practices. This approach enables consensus, quality in producing desired outcomes, and eliminates or manages risk as the project progresses through critical decision points to completion.

⁸ Per WPLG 2022, the agreement between the Okanogan PUD and the identified Project Delivery Sponsor or formed DRE, is referred to as a Transactional Agreement. As described, the sequenced or phased Transactional Agreement includes either transfer of property interest, or liability associated with undertaking the project as the PUD's authorized agent.

⁹ As described in Water and Power Law Group, 2023. Options for Enloe Dam Removal Entity.

2.2.1. Cross-Functional Organization

A successful Enloe Project planning framework must involve cross-functional organization of key decision-makers, technical experts, and key partners and stakeholders. This strategic organization enables productive teamwork and supports risk-informed decision making. Combined with a comprehensive communications and engagement plan, it is a key strategy to reduce the risk of dissatisfaction, conflict, and loss of key social and funding support. The following Enloe planning framework is proposed to address this risk based on its repeated demonstrated success in delivering recent Washington State river restoration, fish passage, salmon recovery, and sustainable water resource infrastructure projects efficiently and effectively. The details of this streamlined and integrated collaborative approach can be further refined in Phase 1 to clearly identify participating entities, functional roles, responsibilities, and maximize effective communication and collaboration. The framework is adaptive and creates flexible project planning and iterative feedback loops that eliminate or reduce uncertainty related to technical and social feasibility.

Executive Advisory Committee: The Executive Advisory Committee (EAC) consists of the stakeholders that individually or collectively have an ownership stake in the dam or lands the dam facility is sited upon (e.g., PUD, BLM, DNR, CTR), or are contractually responsible for planning and delivering the project (e.g., the Phase 1 sponsor: TU, or project delivery sponsor/dam removal entity in Phases 2-3). The EAC is responsible for making critical decisions and working collaboratively towards solutions that also maintain the interests of the parties involved and project stakeholders. The EAC will be convened, and membership confirmed, in Phase 1. The EAC is convened by the project sponsor, and EAC meetings are facilitated by the project sponsor or manager.

Project Team: The Enloe Project Team is led by the Project Manager with guidance from the Project Sponsor and consists of two primary functional groups:

A) The Design or Technical Consultant Team, consists of professional consultants or contractors that possess demonstrated transdisciplinary technical expertise, qualifications, and certifications to manage, evaluate feasibility and costs, design, permit, perform constructability review and prepare construction documentation for river restoration and dam removal projects in Washington State. Procurement by TU of the Phase 1 Technical Consultant Team is currently in process, funded by a NOAA Restoration Center, Fish Passage Program grant.

B) A Technical Advisory Committee (TAC), consists of interdisciplinary technical or subject matter representatives of the project owners, sponsor, tribal nations, fishery co-managers, and regulatory agencies with jurisdiction intersecting with the project. The TAC provides an integrated and collaborative approach to developing project documents, ensuring project requirements are met, and effectively supporting risk management through identification of constraints, issues, and resolutions at all levels of project planning. Functionally, the TAC informs and reviews the technical deliverables produced by the Design Team to identify design constraints and regulatory criteria; provide collaborative input to refine project documentation at progressive design milestones (i.e., alternatives analysis, 30, 60, and 90-percent levels of design); identify issues and questions needing resolution to progress through the feasibility, design, permitting, and construction phases; collaboratively resolve issues and barriers to project planning; and create efficiencies across the technical workflows of fundraising, design, and permitting. A collaborative team environment

repeatedly drives objective evaluation of feasibility and enables design, permitting, and fundraising to occur in alignment and concurrently. This cross-functional and transdisciplinary team approach is a best planning practice that has repeatedly been demonstrated to reduce cost and allow stakeholders to address uncertainty in an iterative feedback process. The TAC will be convened, and membership confirmed, in Phase 1. The TAC is convened by the project sponsor, and TAC meetings are facilitated by the project sponsor or manager.

Key Stakeholders and Partners: Key stakeholders and partners not represented on the TAC, but who play a critical role in developing, authorizing, or funding the project include a) local, state, federal, and Canadian government regulatory agency representatives; b) private and public funding partners; c) local landowners adjacent to the project site or potentially directly affected; d) community groups or underserved community representatives; e) political project champions; and f) the general public. Specific groups and membership are further identified in the Triangle Associate 2023 proviso report.

2.2.2. Communications and Community Engagement

A detailed Project Communications and Engagement Plan will be finalized in Phase 1. The Plan will be informed by combined resources, including this roadmap and planning framework, and the collaborative stakeholder engagement plan completed by Triangle Associates in support of the proviso report. Project communication tools and community engagement opportunities will be used to not only keep the community apprised of progress but to enable equitable participation in developing aspects of the project that impact them. At a minimum, recommendations include establishing a cloud-based platform for project team file storage and collaboration on project document review; project webpage development; distribution of key partner and stakeholder monthly project progress updates prepared by the Project Manager and reviewed by project team leads; recurring frequent project team meetings, EAC and TAC meetings; site visits with multiple audiences for various purposes, community outreach, and community engagement opportunities. The project approach and work status must be communicated in various formats for a diverse variety of partners and stakeholders with widely varying interests, needs, and level of construction project planning understanding. Specific opportunities for key stakeholder participation in project development will be outlined in the final Project Communications and Community Engagement Plan.

2.2.3. Risk-Informed Planning

Analysis of risks and management of liabilities or the potential for damages is a central aspect of PUD decision-making on whether to support the Enloe Project advancing to final design and construction, as described in PUD Resolution 1775¹⁰. Risk assessment and management is also a central aspect of

¹⁰ [PUD Resolution 1775](#). The resolution's supporting memo, [WPLG 2022](#), outlines five components of a "Liability Management Program". Three components of the five "Liability Management Program" outlined in WPLG 2022 are either fully or partially addressed in Phase 1. This includes: 1) Consolidated insurance package - insurance advisor coordination will begin during the Feasibility Study and progress through completion of the 30% Design Acceptance Package. This coordination initiates this component and occurs prior to a statement of support from the PUD for a preferred alternative based on objective feasibility evaluation; 2) establishment of the DRE or selection of the entity that will serve as the project delivery sponsor; 3) integrated project delivery method - eligibility of the project and DRE/project delivery sponsor to pursue an alternative delivery method will be evaluated based on the 30% Design Acceptance Package and a method selected as part of the Phase 2 procurement

modern planning processes required and practiced in undertaking Washington State water resource infrastructure, dam removal and river restoration projects in the last ten years. Risk of undesirable outcomes, and the need to reduce the probability of a specific undesirable consequence is why there are design standards; funding program requirements for project development; regulations that cross local, state, federal, and international jurisdictional and property boundaries; regulatory project review and approval processes; Washington State and federal procurement policy; risk management incorporated throughout modern project management best practices; remaining uncertainty or risk addressed through contracting measures such as bonds, insurance, and indemnification; and partnership agreements for long-term post-project monitoring and adaptive management. To better inform how Phase 1 deliverables and milestones reflect consideration of risk and liability, Section 4.1 highlights key Phase 1 risk-informed planning strategies.

3. Project Phases and Key Milestones

The Enloe Project is presented in three phases from project initiation to completion (Figure 1). Critical path milestones within each phase are highlighted. Section 4 describes Phase 1 key deliverables and milestones, dependencies, and relevant risk-informed planning strategies. Figure 2 presents a process map of the Phase 1 deliverables and milestones organized according to work type, administrative approvals, and dependencies. Cross-referencing of terminology is used throughout with the intent of effectively communicating in the specific words used by partnering entities and stakeholder audiences.

4. Phase 1: Feasibility Evaluation and Alternatives Analysis

Given the critical nature of Phase 1 in evaluating feasibility, supporting decision-making and administrative approvals needed to advance the project, Phase 1 details and steps are described below. Risk-informed planning strategies are presented (4.1), and Phase 1 deliverables and milestones are described (4.2). This Phase 1 narrative is meant to accompany Figure 2 in describing identified deliverables, milestones, and dependencies.

4.1. P1 Risk-Informed Planning Strategy Matrix

The overarching Phase 1 planning objectives are identified in Table 4.1. Objectives are matched with risk-informed planning strategies for meeting the objective, and the deliverables that will produce or contain pertinent information necessary to achieve milestones. A narrative description of deliverables, milestones and critical dependencies are provided in Section 4.2. Comprehensive task details, deliverable contents, and dependencies are intentionally not included in this high-level roadmap but are provided in the Phase 1 procurement contract scope of works and will be detailed in a project management plan.

TABLE 4.1. PHASE 1 RISK-INFORMED PLANNING MATRIX			
<i>Planning Objectives</i>	<i>Risk-Informed Planning Strategy</i>	<i>Deliverable(s)</i>	<i>P1 Milestone(s)</i>

process. The remaining two components (i.e., performance bonds, indemnities) of the "Liability Management Program" are contracting measures and require due diligence of final design and permitting to be complete. Therefore, those components would be finalized by the end of Phase 2 in contract/bid documents for construction.

Objectively evaluate technical feasibility to inform the PUD’s decision-making criteria, per PUD Resolution 1775.	Establish the decision context by identifying the project goal and SMARTIE objectives ¹¹ , gather evidence through site assessment (data collection, scientific and engineering analysis, with/without scenarios), document risks and management, identify how uncertainty will be reduced or otherwise addressed through design, permitting, and contracting measures ¹² .	<ul style="list-style-type: none"> • Draft Project Management Plan, including a Risk Register and Project Funding Strategy • Feasibility Evaluation and Alternatives Analysis Report 	<ul style="list-style-type: none"> • P1 Design Firm Procurement • Convening EAC and TAC • Kickoff Meeting with EAC + TAC • PUD Statement of Support for a Preferred Alternative and a Go/NoGo Decision
Confirm a Project Delivery Sponsor/DRE ¹³	Advance discussions, as proposed in WPLG 2023, related to identifying an existing entity that could or would enter into a Transactional Agreement with the PUD to deliver the project. Complete the substantive technical and feasibility analysis to support a potential project delivery sponsor’s ability to accept project administration responsibilities.	<ul style="list-style-type: none"> • Feasibility Evaluation and Alternatives Analysis Report • Preferred Alt Selection • Permitting Pathway¹⁴ 	<ul style="list-style-type: none"> • Project Delivery Sponsor confirmation or Dam Removal Entity (DRE) formation • PUD and Project Delivery Sponsor/DRE Agreement or Phased Transactional Agreement
Identify a Permitting Pathway with Regulatory Agency and Partner Input	<p>1) Include regulatory agency desired outcomes in project goal and objectives statement development and document identified constraints, both of which are used to guide site assessment and alternatives analysis.</p> <p>2) Begin informal consultation with regulatory agencies and tribes in Phase 1, through a site visit, TAC review of the Feasibility Evaluation and Alternatives Analysis Report</p>	<ul style="list-style-type: none"> • Regulatory agency preference for a preferred alternative, as identified in Feasibility Report review • Regulatory Agency/TAC site visit • Permitting studies and reports 	<ul style="list-style-type: none"> • SEF¹³ Sediment Suitability Determination and Washington State handling requirements to inform sediment management decision-making, design, constructability, and CWA404, 401 and

¹¹ Key partners expressing desired project outcomes and identifying constraints is essential for developing an informed project goal and specific, measurable, achievable, realistic, time-based, inclusive, and equitable (SMARTIE) objective statements.

¹² Contracting measures referenced here include specific items referenced as a “Liability Management Program” in WPLG 2022. Specifically, the contract measures referenced here include consideration of a delivery contracting method based on independent and objective evaluation; performance bonds; a consolidated insurance program; and indemnities.

¹³ An entity that would acquire the responsibilities of a Project Delivery Sponsor and accept liabilities associated with delivering the project are referred to as a “Dam Removal Entity” or DRE in WPLG 2022 and 2023.

¹⁴ WPLG 2022 references a “Regulatory Plan”, the general outlined components of which will be produced in the Permitting Pathway in Phase 1. Collaborative strategies proposed in the Phase 1 Roadmap incorporate best planning and risk management practices to avoid costly redesign and extended timelines. These collaborative strategies include iterative design development with regulatory agency input at progressive design milestones. This reduces uncertainty and streamlines the Phase 2 design and permitting process.

	<p>and a meeting to discuss key stakeholder (including regulatory agency) and partner preference for a design alternative. This allows early input into design development, understanding of agency coordination needed, and identification of nationwide programmatic eligibility, streamlining processes, and constraints.</p> <p>3) Complete permitting studies and initiate long-lead approval consultation.</p>	<ul style="list-style-type: none"> • NW Sediment Evaluation Framework (SEF) Tiered Sediment Evaluation¹⁵ • ECY Solid Waste Handling Determination • Cultural and Archaeological Resources memo • WDNR Aquatic Use determination • SEPA checklist 	<p>ESA permitting pathways.</p> <ul style="list-style-type: none"> • 30% Design Acceptance Package will include an agency informed Permitting Pathway
Secure Project Funding for (at a minimum) Phase 2 activities.	Ensure project documentation and planning framework is consistent with NOAA and Department of Commerce funding program compliance, and Salmon Recovery Funding Board Manual 18 requirements for restoration projects.	<ul style="list-style-type: none"> • Project Funding Strategy • Feasibility Evaluation and Alternatives Analysis Report¹⁶ • Funding Application Development and Submittals • Communications and Engagement Plan 	<ul style="list-style-type: none"> • EAC Approval of Preferred Alt • Cooperative grant agreement with Funder(s)
Procure Professional consultant and contractor services	<ol style="list-style-type: none"> 1. Ensure compliance with all applicable state and required federal procurement procedures. This includes Washington State procurement policy for public works projects¹⁷. 2. Procure a Certified Construction Manager (CCM) to perform the following: a) evaluate alternative delivery method approaches used 	<ul style="list-style-type: none"> • 30% Design Acceptance Package attachment: Project delivery contracting approach evaluation • Sponsor/DRE Agreement or 	<ul style="list-style-type: none"> • Under Design-Bid-Build approach, complete P2 procurement process. • If project is eligible for Alternative Delivery Method, acquire PRC

¹⁵ SEF Tiered Sediment Evaluation as outlined in the [Sediment Evaluation Framework \(SEF\) for the Northwest \(2018\)](#) to support design development, sediment management planning, and the CWA404/401 (Corps, EPA, ECY) and ESA (NMFS, USFWS) permitting process. The SEF provides a risk-based sediment assessment framework that describes methods and procedures to evaluate dredging and the discharges of dredged material and inform sediment management decisions made by regulatory authorities.

¹⁶ The Feasibility Evaluation and Alternatives Analysis Report (Report) must include initiation of Cultural Resources compliance and provide the Basis of Design requirements as outlined in the Salmon Recovery Funding Board (SRFB) [Manual 18, Appendix D: Design and Restoration Project Deliverables](#) (January 2023). The Report also provides supporting information for funding applications; analysis should clearly identify the benefits and tradeoffs associated with project alternatives.

¹⁷ As identified in the [Washington Purchasing Manual](#).

	<p>to deliver dam removal projects in Washington State in the past 10 years¹⁸; b) review detailed requirements for PRC¹⁹ approval of an alternative delivery method for the Enloe Project and work with the sponsor’s Project Manager to recommend a project delivery method based on analysis of project characteristics and delivery method limitations, and outline a specific contracting approach for delivering the Enloe project that will be used to seek approval from the PUD and project sponsor. C) prepare a memo documenting the evaluation, analysis, and recommendation.</p> <p>3. Reference the memo in the 30% Design Acceptance Package and use to refine project deliverables, timeline, and risk management plan components.</p> <p>4. Complete contracting procurement allowed by the funding secured to allow the next phase of work (i.e., project design and permitting) to begin.</p>	<p>Phased Transactional Agreement between the PUD and Project Delivery Sponsor</p> <ul style="list-style-type: none"> • P2 Funding Agreement Executed 	<p>Approval²⁰, and complete Phase 2 and 3 (project delivery) contract solicitation process</p>
<p>Initiate a “Liability Management Program”</p>	<p>Three components of the five “Liability Management Program” outlined in WPLG 2022 are either fully or partially addressed in Phase 1. This includes:</p> <p>1) Consolidated insurance package (CIP) - insurance advisor coordination will begin during the Feasibility Study and progress through completion of the 30% Design Acceptance Package. This coordination initiates this component that will be carried</p>	<ul style="list-style-type: none"> • Feasibility and Alternatives Analysis report incorporating insurance coordination • 30% Design Acceptance Package with attachments related to CIP and CCM evaluation. 	<ul style="list-style-type: none"> • Procuring services of a CIP insurance advisor and CCM. • Confirmation of a Project Delivery Sponsor/DRE. • Phase 2 procurement

¹⁸ To avoid conflict of interest and to ensure evaluation quality, the evaluation should not be performed by a D-B contractor qualified to bid on projects. The evaluation should be informed by an independent consultant, who is a Certified Construction Manager (CCM) with DBIA certification and commitment to a [code of conduct](#).

¹⁹ See Footnote 18.

²⁰ State of Washington Capital Projects Advisory Review Board (CPARB) [Project Review Committee \(PRC\)](#)

	<p>forward through performance of due diligence in Phase 2; 2) establishment of the DRE or selection of the entity that will serve as the project delivery sponsor;</p> <p>3) integrated project delivery method - eligibility of the project and DRE/project delivery sponsor to pursue an alternative delivery method will be evaluated by an independent Certified Construction Manager consultant, as referenced above and in Footnote 18. A contracting approach will then be determined by the Project Delivery Sponsor as part of the Phase 2 procurement process.</p> <p>The remaining two components identified (i.e., performance bonds, indemnities) of the "Liability Management Program" are contracting measures and require due diligence of final design and permitting to be complete. Therefore, those components would foreseeably only be finalized by the end of Phase 2 in construction document and contract development.</p>		
<p>Streamline an effective and efficient planning process that enables Phase 1 milestones to be completed.</p>	<p>Develop collaborative planning framework that targets alignment between: 1) PUD goals and interests, as outlined in Resolution 1775, 2) Washington State and federal procurement policy, 3) county, state, federal, and Canadian project permitting processes for projects in WA state, and 4) eligible public state and federal funding program requirements</p>	<ul style="list-style-type: none"> • Proviso Roadmap • Project Management Plan 	<ul style="list-style-type: none"> • Achievement of phase milestones.

4.2. P1 Key Deliverables and Project Milestones

Phase 1 deliverables are tangible products and documentation that evaluate feasibility, define the project, its requirements and constraints, and characterize risk. Milestones are critical events or points of decision needed to advance the project to Phase 2. The identified deliverables are critical for achieving project milestones, enabling critical decisions to be made and securing executive and funding support for the project. The Enloe Project Phase 1 deliverables and milestones are organized by type of work (administrative, funding, design, permitting) and steps are summarized. Responsible parties are identified if they are currently known. Figure 2 maps the key deliverables and milestones along a timeline, and shows dependencies to demonstrate how design, permitting, and fundraising are intertwined throughout project development and supports risk-informed planning and decision-making. The conceptual timing and dependency relationships depicted in Figure 2 will be refined as additional information is received (e.g., from the Phase 1 design team’s task schedule). Figure 2 is meant to demonstrate a high-level planning process; it does not represent a comprehensive Phase 1 work and decision-making breakdown structure.

<i>Deliverable /Milestone</i>	<i>Description</i>	<i>Responsible</i>
Kickoff Meeting	Meeting to kick off project planning with key partners. Includes presentation of the project framework and facilitation of Owner and Key Partners in identifying desired outcomes, opportunities, and constraints. This information is used by the Project Manager to develop a Project Goal and SMARTIE objective statements to guide the project team and project development.	Phase 1 Project Sponsor
Convene EAC + TAC	This involves: A) Preparation of a 1–2-page document for both the Executive Advisory Committee (EAC) and the Technical Advisory Committee (TAC) that describes the group’s purpose, function/role, representative membership, title and contact info, member role or subject matter expertise, anticipated # of meetings, and time commitment. B) Contacting potential or known members of each group and convening groups prior to the Project Kickoff meeting identified above if possible. TAC membership should include transdisciplinary technical experts that represent tribal nations and specific regulatory reviewers of project permits if possible.	Project Sponsor and Manager
Project Management Plan (PMP)	The P1 PMP creates a collective understanding of how the project will be administered and aligns the project team to perform the critical initiatives required for the project to succeed. It is composed of key documentation such as the Project Planning Framework, Communications Plan, Community Engagement Plan, Funding Strategy, Schedule, Budget, Charter, Risk Register, Risk Management Plan, Quality Control and Assurance Plan, and list of required agreements or approvals, all iteratively updated.	V1 – Phase 1 Project Manager V2 – Phase 2/3 Project Delivery Sponsor/DRE

	The P2 PMP update is informed by results and decisions of Phase 1. Sections such as a Procurement Plan, Approval Requirements, and a Liability Management Plan with specific contract measures.	
Funding Strategy	<p>The Funding Strategy is critical for identifying project eligibility for competitive state and federal public funding, aligning project documentation with funding program requirements, identifying funding program advertisement (RFP/Q/NOFO) timelines, building critical relationships, and developing outreach strategies.</p> <p>The Funding Strategy should be prepared by someone with experience in developing successful funding strategies for similar projects, funding applications, and past success in securing significant amounts of public funding for projects of similar scope and budget. Key elements addressed in this roadmap include targeting collaborative processes for project development, best planning practices, and solicitation cycles of competitive funding programs. Developing a collaborative project approach, acquiring structure/landowner support, experience securing and managing funds, and credibility of the entity requesting the funds are all key considerations in competing for public funding. Funders also want assurances the project can be delivered as measured by progress against key milestones and advancement through project phases.</p>	Project Manager
Feasibility Evaluation and Alternatives Analysis Report	<p>The Report identifies owner and stakeholder desired outcomes expressed as a Project Goal and SMARTIE objectives, identifies known design criteria, design objectives and constraints that then guide identification of feasibility evaluation criteria and decision-making criteria (if applicable). Results of field studies are provided to document infrastructure and existing site conditions. Conceptual design alternatives (including the “no action” alternative and proposed project alternatives that meet the project goal and objectives) are identified and their feasibility is evaluated against select criteria through impact analysis, scenario development, risk characterization, project capital and life cycle cost estimation commensurate with the conceptual level of design. The Report concludes with objective recommendation of a preferred alternative that emerges from the analysis. This Report supports a basis of design, fulfills NEPA and SEPA alternatives analysis, and identifies comparative merit of project alternatives for TAC discussion and EAC review. The primary purpose of the site assessment, feasibility evaluation, and alternatives analysis documented in the report is not only to select a preferred alternative so project design can advance, but to reduce uncertainty, answer questions, support Phase 1 decision-making and approvals, and characterize risks so they can be further addressed objectively and systematically through advanced design iterations and the permitting process. The Report also allows the project sponsor to better target funding from state and federal funding sources. Individual technical and permitting documentation informs feasibility evaluation and should be referenced or attached as</p>	Design Team, Refinement from TAC and EAC review

	<p>an appendix, including geotechnical, hydraulic and hydrological modeling and analysis, wetland delineation, cultural resources assessment, and tiered sediment evaluation reports as required by the Regional Sediment Evaluation Team.</p>	
<p>Design Alternative Selection/ Approval</p>	<p>To effectively manage risk and facilitate approvals past a critical milestone, the Enloe Project will require a tiered process for selecting and approving a preferred design alternative.</p> <ol style="list-style-type: none"> 1. The project sponsor and manager first review the design team’s Feasibility Evaluation and Alternatives Analysis (Report) submittal to ensure quality and gaps are addressed. 2. The Draft Report is then submitted to the TAC for review. A TAC meeting is scheduled by the Project Manager and held for the design team to present the study findings, alternatives analysis, and the recommended design alternative. The TAC identifies issues/resolutions and problems/opportunities in discussing their support for a preferred alternative, the details of which are documented systematically. Substantive TAC feedback is systematically addressed by the design team, which is also documented as it pertains to design updates, criteria development, permitting guidance, requirements, and risk management. TAC feedback is then attached as an appendix to the Report. 3. The peer-reviewed and stakeholder informed Report is then sent to the EAC for review. The Report will substantively contain the critical technical (design and permitting) feasibility information needed for the PUD to make a decision to support the preferred alternative and begin to enter discussions with an identified project delivery sponsor as to the terms of the Transactional Agreement. 	<p>Executive Advisory Committee Selects, PUD Approves</p>
<p>Go/NoGo Decision (Support for a Project Alternative to be Advanced)</p>	<p>WPLG 2022 outlines two primary requirements needed for a decision to advance the project beyond Phase 1. These are: 1) “TU consulting closely with the District and other key stakeholders” with respect to the design recommendation (preferred alternative); and 2. “reasonable expectation that funding will be awarded to cover estimated costs”.</p> <p>Collaborative support for selection of a preferred alternative can be achieved through a stepwise process:</p> <ol style="list-style-type: none"> 1) The design team recommends a preferred alternative based on the objective basis of the feasibility assessment and comparative analysis of project alternatives in a multi-criteria decision matrix (documented in the Feasibility Report). 2) The basis for the recommendation and all evidence is reviewed by the project's TAC, which includes key technical subject matter experts from partners, Tribes, and regulatory representatives/reviewers involved in consultation, design review, and permit development. 3) the PUD, with feedback from the EAC...approves/disproves the recommended alternative for advancing into the iterative design and permitting process of Phase 2. 	<p>PUD, EAC</p>

	<p>Funding – PUD support of a preferred alternative would be required to pursue and secure public funding for final design and implementation, and provide a foundation for drafting a phased Transactional Agreement between the PUD and a Project Delivery Sponsor/DRE. If PUD support is expressed, via a resolution or letter of support (for federal grant submittals), or Owner Acknowledgement Form (per SRFB Manual 18 for state grant submittals), the funding application would be eligible for review. If the grant application is then competitive, the grant program issues notification of funding award. At that point, the PUD could reasonably anticipate funding and further negotiate with an amenable Project Delivery Sponsor/DRE as to the terms of Agreement. That Agreement or phased Transactional Agreement, could then be executed upon funding award to the project sponsor. Reasonable flexibility by the project delivery sponsor and PUD would be required to ensure project eligibility and alignment with the conditions of the funding source.</p>	
<p>Fundraising Application Submittals</p>	<p>This substantial work involves meeting all the requirements of the grant program and implementing agency, and writing a compelling grant application ensuring eligible program requirements and benefits to funding programs are addressed in project documentation. It is best if the Project Manager is directly involved in developing grant applications or facilitating the team so they can communicate the overall vision, benefits, and the social, technical, and administrative components to funders.</p>	<p>Project Manager, with support from partners</p>
<p>Funding Award Notification</p>	<p>When pursuing funding through competitive state or federal grant programs, successful state and federal grant recipients are notified of competitive ranking and/or acceptance/rejection several months after a grant application is submitted. Notification of grant award to successful applicants occurs several months prior to receiving an actual grant agreement (i.e., securing the funding). If the project is pursuing congressionally directed spending through the federal appropriations process, or direct capital project funding through the state budget and appropriations process, state and federal budget cycles and approval timelines are mostly standard but are subject to delays.</p> <p>For the purposes of efficient project planning, the Enloe Project timeline anticipates drafting or negotiation of pertinent pending administrative agreements (such as partnership and cooperative agreements, a PUD and Project Delivery Sponsor/DRE Agreement or Phased Transactional Agreement between the PUD and the project delivery sponsor, and project procurement planning) beginning upon notification of award. However, the finalization and execution of specific contracts or agreements (e.g., Project administrative Agreement and procurement contracts) will require funding to be secure (i.e., funding agreements are executed/active with an award sufficient to cover estimated costs).</p>	<p>Funding entities</p>

<p>PUD and Project Delivery Sponsor/DRE Agreement, or Phased Transactional Agreement</p>	<p>An agreement that meets PUD and identified project delivery sponsor requirements (as referenced in WPLG 2022). Phase 1 Deliverables needed to initiate drafting of Transactional Agreement include: a) Permitting Pathway: standard project management and planning document that identifies required permits, programmatic streamlining approach(es) if applicable and lead agency, and timeline (required documentation development duration, application submittals, agency review and negotiation period concurrent with iterative design process, and anticipated approval date ranges). - Insurance advisor consultant initiates liability management program, focused on developing a Consolidated Insurance Program based on the Feasibility study. "</p>	<p>PUD and Project Delivery Sponsor (Phases 2 – 3)</p>
<p>Permitting Pathway</p>	<p>To address risk-informed planning strategies identified in Table 4.1, minimum Phase 1 deliverables include a) TAC input into and selection of a preferred alternative, b) an informal site visit or multiple visits so permit reviewers and agency landowners (e.g., BLM, DNR) have a better understanding of conditions and potential impacts; c) Permitting documentation (e.g., Wetland delineation and OHWM memo, natural resources and biological risk assessment, ESA Habitat Assessment) to inform both design and multiple permitting processes; d) Sediment Management cross-coordination meeting to kickoff the NW Sediment Evaluation Framework’s (SEF) Tiered Sediment Evaluation and Washington State classification and handling of dredged sediments. Phase 1 should produce several determinations, and a Level 1 report to inform the feasibility evaluation process and design refinement; e) final Cultural and Archaeological Resources assessment and memo that builds on previous work completed; f) consultation with WDNR regarding aquatic and state lands use determinations; and g) initiate development of long-lead permitting documentation such as SEPA checklist, ESA and other NEPA-related coordination, analysis, and documentation.</p>	
<p>30% Design Acceptance Package</p>	<p>The steps involved in developing a peer-reviewed 30% design package include: A) recommendation of a preferred alternative by the TAC; B) written statement(s) of support for a preferred alternative by the PUD and other EAC entities; C) the design team performing the modeling, 3D CAD generation, and analysis necessary to advance the preferred alternative to at least the 30% level of design. The Design Submittal will include plan, specifications, cost estimation, a basis of design report, TAC/regulatory reviewer informed permitting pathway with supporting technical memos and permitting documentation, a Draft Sediment Management Plan based on SEF reviewer input and suitability determination, Property legal descriptions (for ROW easements), and CCM evaluation of recommended contract delivery alternative. D) Upon submittal, TAC and EAC review and meetings are scheduled to discuss feedback and facilitate collaborative input that is</p>	<p>Design Team development TAC and EAC review</p>

	systematically documented by the design team and substantively addressed in producing the final 30% Design Acceptance Package.	
Phase 2 Procurement	Phase 2 procurement is dependent upon several key administrative approvals, including secured funding and an agreement between the PUD and Project Delivery Sponsor/DRE that allows the project to advance. Procurement itself includes scoping Phase 2 work, selecting the appropriate delivery approach given CCM evaluation of sponsor/funding/WA State procurement policy constraints, RFQ/P advertisement, firm selection, contract negotiation, and a Phase 2 Notice to Proceed.	Project Delivery Sponsor (Phases 2 – 3)

Figure 1. Roadmap Phased Timeline

ENLOE PROJECT PHASES AND KEY MILESTONES

Proof of concept roadmap for project progression from initiation to completion.

For each phase, a target timeframe and critical path milestones are identified.

A roadmap update is anticipated at the conclusion of Phase 1.

Initiation

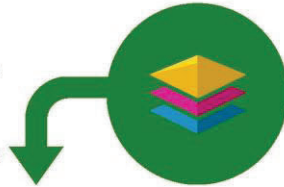


May 2022 - June 2023

- Okanogan PUD - Resolution 1775
- Confederated Tribes of the Colville Reservation - NOAA Tribal Grant Sponsor
- Trout Unlimited - NOAA Grant and Phase 1 Project Sponsor

July 2023 - Dec 2025 (2.5 years)

- Feasibility + Alternatives Analysis Report
- Preferred Design Alternative Approval
- PUD Go/NoGo Decision
- 30% Design Acceptance Package with Permitting Pathway
- Project Delivery Sponsor confirmation or Dam Removal Entity (DRE) formation
- PUD and Project Delivery Sponsor/DRE Agreement
- P2 Procurement



PHASE 1:

Feasibility Evaluation and Alternatives Analysis

PHASE 2: Design, Permitting, and Construction Document Packaging



Jan 2026 - May 2027 (1.5 years)

- 60% Design PS&E Package
 - 60% TAC Review Meeting
 - Permit applications submitted
 - 90% Design PS&E Package
 - 90% TAC Review Meeting
 - Project Delivery Transactional Agreement Executed
 - Permit Approvals in-hand
 - Final Project Funding secured
 - Construction Docs
- * with integrated stamped PS&E, funding, permit, contracting measures for liability management

June 2027 - 2028 (1-2 seasons)

Pending in-water work window timing, 1-2 construction seasons.

- Submittal Approvals
- Mobilization and staging
- Sediment, water, fish management
- Dam site improvements
- Impoundment improvements: Channel/floodplain restoration
- Site restoration: Revegetation, >OHWM elements
- As-built surveys
- Substantial Completion approved



PHASE 3: Construction

Post-Project: Performance Effectiveness Monitoring and Adaptive Management



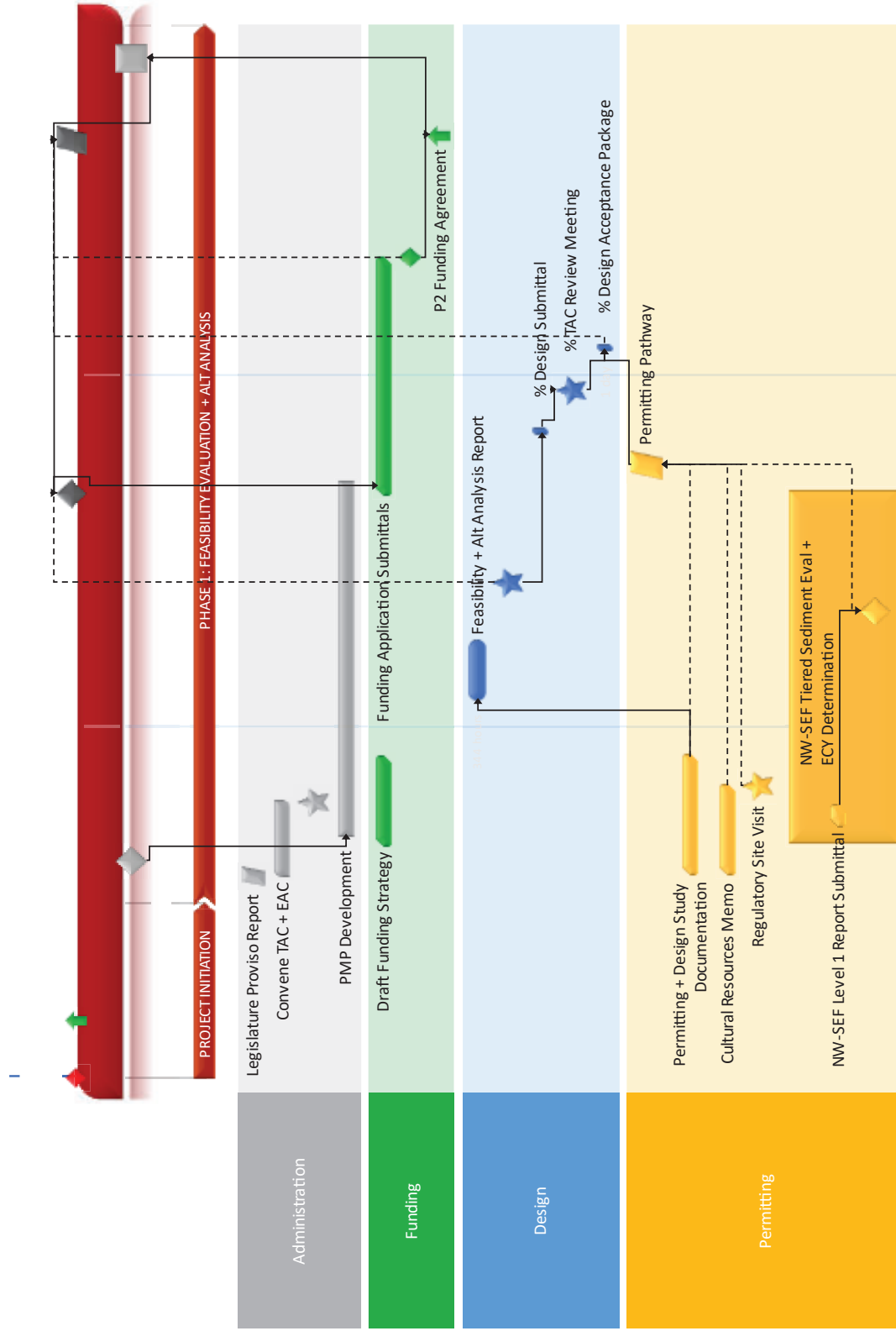
2028 - 2038

- 10 years effectiveness monitoring
- Adaptive management
- Educational opportunities and ongoing community outreach

Draft Version: June 7, 2023

Phase 2 and 3 milestones may be updated upon Phase 1 conclusion.

Figure 2. Phase 1 Milestones and Key Deliverables Process Map



Appendix D: Dam Removal Entity Memorandum

**WATER AND POWER
LAW GROUP PC**

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OTHER OFFICES
WASHINGTON, D.C.

June 20, 2023

Memorandum

To: Julie Turrini
Steve Malloch
Resources Legacy Fund

Warren Colyer
Lisa Pelly
Trout Unlimited – Washington Chapter

From: Richard Roos-Collins
Julie Gantenbein
Water and Power Law Group PC

Markham A. Quehrn
Meredith Weinberg
Jane Carmody
Perkins Coie LLC

Re: Candidates for Enloe Dam Removal Entity

In this memorandum, we evaluate candidate entities to implement the potential project of removing Enloe Dam. We address legal authorities of these candidates to assume the responsibilities of the dam removal entity (DRE), as described in our May 12, 2022 memorandum, “Enloe Dam Removal” (2022 Memo).¹ We consider a range of public and private entities, without knowing whether any given candidate is actually interested in assuming the responsibilities.

We prepare this memo under Contract 17034 with Resources Legacy Fund and Professional Services Agreement (dated November 8, 2022) with Trout Unlimited –

¹ Available for download at: <https://waterpowerlaw.sharefile.com/d-s72e4e22704d249b3aab778934b078b1d>.

Washington State Chapter (TU), which passed-through funds from Washington Department of Fish and Wildlife (WDFW) pursuant to Section 306(66) on page 553 in Engrossed Substitute Senate Bill 5693 (2022).

I. **INTRODUCTION**

1. Enloe Dam is located on the Similkameen River at river mile 8.8 near the city of Oroville in Okanogan County, Washington. Okanogan Valley Power Company built the dam and began to generate power in 1920.

2. The Okanogan Public Utility District (District or PUD) acquired the dam by eminent domain in 1942. It ceased power generation in 1958, when it obtained cheaper power from the Bonneville Power Administration. It later pursued a plan to repower the dam, and it obtained a license from the Federal Energy Regulatory Commission (FERC) in 2013.² It made a final decision not to repower the dam in 2018, and FERC approved license termination.³ Today, Enloe Dam is not operated for power generation, and it does not provide water supply or flood control benefits.

3. After termination of the power license, the District stated that it will consider removal of Enloe Dam if proponents undertake a feasibility study that results in a comprehensive plan consistent with certain criteria. Its complete statement follows:

“The District has been engaged in Enloe Dam removal conversations as far back as the 1960s. In 2015, the Board of Commissioners under Resolution No. 1603, continued its direction to staff to work with proponents of dam removal. That offer has remained open as there is clearly a desire by stakeholders to remove the dam. However, despite entertaining the same discussions over the past six years with the same dam removal proponents, there has been no new data and no comprehensive removal plan.

If dam removal advocates would like the District to engage in their process, then they must develop a plan that meets the ... criteria [quoted below]. The District no longer has the resources to entertain discussions that do not contain concrete scientific data and a comprehensive proposal. Therefore, requests made to the District to meet with dam removal advocates or answer questions will be directed back to the above criteria.

² *Okanogan PUD*, 144 FERC ¶ 62,018 (July 9, 2013) (License Order), ¶ 1.

³ *Okanogan PUD*, 169 FERC ¶ 61,215, 62,532 (2019).

The District is aware of the desire on the part of some stakeholders to remove Enloe Dam. However, there is no requirement to do so. Nevertheless, the District remains open to reviewing comprehensive proposals from interested stakeholders that include, but are not limited to, the following criteria:

- Independent feasibility assessment that collects and evaluates scientific data, including:
 - Determination if Enloe Dam was built on the second set of falls or a run of falls.
 - How anadromous fish would pass after removal, either naturally or artificially.
 - Would artificial passage be allowed by all interested parties?
 - What agencies will fund and manage the new fish populations?
 - Process for establishing new ESA habitat above Enloe Dam and impacts to private property owners, irrigators, and the Palmer Lake fishery.
 - Delineation of suitable habitat for anadromous fish above Enloe Dam, with current data.
 - Comprehensive sediment analysis of the 2.43 million cubic yards of sediment, behind Enloe Dam, approved by the Washington State Department of Ecology.
 - Process for cultural resource mitigation requirements by removing a structure on the National Register of Historic Places.
 - Dam removal cost estimate based on preliminary engineering designs.
 - Ability to compete for funding with other habitat projects in the Pacific Northwest.
- Approval from the Canadian government to allow new fish populations to cross the border.
- Scoping process for the public, upstream and downstream landowners, affected cities, irrigators, and other interested parties
- Identification of a partner with the means to fund Dam removal.
- Identification of a partner who can relieve the District of any future liability.”⁴

4. In our 2022 Memo, we recommended a pathway to pursue potential removal of Enloe Dam. The pathway consists of three phases, with the DRE selected at the end of the first phase.

⁴ Okanogan PUD, “Enloe Dam,” available at: <https://www.okanoganpud.org/environmental/enloe-dam-project>.

5. **Preliminary Design Phase.** During this phase, key stakeholders should fund and undertake a Feasibility Study to develop a preliminary project design, including cost estimate, which satisfies the District’s criteria. If the preliminary design appears feasible, TU in coordination with other stakeholders should secure the funding for the Permit and Implementation Phases that follow.

6. At the end of the Preliminary Design Phase, TU should coordinate with the District and other key stakeholders to make a go/no-go decision, based in part on whether anticipated funding is sufficient to cover the estimated cost. If yes, they should select or form the DRE, which will be responsible to pursue the Permit and Implementation Phases. The DRE and District should negotiate the terms for the District’s cooperation in implementation including the conveyance of any property interest in Enloe Dam needed for the sake of removal.

7. Our 2022 Memo emphasized that, during the Preliminary Design Phase, TU should convene the District and other key stakeholders in an organized manner to address goals, and means and methods, for dam removal, and consider, revise, and finalize work products. An organized structure for stakeholder participation has been critical to the success of complex dam removal projects elsewhere.⁵

8. **Permit Phase.** During this second phase, the DRE will apply for and secure all permits necessary for implementation. It will engage a contractor to finalize the preliminary design developed during the prior phase. In our 2022 Memo, we recommended that the DRE should be in charge during the Permit Phase, not the Project Manager that had developed the preliminary design. Consistent with the District’s criteria, the DRE will be the entity that will be legally responsible for the decision whether to accept the permits and, if accepted, comply with them.

9. **Implementation Phase.** After accepting the permits, the DRE will secure the actual insurance policies, bonds, and other commercial mechanisms necessary to effect the liability management program described in Section VII of the 2022 memo. It will then undertake dam removal including mitigation and habitat restoration.

10. The District supports this overall pathway, beginning with the Preliminary Design Phase. By Resolution no. 1775 (2022), the District determined that:

⁵ For an example of such a structure, see U.S. Army Corps of Engineers, *Draft Environmental Impact Statement/Environmental Impact Report for the Matilija Dam Ecosystem Restoration Project* (2004), Figure 1-3, p. 1-5.

“ ... the process described in the [2022 Memo] is consistent with the District’s criteria for proposals to evaluate the removal of Enloe Dam.... District staff is authorized to collaborate with the Project Manager on the Design Phase of a Feasibility Study to evaluate removal of Enloe Dam, as such Enterprise is described in [the 2022 Memo], and ... staff is further directed to provide progress updates to the Commission at regular intervals. Specific requirements of the Memo essential to the District’s ability to effectively collaborate on this process are:

- That a Project Manager acceptable to key stakeholders will serve as a single point of contact for the District, and that the Project Manager will be responsible for facilitating a disciplined process and organizing the structure for stakeholder participation.
- That the Project Manager engages an engineering firm that has the capacity to serve as the prime contractor, and that will prepare a project design that advances beyond conceptual to a material level of completion. The firm should manage all aspects of the design phase and also have extensive experience in dam removal to ensure that an independent, credible approach is developed that can withstand peer review.”⁶

11. In late 2022, TU received a grant from the National Marine Fisheries Service funding the Feasibility Study for dam removal. TU is now preparing to engage an engineering firm to conduct the study, which is expected to be complete by 2024. If that study concludes that dam removal is feasible, TU will confer with the District, as well as others, on the go/no-go decision whether to proceed with the Permit Phase. If yes, then these key stakeholders should select or form a DRE. This memo is intended to support that deliberation.

II.

NECESSARY AUTHORITIES OF THE DAM REMOVAL ENTITY

12. In our 2022 Memo, we recommended a DRE as a single point of accountability to pursue this pathway through the Permit and Implementation Phases.

13. This memo assumes that the District will not be the DRE. This is consistent with the District’s criterion that it must be fully shielded against liability associated with dam removal. As permittee, the DRE will be responsible to comply with the terms of all

⁶ District, Resolution No. 1775 (July 25, 2022), p. 2.

permits, subject to penalty and other remedy under regulatory laws for any non-compliance; and it may be liable under tort and other civil laws for any damages to person or property caused by compliance with the permits.⁷ We emphasize that the separation between DRE and District is not required by law (the District has the legal right to maintain or remove the dam) but instead follows from the policy guidance in its 2020 criteria.

14. In this memo, we evaluate candidates with respect to their legal authorities to handle the responsibilities of the DRE as described in the 2022 Memo. We summarize these responsibilities here.

15. **Property Interests.** We conclude that, today, the District holds a bundle of property interests in Enloe Dam. The District will convey that bundle to the DRE for the purpose of dam removal consistent with its principle that a separate entity as partner will relieve it of any liability associated with ownership or dam removal.

16. The U.S., through its Department of Interior’s Bureau of Land Management (BLM), owns the banks and uplands at the dam site.⁸ In 1911 and 1917, the Interior Secretary withdrew the dam site from the public domain that was otherwise open to homesteading and dedicated the site to power development.⁹ In 1920, the Secretary granted a right-of-way (ROW) and permit for power development by the Okanogan Valley Power Company.¹⁰ BLM subsequently re-issued the ROW to the District, as the power company’s successor, in 1991 with respect to power use,¹¹ and in 2021 with

⁷ See 2022 Memo ¶ 39.

⁸ See maps prepared by Cardno/Entrix on behalf of District, *Dam and Reservoir Plan of Development* (Nov. 2013), Sheet G-2 (Attachment 1).

⁹ “Order of Withdrawal, Power Site Reserve No. 179” (March 30, 1911), as modified by “Order of Modification” (July 20, 1917) (Attachment 2). We are grateful to the Washington Department of Natural Resources (DNR) for providing these documents, which were referenced in a letter from Michal Rechner, DNR Aquatic Resources, to Curtis Bryan, BLM Wenatchee Field Office (May 20, 2019) (Attachment 3).

¹⁰ Letter from General Land Office to Washington State Commissioner of Public Lands (Dec. 7, 2020) (Attachment 4, p. 1).

¹¹ BLM, “Right of Way Grant OR 45490” (April 3, 1991) (Attachment 5). This and the 2021 ROW were issued pursuant to the Federal Land Policy Management Act of 1976, 43 U.S.C. §§ 1761 et seq.

respect to dam safety.¹² These ROWs issued by Interior are each just that and are not an easement burdening the federal lands.¹³

17. The Washington Department of Natural Resources (DNR) has stated that it may own the riverbed below the ordinary high-water mark at the dam site.¹⁴ By operation of law, the State considers a river which was meander-surveyed by the Interior Department to be navigable unless otherwise adjudicated.¹⁵ The Similkameen River was meander-surveyed by BLM's predecessor, the General Land Office. Given that, DNR considers the entire river to the Canadian border to be navigable and asserts State ownership to the riverbed and shores not otherwise conveyed.¹⁶ However, DNR also acknowledges that Coyote Falls immediately downstream of the dam site may create a non-navigable reach. It also acknowledges that Power Site Reserve 179 may have

¹² BLM, "Right of Way Grant WAOR-69895" (March 29, 2021) (Attachment 6).

¹³ The 1920 ROW was issued pursuant to 31 Stat. 790 (1901), 43 U.S.C § 959, which provides in relevant part:

"That the Secretary of the Interior be, and hereby is, authorized and empowered, under general regulations to be fixed by him, to permit the use of rights of way through the public lands, forest and other reservations of the United States, and the Yosemite, Sequoia, and General Grant national parks, California, for electrical plants, poles, and lines for the generation and distribution of electrical power, and for telephone and telegraph purposes, and for canals, ditches, pipes and pipe lines, flumes, tunnels, or other water conduits, and for water plants, dams, and reservoirs used to promote irrigation or mining or quarrying, or the manufacturing or cutting of timber or lumber, or the supplying of water for domestic, public, or any other beneficial uses to the extent of the ground occupied by such canals, ditches, flumes, tunnels, reservoirs, or other water conduits or water plants, or electrical or other works permitted hereunder, and not to exceed fifty feet on each side of the marginal limits thereof, or not to exceed fifty feet on each side of the center line of such pipes and pipe lines, electrical, telegraph, and telephone lines and poles, by any citizen, association, or corporation of the United States, where it is intended by such to exercise the use permitted hereunder or any one or more of the purposes herein named: Provided, That such permits shall be allowed within or through any of said parks or any forest, military, Indian, or other reservation only upon the approval of the chief officer of the Department under whose supervision such park or reservation falls and upon a finding by him that the same is not incompatible with the public interest: *....And provided further, That any permission given by the Secretary of the Interior under the provisions of this Act may be revoked by him or his successor in his discretion, and shall not be held to confer any right, or easement, or interest in, to, or over any public land, reservation, or park.*"

Emphasis (underline) added. We have not located any authority in the Federal Land Policy and Management Act of 1976 (FLPMA) converting the ROW into an easement.

¹⁴ Letter from Michal Rechner, DNR, to BLM, *supra* at p. 2.

¹⁵ *Id.* at p. 1.

¹⁶ *Id.*

effected a withdrawal of State lands for the purpose of power development.¹⁷ “[G]iven the uncertainties regarding ownership in the immediate vicinity of Enloe Dam, DNR has concluded that it will not seek a use authorization for Enloe Dam as it exists today or for its reservoir. DNR reserves the right to modify or reverse this decision...”¹⁸

18. Nine years before the 1920 ROW for this dam, the Washington Legislature enacted RCW 90.28.170, which provides:

“There is hereby granted to persons, firms and corporations organized among other things, for irrigation and power purposes, the right to construct and maintain dams and works incident thereto over, upon and across the beds of the rivers of the state of Washington in connection with such power and irrigation purposes, and there is hereby granted to such persons, firms and corporations an easement over, upon and across the beds of such rivers for such purposes. Such easement shall be limited however, to so much of the beds of such rivers as may be reasonably convenient and necessary for such uses AND, PROVIDED FURTHER, That the use and enjoyment of the grants and privileges of this section shall not interfere with the lawful and rightful diversion of the waters of said rivers by other parties under water appropriations in existence at the time any such persons, firms or corporations shall avail themselves of the benefits and privileges of this section, but no such persons, firms or corporations shall have any right to construct any such dams or works over, upon or across the land between ordinary high water and extreme low water of any river of this state without first having acquired the right to do so from the owner or owners of the lands adjoining the land between ordinary high water and extreme low water over or across which said dam or works are constructed.”¹⁹

The power company had complied with the final proviso by obtaining the ROW from Interior.

19. If applicable, this 1911 statute authorized the power company (and now the District, as successor) to hold an easement in the State-owned submerged lands at the

¹⁷ *Id.*

¹⁸ Washington Department of Ecology, WDFW, and DNR, “Focus on: Future of Enloe Dam,” Publication 21-11-04 (March 2021), p. 2 (Attachment 7).

¹⁹ RCW 90.28.170.

dam site. However, DNR concludes that it is “unclear” to what extent this statute applies to the dam.²⁰

20. It is uncertain whether DNR or the U.S. holds fee title to the submerged lands beneath Enloe Dam. Resolving this issue of ownership would require a quiet title proceeding. That would take years, requiring expert testimony and other evidence on historic navigability at the dam site as well as the intent and effect of the power withdrawal 113 years ago. Further, resolving the issue of ownership would be unnecessary for the purpose of dam removal, as long as DNR, BLM, the District, and the DRE agree to terms for such removal.

21. The District’s interest in the dam itself is in the nature of real property:

“The term ‘real property is defined in RCW 84.04.090; this definition should be consulted as a matter of course in all cases where the meaning of ‘real property’ is in doubt. As there defined, ‘real property’ includes but is not limited to the following:

- (1) All land, whether platted or unplatted.
- (2) All buildings, structures or permanent improvements built upon or attached to privately owned land.
- (3) Any fixture permanently affixed to and intended to be annexed to land or permanently affixed to and intended to be a component of a building, structure, or improvement on land, including machinery and equipment which become fixtures.”²¹

22. In sum, the District holds a bundle of real property interests in Enloe Dam. These are: fee title to the dam as structure affixed to various lands; a right-of-way in the riverbanks and uplands managed by BLM; an easement or implied authorization from DNR, if the State owns the submerged lands, or a right-of-way in the submerged lands if the U.S. owns them.

23. As a general matter, permit applications for land-distributing activities must be filed by the property owner or an authorized agent. If the District continues to hold its bundle of property interests during the Permit Phase, the District will grant permission to

²⁰ Letter from Michal Rechner, DNR, to BLM, *supra* at p. 2.

²¹ WAC 458-12-010 (emphasis added).

the DRE to file applications and pursue approval, as agent. This status may be established through an agency agreement.

24. If the DRE secures and, with the District's agreement, accepts the permits, the District will then execute a nonrecourse transfer (or quitclaim) of its property interests to the DRE. This will shield the District from liability for damages caused by dam removal, excepting any damages that are traced to a former owner under applicable law.²² In the alternative, if the District agrees to retain ownership of its property interests during the Implementation Phase, it would grant a limited property interest (such as a temporary easement) or contractual permission (such as a use license) to the DRE. In either event, the DRE must have the authority from the District to remove the dam itself.

25. In our 2022 Memo, we recommended that the District and DRE enter into a Transactional Agreement during the Permit Phase.²³ That agreement should resolve whether, and if so, when, the DRE will assume the District's property interests in Enloe Dam. The District will expect indemnification from liabilities associated with dam removal. And the DRE should accept property interests in the dam, or assume the liabilities related to dam removal, only when it is assured of its capacity to perform dam removal. Thus, the agreement should address when the following events occur relative to any transfer of the District's property interests: applications for permits, receipt and acceptance of such permits, and the DRE's entering into binding commitments with insurers and other entities for the liability management program described in Section VII of the 2022 Memo.

26. We analyze below the legal authority of DRE candidates to hold the District's property interests in the dam, for the sole purpose of dam removal.

27. **Permits.** The DRE must have the authority to apply for, obtain and accept, and implement the regulatory permits necessary for dam removal. As recommended in our 2022 Memo, the DRE will be the exclusive permittee and will be responsible (through its prime contractor) for all work. If the District is co-permittee of the dam, it would have imputed liabilities for any permit noncompliance, as well as for damages to third parties resulting from implementing the permits.

28. **Procurement Methods.** The DRE must have the authority to enter into a procurement contract with a contractor to remove Enloe Dam. The DRE will be responsible for supervision and payment of the contractor.

²² See 2022 Memo ¶¶ 33 – 37 regarding hazardous waste contamination in reservoir sediments.

²³ 2022 Memo ¶¶ 74 – 76.

29. In Section VII.B of the 2022 Memo, we recommended that the DRE consider a procurement method that requires the contractor to be responsible for both design and implementation, subject to narrow and carefully negotiated exceptions involving uncontrollable circumstances. This integrated procurement method departs from the traditional approach to public works, where the owner (or its consulting designer) is responsible for design and a separate contractor is responsible for construction. While the traditional approach has been used successfully for many dam removal and other projects, it carries risks when unexpected conditions are discovered, or complications occur, during construction: the designer and construction contractor may dispute responsibility for the problem. Whichever procurement method is chosen, the DRE should require contract terms that clearly allocate responsibilities to resolve such problems.

30. We analyze here the authority of DRE candidates to use a procurement method that clearly allocates responsibilities for successful design and implementation. This method takes many forms including design-build, progressive design-build, and construction manager-at-risk.

31. **Insurance.** As described in Section VII.D of the 2022 Memo, the DRE will secure insurance (broadly defined to include indemnities) to defend itself against claims for damages associated with dam removal. The DRE must have the authority to secure insurance that, in addition to naming itself as the primary insured, names the District as Additional Insured, establishing a duty for the insurer to defend the District against exposure to such claims.

III. **CANDIDATES FOR DAM REMOVAL ENTITY**

32. We now turn to the DRE candidates. Based on stakeholder interest to date, we consider the following federal, state, tribal, and private entities:

- A. Bureau of Land Management (BLM);
- B. Washington Department of Ecology (Ecology);
- C. Washington Department of Natural Resources (DNR);
- D. Washington Department of Fish and Wildlife (WDFW);
- E. Confederated Tribes of the Colville Reservation (Colville Tribes);
- F. Washington State Business Structure: non-profit corporation or limited liability corporation.

33. For each candidate, we start with its authority to hold the District's property interests described in paragraphs 15 - 22: namely, fee title in the dam itself, a right-of-

way in the riverbanks and uplands managed by BLM, and an easement or some other authorization to use the submerged lands. We treat that authority, along with other authorities that relate to permitting, procurement, and risk management, as qualification criteria to become the DRE.²⁴

34. We emphasize a general principle applicable to all State agencies. Namely, State agencies have those powers expressly granted to them and those necessarily implied from their statutory delegation of authority.²⁵ Agencies also have implied authority to carry out their legislative mandated purposes. When a power is granted to an agency, “‘everything lawful and necessary to the effectual execution of the power’ is also granted by implication of law.”²⁶ Washington courts have routinely held that “‘implied authority is found where an agency is charged with a specific duty, but the means of accomplishing that duty are not set forth by the Legislature.’”²⁷

35. The exact scope of implied agency power is typically decided on a case-by-case basis. In assessing whether an agency is acting within its scope of authority, Washington courts will determine whether the specific action is implied “‘to meet a legislatively mandated general standard.’”²⁸ An agency is allowed to “‘fill in the gaps’ where necessary to the effectuation of a general statutory scheme.”²⁹ Importantly, agencies “do not have implied authority to determine issues outside of that agency’s delegated functions or purpose.”³⁰ As a result, in Sections III.B – D below, we use the

²⁴ Of course, key stakeholders will decide which criteria to use to select the DRE, and how to address any limitations in relevant authorities. This memo treats the authorities discussed in Section II as qualification criteria to facilitate that discussion and, given that, analyzes the suitability of various candidates.

²⁵ *Municipality of Metropolitan Seattle v. Public Employment Relations Commission*, 118 Wash.2d 621, 633, 826 P.2d 158 (1992); see also *Hood Canal Sand and Gravel, LLC v. Goldmark*, 195 Wash. Ap. 284, 298, 381 P.3d 95 (2016) (“DNR may generally exercise only the powers the legislature has conferred to it by statute and those powers that are necessarily implied in the enabling statute.”).

²⁶ *Tuerk v. State Department of Licensing*, 123 Wash.2d 120, 124, 864 P.2d 1382 (1994) (citing *State ex rel. Puget Sound Navigation Company v. Department of Transportation*, 33 Wash.2d 448, 481, 206 P.2d 456 (1949)).

²⁷ *Tuerk*, supra at p. 124 (citing *Ortblad v. State*, 85 Wash.2d 109, 117, 530 P.2d 635 (1975)).

²⁸ *Id.*

²⁹ *Hama Co. v. Shorelines Hearings Board.*, 85 Wash.2d 441, 448, 536 P.2d 157 (1975).

³⁰ *Tuerk*, 123 Wash.2d at 124; see *Taylor v. Morris*, 88 Wash.2d 586, 564 P.2d 795 (1975).

term “authority” to mean authority expressly granted by State statute or necessarily implied. A similar rule of construction applies to BLM under federal law.³¹

A. **Bureau of Land Management**

36. BLM holds 245 million acres of land, or one-tenth of the land in our nation.³² As discussed above, it owns the banks and uplands of the Similkameen River at the dam site.

37. **Property Ownership.** We address whether BLM may acquire and hold the District’s property interests in Enloe Dam.

38. BLM has broad authority to acquire property interests to advance federal interests. The Federal Land Policy and Management Act of 1976 (FLPMA) provides:

- “(a) Notwithstanding any other provisions of law, the Secretary, with respect to the public lands and the Secretary of Agriculture, with respect to the acquisition of access over non-Federal lands to units of the National Forest System, are authorized to acquire pursuant to this Act by purchase, exchange, donation, or eminent domain, lands or interests therein: Provided, That with respect to the public lands, the Secretary may exercise the power of eminent domain only if necessary to secure access to public lands and then only if the lands so acquired are confined to as narrow a corridor as is necessary to serve such purpose ...
- (b) Acquisitions pursuant to this section shall be consistent with the mission of the department involved and with applicable departmental land-use plans.”³³

39. BLM may acquire fee title to land. “The acquisition of the fee estate on parcels of land provides BLM the opportunity to protect threatened natural and cultural

³¹ *State of West Virginia v. U.S. Environmental Protection Agency*, 597 U.S. 2587, 2609 (2022): “Agencies have only those powers given to them by Congress, and ‘enabling legislation’ is generally not an ‘open book to which the agency [may] add pages and change the plot line.’ E. Gellhorn & P. Verkuil, Controlling Chevron-Based Delegations, 20 Cardozo L. Rev. 989, 1011 (1999). We presume that ‘Congress intends to make major policy decisions itself, not leave those decisions to agencies.’ *United States Telecom Assn. v. FCC*, 855 F. 3d 381, 419 (CA DC 2017) (Kavanaugh, J., dissenting from denial of rehearing en banc).”

³² <https://www.blm.gov/about/what-we-manage/national>.

³³ 43 U.S.C. § 1715.

resource values, critical habitat and ecosystems, historic and cultural sites, and fulfill the public’s need for outdoor recreation and open space.”³⁴

40. BLM may acquire an easement in private or state-owned land, for purposes of conservation of resources located on that land or adjacent federal land.³⁵ This authority does not seem relevant here, where the DRE will acquire a property interest in the dam for the purpose of removing it, not directly for conservation of fish habitat at the site.

41. BLM may also acquire an easement for access to federal lands to enhance conservation of resources on those lands.³⁶ “[Access] easements have historically been the most frequent type of acquisition made by the BLM. The nature of the land ownership pattern of United States lands administered by the BLM requires that very few resource functions can take place without crossing private land. Public land may not be effectively administered without legal and physical access. Acquisition of access rights supports one or more of these resources: lands, minerals, forestry, range, wildlife, recreation, and watershed.”³⁷ This authority seems relevant here, as the DRE will access the dam (as a structure on submerged lands) in order to conserve resources (including fisheries) on adjacent federal lands.

42. BLM may acquire a property interest, whether fee title or easement, for the purpose of land management to conserve fisheries and other natural resources. “It is the policy of the Bureau to: ...[a]cquire land and/or interests in land needed to implement land use plans and to manage, protect, develop, maintain, and use resources on public land and further provide access for public use and enjoyment of such lands (as exemplified by perpetual access to lands having outstanding recreational value); provided such acquisitions are within the limitations of applicable authorities and available funds and are in conformity with land use plans that apply to the area involved.”³⁸

³⁴ BLM, *Acquisition Handbook* (Jan. 2002), Document H-2100-1, p. I-1.

³⁵ *Id.*, p. I-2.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*, p. II-12.

43. BLM does not appear to have general authority to acquire property interests in a structure separate from the underlying lands, or solely for purpose of demolition.³⁹ The Interior Department relied on special legislation to acquire Elwha Dam (and adjacent lands) from non-federal entities for the purpose of dam removal.⁴⁰ Similarly, it relied on special legislation to acquire and operate historical structures in the Minidoka Internment National Monument, where some of the lands are owned by non-federal entities.⁴¹ BLM is reluctant to assume the cost and responsibility for maintenance of a structure absent a federal interest in the underlying lands.⁴²

44. BLM's acquisition of any property interest may occur only after compliance with rigorous requirements for appraisal⁴³ and title insurance.⁴⁴ It does not appear to have authority to acquire property interests in a structure that is itself a liability, without any intrinsic value for resource conservation. Enloe Dam does not provide any power, water supply, or flood control benefit. Ownership will carry liability for maintenance and, if dam removal is permitted, compliance with permit terms for dam removal, as well as mitigation for any damages to property or person.

45. **Insurance.** Under Federal Acquisition Regulations (FAR),⁴⁵ any federal agency including BLM must require a contractor to meet insurance requirements for protection of federal interests.⁴⁶ BLM may require a contractor to name a third party as an Additional Insured when necessary for the protection of federal interests – e.g., in a circumstance when it is foreseeable that a third party would otherwise suffer damages

³⁹ BLM would need to acquire fee title in the structure, as well as the easement in the submerged lands if State-owned. As the U.S. already owns the riverbanks and other lands subject to the federal ROW, BLM could extinguish the ROW if it were the DRE.

⁴⁰ Office of the Secretary, Interior Department, Order no. 3212, Amendment no. 1 (March 1, 2010), citing to “Elwha River Ecosystem and Fisheries Restoration Act of 1991,” P.L. 102-495.

⁴¹ P.L. 110-229, Section 313, 16 U.S.C. § 431 note.

⁴² Interview with Curtis Bryan, Field Supervisor, BLM Wenatchee Field Office (May 30, 2023).

⁴³ BLM, *Acquisition Handbook*, *supra* p. II-14.

⁴⁴ *Id.*, Chapter VII.

⁴⁵ General Services Administration, *Federal Acquisition Regulation* (2023), 48 C.F.R. Part 1 *et seq.*, available at: <https://www.acquisition.gov/browse/index/far>.

⁴⁶ *Id.*, Part 28, Subpart 28.3 (Insurance).

from the contractor’s performance and would seek relief against the U.S.⁴⁷ Put in the negative, BLM does not appear to have authority to require a contractor to name an Additional Insured specifically for the protection of that third party. For example, the contract between the Interior Department’s National Park Service (NPS) and Barnard Construction for removal of Elwha Dam in Washington State required the contractor to obtain insurance which protected the contractor and NPS against claims. The coverage did not reach the prior dam owners or downstream landowners, including Port Angeles which has downstream water supply facilities.⁴⁸

46. A contractor will typically not insure against damages inherent in a construction activity, which is to say, damages that arise absent any errors or omissions in the contractor’s performance. Such risks stay with the owner which chooses to undertake the activity. As discussed in Section II.C of our 2022 Memo, some of the sediment currently captured by Enloe Dam will necessarily be released following dam removal. Such sediment release may result in claims related to impairment of water supply diversions and other beneficial uses in the lower Similkameen.

47. BLM does not appear to have authority to insure against claims by third parties for damages inherent in its undertaking a construction activity. As a general matter, the U.S. is self-insured with respect to risks like these.

48. If BLM were the DRE, the District would not receive upfront insurance coverage from BLM with respect to damages caused by sediment discharge from the dam site. It is possible that third parties might file claims against the District, alleging that it is partly responsible for such damages due to its prior ownership, as well as its ongoing cooperation with BLM. The District would be covered to the extent that BLM required its contractor to cover such claims, naming the District as Additional Insured. Otherwise, the

⁴⁷ FAR allows some discretion for the federal agency to determine the scope of insurance coverage based on the risks in the public works project. *See* FAR § 28.301(a): “The Government requires any contractor subject to Cost Accounting Standard (CAS) 416 ... to obtain insurance, by purchase or self-coverage, for the perils to which the contractor is exposed, except when (i) the Government, by providing in the contract in accordance with law, agrees to indemnify the contractor under specified circumstances or (ii) the contract specifically relieves the contractor of liability for loss of or damage to Government property” (emphasis added). Our analysis here is also informed by an interview with Stephanie Lynch, Office of the Solicitor (Portland), Interior Department (May 24, 2023).

⁴⁸ Contract between National Park Service and Barnard Construction Company (July 2010), Sections I-62, I-102.

District would be compelled to seek relief against the U.S. under general law, such as the Federal Tort Claims Act⁴⁹ or the Contract Disputes Act.⁵⁰

49. **Procurement Method.** Under FAR, BLM may use design-bid-build as procurement method for construction and demolition.⁵¹ Specifically, the rules permit a contract with an architect-engineer for design services, and a separate contract with a construction contractor.⁵²

50. The rules also permit design-build where one contractor performs both functions.⁵³ However, the Interior Department has adopted policy disfavoring design-build due to its assessment of risks related to quality assurance, scope creep, and overdependence on a single contractor.⁵⁴

51. **Permits.** We have not analyzed BLM’s authorities to apply for and hold State and local permits for dam removal, in light of the limitations on its authorities related to property interest and insurance.

B. Washington State Department of Ecology

52. Ecology has broad authorities “to manage and develop” the State’s “air and water resources” and “carry out a coordinated program of pollution control.”⁵⁵ Ecology

⁴⁹ 28 U.S.C. §§ 2671-2680; see <https://www.justice.gov/civil/federal-tort-claims-act-litigation-section>.

⁵⁰ 41 U.S.C. § 7101 *et seq.*; see <https://www.justice.gov/jm/civil-resource-manual-47-court-federal-claims-litigation>.

⁵¹ FAR § 36.104.

⁵² FAR § 36.6.

⁵³ FAR § 36.3.

⁵⁴ Office of the Secretary, Interior Department, “Use of Design-Build Contract Method for Implementation of American Recovery and Reinvestment Act of 2009” (May 21, 2009), p. 1.

⁵⁵ RCW 43.21A.020.

regulates: air and climate,⁵⁶ water and shorelines,⁵⁷ waste and toxics,⁵⁸ and spills and cleanups.⁵⁹ In general, Ecology regulates activities by other entities within this broad scope, including responsibilities for:

- “The supervision of public waters within the State and their appropriation, diversion, and use;”⁶⁰
- “Regulation and control of the diversion of water in accordance with the rights thereto;”⁶¹
- “Insofar as may be necessary to assure safety to life or property, [inspection of] the construction of dams, canals, ditches, irrigation systems, hydraulic power plants, and all other works, systems, and plants pertaining to the use of water, and [requirement for] such necessary changes in the construction or maintenance of said works, to be made from time to time, as will reasonably secure safety to life and property;”⁶²
- Review and approval of floodplain management ordinances, technical assistance, and assistance in enforcement actions.⁶³

⁵⁶ See Chapter 70A.15 (Washington Clean Air Act); Chapter 70A.25 RCW and Chapter 70A.30 (Motor Vehicle Emission Control and Standards); Chapter 70A.45 RCW (Limiting Greenhouse Gas Emissions); Chapter 70A.55 RCW (Diesel Emissions); Chapter 70A.65 RCW (Greenhouse Gas Emissions - Cap and Invest Program).

⁵⁷ See Chapter 90.03 RCW (Water Code); Chapter 90.44 RCW (Regulation of Public Groundwaters); Chapter 90.42 RCW (Water Resource Management); Chapter 90.46 RCW (Reclaimed Water Use); Chapter 90.48 (Water Pollution Control Act); Chapter 90.58 RCW (Shoreline Management Act); Chapter 90.94 RCW (Streamflow Restoration).

⁵⁸ See Chapter 70A.205 (Solid Waste Management); Chapter 70A.300 RCW (Hazardous Waste Management).

⁵⁹ See, e.g., Chapter 70A.305 (Model Toxics Control Act); Chapter 70A.325 RCW (Underground Petroleum Storage Tanks); Chapter 90.56 RCW (Oil and Hazardous Substance Spill Prevention and Response).

⁶⁰ RCW 43.21A.064 (1).

⁶¹ RCW 43.21A.064(3).

⁶² RCW 43.21A.064(2).

⁶³ RCW 90.03.350.

53. Ecology is the State’s Dam Safety Office. It “shall have the supervision and control over all dams and obstructions in streams, and may make reasonable regulations with respect thereto concerning the flow of water which [the department] deems necessary to life and property below such works from flood waters.”⁶⁴ This authority reaches to when a dam owner or operator of a dam may release impounded water,⁶⁵ specifically “... for protection against harm resulting from inundation, regardless of the immediate cause of the damage.”⁶⁶ Thus, Ecology has regulatory jurisdiction over Enloe Dam to assure that its owner maintains and operates the dam in safe condition.

54. **Property Ownership.** Ecology does not appear to have authority to acquire and hold a property interest of any kind, including specifically a structure. Ecology owns one dam (Zosel Dam on the Okanogan River), although the circumstances associated with its acquiring fee title are unknown.⁶⁷ Another limited exception (not applicable here) is where Ecology designates, acquires, and controls a contaminated site for clean-up under the Model Toxics Control Act (MTCA).⁶⁸ We conclude that the District will not seek or support such a designation, which would create substantial liability for it whether or not dam removal proceeds.

55. **Procurement Method.** Ecology does not appear to have authority to undertake dam removal or any other demolition activity, outside of the context of a contaminated site designated under MTCA.⁶⁹

56. **Permits.** Ecology has an Office of Columbia River, whose jurisdiction includes the Similkameen. It has a broad purpose that could encompass dam removal, and even lead responsibility as DRE: “[w]e are implementing projects to meet current and future water needs in the Columbia River Basin. By ensuring the region is prepared to respond to droughts, our work supports growing communities, the agricultural economy, endangered fish, and the natural environment. Sustainable solutions in our watersheds are

⁶⁴ RCW 86.16.035.

⁶⁵ See Washington Attorney General Letter Opinion 1979 No. 42 (1979).

⁶⁶ *Id.*

⁶⁷ Interview with Sage Park, Ecology Regional Director (May 31, 2023).

⁶⁸ See <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Rules-directing-our-cleanup-work/Model-Toxics-Control-Act#:~:text=The%20Model%20Toxics%20Control%20Act,natural%20resources%20for%20the%20future.>

⁶⁹ Our analysis here is informed by an interview with Ivy Anderson, Washington Department of Justice (May 31, 2023).

critical to securing a healthy planet for future generations.”⁷⁰ However, Ecology would need to address conflict-of-interest issues to determine whether the Office of Columbia River could be DRE while Ecology (as the parent agency) would regulate dam removal under state laws.⁷¹

57. We have not analyzed whether Ecology could use alternative procurement methods, or provide insurance coverage to third parties affected by dam removal, given these limitations in authority related to property ownership and construction activities.

C. Washington Department of Natural Resources

58. DNR was created in 1979 to consolidate management of state-owned lands. “The purpose of this chapter is to provide for more effective and efficient management of the forest and land resources in the state by consolidating into a department of natural resources certain powers, duties and functions of the division of forestry of the department of conservation and development, the board of state land commissioners, the state forest board, all state sustained yield forest committees, director of conservation and development, state capitol committee, director of licensing, secretary of state, director of revenue, and commissioner of public lands, manage state trust lands for the people of Washington.”⁷² Its enabling statute is located in RCW 43.30, and its specific powers and duties are stated in RCW Title 79.

59. DNR manages state-owned lands. These lands are classified in three types, as follows:

- Forest Lands.⁷³ DNR has the authority to acquire and manage lands “which by reason of their location, topography, or geological formation, are chiefly valuable for purpose of developing and growing timber, and to designate such lands and any lands of the same character belonging to the state as state forestlands.”⁷⁴

⁷⁰ <https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Office-of-Columbia-River>.

⁷¹ See 2022 Memo Appendix 1.

⁷² RCW 43.30.010.

⁷³ RCW 79.22.

⁷⁴ RCW 79.22.010.

- Natural Areas.⁷⁵ DNR manages two different subtypes of Natural Areas. The first type is Natural Area Preserves. These are “public or private areas of land or water which have retained their natural character, although not necessarily completely natural and undisturbed, or which are important in preserving rare or vanishing flora, fauna, geological, natural historical or similar features of scientific or educational value and which are acquired” by DNR.⁷⁶ The preserve system presently includes more than 41,344 acres in 58 sites throughout the State.

The second type of Natural Areas are Natural Resources Conservation Areas. Natural Resources Conservation Areas are lands that DNR has “identified as having high priority for conservation, natural systems, wildlife, and low-impact public use values;” or areas of “land or water, or land and water, that ha[ve] flora, fauna, geological, archaeological, scenic, or similar features of critical importance to the people of Washington and that has retained to some degree or has reestablished its natural character.”⁷⁷ When DNR establishes a Natural Area Preserve or Natural Resource Conservation Area, it also establishes a management plan that details allowed uses, restoration activities, and related matters.⁷⁸

- Aquatic Lands.⁷⁹ Aquatic Lands are “all tidelands, shorelands, harbor areas, and the beds of navigable waters.”⁸⁰ These lands include all submerged lands that, under the equal Footing Doctrine, were conveyed

⁷⁵ RCW 79.70; RCW 79.71.

⁷⁶ RCW 79.70.020(2).

⁷⁷ RCW 79.71.020(1)-(2).

⁷⁸ RCW 79.70.030(1)(a)-(b); RCW 79.71.070.

⁷⁹ RCW 79.105.

⁸⁰ RCW 79.105.060(1).

from the U.S. to Washington State upon admission to the Union.⁸¹ The State owns Aquatic Lands in fee title, while DNR manages the lands.⁸²

60. As discussed above, DNR classifies the riverbed of the Similkameen as Aquatic Lands. We examine below its authority to acquire the District’s property interests in Enloe Dam.

61. **Property Ownership.** We examine three authorities as the basis for DNR’s acquiring the District’s property interests in Enloe Dam.

62. Under RCW 79.10.020, DNR has authority, “when in its judgment it appears advisable, to accept on behalf of the state, any grant of land within the state....”⁸³ Acquisition may occur after a title report and subject to the approval of the Attorney General and the Board of Natural Resources. Any such land is classified as Forest Lands and managed as such.⁸⁴ However, Enloe Dam is a structure in the Similkameen River. It may not be classified meaningfully as Forest Lands. The authority under RCW 79.10.020 does not appear relevant to whether DNR may become the DRE.

63. Under RCW 90.28.170, an easement is granted to construct and maintain dams on submerged lands for power generation and irrigation purposes. “...[T]he failure to maintain and use such dams and works after the same shall have been constructed, for a continuous period of two years, shall operate as a forfeiture of all the rights hereby granted and the same shall revert to the state of Washington.”⁸⁵ Such reversion would be overseen by DNR, which manages submerged lands.⁸⁶ This statute is not clearly applicable, as the District has maintained the dam even if power generation has ceased.

⁸¹ *Illinois Central Railway Co. v. State of Illinois*, 146 U.S. 387 (1892). As the Court stated at *435:

“It is the settled law of this country that the ownership of and dominion and sovereignty over lands covered by tide waters, within the limits of the several states, belong to the respective states within which they are found, with the consequent right to use or dispose of any portion thereof, when that can be done without substantial impairment of the interest of the public in the waters, and subject always to the paramount right of congress to control their navigation so far as may be necessary for the regulation of commerce with foreign nations and among the states.”

⁸² RCW 79.105.010.

⁸³ RCW 79.10.020.

⁸⁴ *Id.*

⁸⁵ RCW 79.10.020.

⁸⁶ This statute appears in RCW Title 90, which governs water rights and is administered by Ecology. However, this 1911 statute predates Ecology, and its location in Title 90 does not alter its effect, which is that a dam

64. Lastly, Senate Bill 5433 (2023), the “Delinquent Aquatic Structures Act,” was just enacted. It will be enrolled as a chapter in RCW Title 79. It authorizes DNR to acquire “derelict aquatic structures” for the purpose of removal.⁸⁷ Such structures are defined as “... in-water structures where, as a result of ... disuse ..., conditions exist that make the structure unsafe for use, pose a hazard, or pose risks to public health or safety or the surrounding environment.”⁸⁸ Again, the statute is not clearly applicable. Enloe Dam is properly maintained and thus is not “derelict” in the ordinary meaning, even though power generation has ceased. Further, the statute provides that the owner has “primary responsibility” to remove a derelict structure,⁸⁹ and the District has clearly stated that it will not assume such responsibility.

65. **Procurement Method.** We turn to whether DNR has authority to demolish the structure for the purpose of enhancing the condition of the Aquatic Lands.

66. DNR may undertake many activities for the purpose of management and improvement of state-owned lands. These activities include:

- Planning, construction, and operation of conservation, recreational sites, area, roads, and trails;
- Planning, construction, and operation of special facilities for educational, scientific, conservation, or experimental purposes;
- Improvement of any lands;
- Entering into cooperative agreements with public agencies, nonprofit organizations, volunteers, and volunteer organizations regarding the use of lands managed by DNR for the purpose of providing a benefit to the lands, including use of lands for watershed purposes; carrying out restoration and enhancement projects; improving, restoring, or enhancing watershed conditions; removing nonnative vegetation; and other similar projects;

would revert to the State of Washington (not Ecology). Under RCW Title 79, DNR administers submerged lands beneath the dam.

⁸⁷ S.B. 5433, Section 3(1).

⁸⁸ *Id.*, Section 2(3).

⁸⁹ *Id.*, Section 3(2).

- Authorizing individual volunteers and volunteer organizations to conduct restoration and enhancement projects on lands managed by DNR.⁹⁰

67. In addition, DNR has authority to undertake specific activities on Aquatic Lands. These activities include: planning for land use, management agreements with harbor districts, permits and fees for sand and gravel extraction, management of log booms, and exchanges of tidelands and shorelands.⁹¹ DNR will manage Aquatic Lands to achieve the following goals:

- “(a) Foster water-dependent uses;
- (b) Ensure environmental protection;
- (c) Encourage direct public use and access;
- (d) Promote production on a continuing basis of renewable resources;
- (e) Allow suitable state aquatic lands to be used for mineral and material production; and
- (f) Generate income from use of aquatic lands in a manner consistent with the above goals.”⁹²

68. While DNR has authority under RCW 79.10 to construct a trail or road for access for recreation or other beneficial uses, the agency does not appear to have general authority to demolish a structure (or undertake other construction activity) on Aquatic Lands.⁹³ While S.B. 5433 grants such authority with respect to derelict aquatic structures,

⁹⁰ RCW 79.10.

⁹¹ WAC 332-30.

⁹² WAC 32-30-100 ¶ 1.

⁹³ As noted above, upon forfeiture of the statutory easement granted by RCW 90.28.170 DNR would take ownership of the dam if it did not require the prior owner (the District or the DRE as the District’s successor) to remove the dam from DNR managed State lands. In that scenario, DNR would become the owner of the portion of the dam situated on DNR managed lands and theoretically could remove that portion of the dam. DNR could not do this, however, without acquiring the additional property that it would need to effect dam removal. We do not think the agency would go down this path, acquire these additional lands, and incur the cost of dam removal when it can, instead, order the prior owner to remove the dam from its property.

we are uncertain whether that statute applies in this circumstance where the District is properly maintaining the dam and is not willing to assume primary responsibility for removal.

69. **Looking Ahead.** Having authority to demolish Enloe Dam is the core responsibility of the DRE. Given the limitations discussed above, we have not analyzed whether DNR has other necessary authorities related to permits, procurement contracts, and insurance.⁹⁴ DNR has stated that it “would still like to remain involved in the decision making processes and activities surrounding the disposition of Enloe Dam given the management authorities we retain immediately upstream and down river from Enloe Dam.”⁹⁵ This underscores an important principle applicable to all entities analyzed in this memo: namely, an agency which chooses not to be DRE itself may actively cooperate in the implementation of dam removal.

D. Washington Department of Fish and Wildlife

70. WDFW has a dual mandate. Its paramount responsibility is to preserve, protect, perpetuate, and manage the fish and wildlife species of the State.⁹⁶ It must also seek to maximize opportunities for people to hunt, fish, and appreciate fish and wildlife.⁹⁷

71. **Property Ownership.** Through its Commission, WDFW has express authority to acquire both land and structures. It may “acquire by gift, easement, purchase, lease, or condemnation lands, buildings, water rights, rights-of-way, or other necessary property, and construct and maintain necessary facilities for purposes consistent” with

⁹⁴ DNR does not have a practice of obtaining insurance covering third parties as Additional Insureds in connection with construction activities. Interview with Michal Rechner, DNR (May 15, 2023).

⁹⁵ Letter from Michal Rechner, DNR to BLM, *supra* at p. 2.

⁹⁶ RCW 77.04.12.

⁹⁷ RCW 77.04.12; RCW 77.04.020. WDFW’s enabling statute is located in RCW 43.300. This chapter does not provide specific powers and duties, likely because it transferred the powers and duties from the former Department of Wildlife to WDFW. *See* RCW 43.300.005. After the creation of WDFW, the State Legislature created several Chapters under RCW Title 77 that specifically pertain to WDFW’s powers and duties. For example, RCW 77.04.020 provides the organizational structure of WDFW, which consists of the fish and wildlife commission and the director. The commission, which is comprised of nine individuals, establishes hunting, trapping, and fishing seasons; regulates the taking of food, fish, and shellfish; has final approval authority for the department’s budget proposals; and adopts rules to implement the state’s fish and wildlife laws. RCW 77.04.55(2)-(7).

RCW Title 77.⁹⁸ It may acquire fee title or property interest sufficient for “control and tenure.”⁹⁹

72. WDFW has adopted a guidance document that outlines its program, vision, and policies for land acquisitions.¹⁰⁰ It will be “strategic and selective” and will acquire “lands that provide the highest benefit to fish and wildlife and the public.”¹⁰¹ As to the first element of its dual mandate, it seeks to acquire key habitat for priority species.¹⁰² Beyond individual species, it “acquires and manages lands that provide substantial benefits to multiple fish and wildlife species or are important for specific ecological processes.”¹⁰³ As to the second element of its mandate, WDFW assesses the opportunities for public access to wildlife resources for hunting, fishing, and wildlife viewing.¹⁰⁴ It takes into account demographics, economics, and the needs expressed through public comment, and it follows applicable policies of management plans.¹⁰⁵

73. WDFW is funded through appropriations, revenues from the sale of hunting and fishing licenses, and grants. Given its legal obligations for fiscal management, WDFW applies two criteria in considering a potential land acquisition: (a) land that already exists in its healthy, natural state, and already provides a high quality recreational opportunity is a more economical addition to the lands portfolio than land that needs significant enhancement or restoration; and (b) where restoration or development improvements are necessary, the improvements must be feasible and cost effective.¹⁰⁶ We understand that WDFW has a policy that it will not use operating budget funds for land acquisition, relying instead on State and federal grants for that purpose.

74. WDFW has authority to acquire a property interest and to dispose of any interest so acquired when to do so is in the public interest. “The director shall maintain

⁹⁸ RCW 77.12.037.

⁹⁹ Interview with Karen Edwards, WDFW (May 30, 2023).

¹⁰⁰ WDFW, *Lands 20/20: A Clear Vision for the Future* (July 2005), available at <https://wdfw.wa.gov/sites/default/files/publications/00726/wdfw00726.pdf>.

¹⁰¹ *Id.* at 5.

¹⁰² *Id.* at 13.

¹⁰³ *Id.* at 14.

¹⁰⁴ RCW 77.04.012; RCW 77.04.020.

¹⁰⁵ WDFW, *Lands 20/20, supra*.

¹⁰⁶ *Id.* at 24.

and manage real or personal property owned, leased, or held by the department and shall control the construction of buildings, structures, and improvements in or on the property If the commission determines that real or personal property held by the department cannot be used advantageously by the department, the director may dispose of that property if it is in the public interest.”¹⁰⁷ WDFW staff understand this statute to authorize property ownership with the intent to demolish a structure, provided the demolition advances WDFW’s mandate as stated in RCW 77.04.012 – here, to protect fish and wildlife species.¹⁰⁸

75. If WDFW were interested in being the DRE, but the Attorney General concludes that its authority to acquire Enloe Dam for the sole purpose of demolition is unclear, then limited legislation could be advanced to establish that authority. The legislation could be framed for the purpose of fisheries restoration on the Similkameen or more generally.¹⁰⁹

76. **Procurement Method.** WDFW uses design-bid-build as its typical procurement method.¹¹⁰ Using this method, it has completed many restoration projects on state-owned and other lands.¹¹¹ For example, WDFW led the Fir Island Farm Restoration Project which set back nearly 5,800 feet of dike, removed 3,400 feet of marine dike, built a 7-acre drainage storage pond and pump station, and restored 131 acres of tidal marsh and tidal channels, which are important habitats for juvenile Chinook salmon and other fish and wildlife.¹¹²

77. RCW 39.10 establishes “Alternative Public Works Contracting Procedures.” It authorizes WDFW (like other State agencies) to use an integrated procurement method, including design-build.¹¹³ “The legislature finds that the traditional process of awarding public works contracts in lump sum to the lowest responsible bidder is a fair and objective method of selecting a contractor. However, under certain

¹⁰⁷ RCW 77.12.210.

¹⁰⁸ Interview with Karen Edwards, *supra*.

¹⁰⁹ See discussion in paragraph 34 regarding State agencies only having authority expressly granted or by necessary implication.

¹¹⁰ Interview with Kristen Kuykendall, WDFW (March 30, 2023).

¹¹¹ WDFW, *Lands 20/20*, p. 14.

¹¹² WDFW, “Fir Island Farms Restoration Project,” available at <https://wdfw.wa.gov/species-habitats/habitat-recovery/puget-sound/estuary-restoration-projects/fir-island-farms-restoration-project#updates>.

¹¹³ RCW 39.10.

circumstances, alternative public works contracting procedures may best serve the public interest if such procedures are implemented in an open and fair process based on objective and equitable criteria.”¹¹⁴ The applicable criteria permit use of design-build for a project with an estimated cost over \$2 million where:

- “(a) The construction activities are highly specialized and a design-build approach is critical in developing the construction methodology; or
- (b) The projects selected provide opportunity for greater innovation or efficiencies between the designer and the builder; or
- (c) Significant savings in project delivery time would be realized.”¹¹⁵

78. If it became the DRE, WDFW may reasonably conclude that removal of Enloe Dam satisfies these criteria. The project will certainly cost more than \$2 million.¹¹⁶ In-water demolition is complex and specialized. Innovative design will be needed to minimize damages arising from sediment release. And having one contractor responsible for design and implementation will save time relative to a traditional method where unforeseen circumstances (e.g., unexpected toxicity in reservoir sediments) could result in disputes between the owner, designer, and construction contractor with respect to responsibility for the cost to address those circumstances. While the DRE (whoever it is) will select the procurement method in the future, we are confident that design-build will be available to WDFW under RCW 39.10. That said, WDFW staff stated that the agency has not used this authority and instead has uniformly used design-bid-build.¹¹⁷

79. **Insurance.** WDFW is self-insured, along with other State agencies, under a program administered by the Washington Department of Enterprise Services (DES). The total coverage is \$50 million for all agencies for a two-year period.¹¹⁸ That amount of coverage may be needed, or more, with respect to the potential impacts of sediment

¹¹⁴ RCW 30.10.200.

¹¹⁵ RCW 39.10.300.

Under RCW Title 39, a Project Review Committee (PRC) certifies public agencies to use design-build or other alternative methods. RCW 39.10.250(1). In the alternative, the PRC may certify individual projects. RCW 39.10.250(2).

¹¹⁶ Interfluve, *Enloe Dam Removal Concept Plan* (June 1, 2021), Appendix C (estimating probable construction cost of \$3.3 - \$51.1 million, exclusive of insurance and contingencies).

¹¹⁷ Interview with Kristen Kuykendall, *supra*.

¹¹⁸ Interview with Sam Taylor, WDFW (May 30, 2023).

discharge on downstream beneficial uses.¹¹⁹ However, WDFW may obtain a wide range of commercial insurance policies with DES's approval.¹²⁰ State agencies use an "Enterprise Risk Management" approach with respect to their activities.¹²¹

80. Direct consultation with DES will be necessary to determine whether a comprehensive insurance program (as described in Section VII.D of the 2022 Memo) could be secured if WDFW were the DRE.¹²² Specifically, whether WDFW could obtain coverages sufficient to cover liability exposure related to sediment discharges and whether it could name the District as Additional Insured in applicable policies.

81. **Permits.** WDFW has implied authority to apply for and accept permits necessary to implement construction activities subject to RCW 77.12.210. It did so for the Fir Island Farms Restoration Project.¹²³

E. Colville Tribes

82. The Colville Tribes are a federally recognized tribe located in northeastern Washington. Their reservation is 1.4 million acres. Their ancestral lands included the Similkameen River.

83. Colville Tribes have a Tribal Law and Order Code.¹²⁴ This authorizes the formation of government corporations and limited liability companies,¹²⁵ nonprofit

¹¹⁹ We expect to be able to secure indicative coverages and pricing for a comprehensive insurance program once a Feasibility Study (including its proposed measures for sediment management and discharge) has been completed and is available for review by underwriters.

¹²⁰ Washington Department of Enterprise Services (DES), <https://des.wa.gov/policies-legal/risk-management/commercial-insurance-policies>.

¹²¹ DES, <https://des.wa.gov/policies-legal/risk-management/enterprise-risk-management>.

¹²² As one example, DES permits a state agency to obtain excess liability insurance. This "protects the state's self-insurance liability program for damages in excess of the self-insured retentions that the state is legally obligated to pay arising from personal injury, property damage, advertising injury, or errors and omissions to a third party." WDES, <https://des.wa.gov/policies-legal/risk-management/commercial-insurance-policies#EL>. As a precedent, the Klamath River Renewal Corporation, as the DRE for the Lower Klamath Project, was able to secure general liability coverage for non-contaminated sediment, to supplement the coverage for contaminated sediment under a pollution liability policy.

¹²³ Interview with Karen Kuykendall, *supra*.

¹²⁴ <https://www.colvilletribes.com/current-code>.

¹²⁵ Tribal Code 7-1-2.

corporations,¹²⁶ and business corporations.¹²⁷ These different forms of corporation are intended to advance the economic and cultural interests of the Tribes.

“The Tribes and its members have endured a century of economic deprivation and oppression. This fact has been recognized by the Congress of the United States through numerous Acts intended to assist in the development of Indian resources. There is now a need and an opportunity to develop Colville natural resources and human resources to provide a standard of living and education to all tribal members equal to that of all citizens of the United States. The Tribes adopt this Chapter in order to meet the following independent goals;

- (1) carry out a constitutional mandate;
- (2) develop and manufacture tribal natural resources to obtain the highest value possible for those resources;
- (3) raise the standard of living and education for all Tribal members; and
- (4) enter into and take advantage of other business and commercial opportunities available to the Tribes.”¹²⁸

84. **Property Ownership.** Colville Tribes own lands off the Colville Reservation.¹²⁹ The Tribal Code authorizes tribal nonprofit corporations to hold any form of property interest, without regard to location.¹³⁰ It is less specific as to governmental corporations and LLCs, authorizing them to use those powers set out in their bylaws or operating agreements as applicable.¹³¹

85. The Tribal Code states a policy “... to restore, preserve, protect and perpetuate the fish and game resources (wildlife) on the Colville Indian Reservation, the

¹²⁶ Tribal Code 7-2-1.

¹²⁷ Tribal Code 7-3-1.

¹²⁸ Tribal Code 7-1-2(C).

¹²⁹ Tribal Code 7-1-10 authorizes a governmental corporation to do so, subject to certain requirements with respect to trust status.

¹³⁰ Tribal Code 7-2-5(d).

¹³¹ Tribal Code 7-1-9.

North Half, and off the Colville Reservation to the extent that wildlife passes through or would pass through the usual and accustomed fishing grounds and stations, hunting areas, or aboriginal lands of the Tribes.”¹³² This policy, in combination with Tribal Code Title 7, appear sufficient to authorize the acquisition of off-Reservation properties for the purpose of fisheries restoration. In fact, the Tribe has acquired many such properties using grants from Bonneville Power Administration and other sources.¹³³

86. **Permits.** Dam removal will be subject to various federal and State permits as specified in Appendix 1 of the 2022 Memo. The Tribal Code does not specify how Colville Tribes, as a sovereign nation, approaches State permits for off-Reservation activities. As a matter of practice, the Tribes have applied for and accepted such State permits, provided the terms were limited to the activities and did not address broader issues between the Tribes and State (such as hunting and fishing rights).¹³⁴

87. **Procurement Method.** The Tribal Code authorizes corporations to “make contracts and incur liabilities...”¹³⁵ It does not specify or prohibit any specific procurement method for a construction activity. As a matter of practice, the Tribes have used a Request for Proposal (RFP) for activities involving a complex design or construction methods. RFP is similar to design-build, where one contractor is responsible for design and construction.¹³⁶

88. The Tribal Code does not appear to resolve choice of law for a dispute between a tribal entity and a contractor, and specifically, whether the dispute is subject to the exclusive jurisdiction of the Tribal Court. As a matter of practice, the Tribes have tended to specify Tribal Court as the exclusive venue, although they have agreed to an arrangement where a dispute goes to a dispute panel (not arbitration) subject to appeal to U.S. District Court.¹³⁷

89. **Insurance.** The Tribal Code does not resolve whether a tribal corporate entity is to hold insurance with respect to a construction activity, and specifically, insure third parties such as the District. As a matter of practice, the Tribes have required

¹³² Tribal Code 4-1-2.

¹³³ Interview with Charissa Eichman, Office of Reservation Attorney (May 15, 2023).

¹³⁴ *Id.*

¹³⁵ Tribal Code 7-2-5(h).

¹³⁶ Interview with Charissa Eichman, *supra*.

¹³⁷ *Id.*

contractors to hold insurance, and the terms varied based upon the risks associated with the construction activity.¹³⁸

F. Washington State Business Structures

90. Washington State law permits various Business Structures.¹³⁹ The two relevant to this memo are: nonprofit corporation and limited liability company (LLC). We conclude that either form has the authorities sufficient to meet the DRE's responsibilities.

91. **Nonprofit Corporation.** This is a form of corporation exempt from income taxation due to its dedication to the public interest. That status creates eligibility for grants from charitable foundations and federal and state agencies.

92. Under the Washington Nonprofit Corporation Act of 2021,¹⁴⁰ a nonprofit corporation has "...perpetual duration and has the same powers as an individual to do all things necessary or convenient to carry out its affairs including, without limitation, power to:

- (1) Sue and be sued, complain[,] and defend in its corporate name; ...
- (4) Purchase, receive, lease, or otherwise acquire, and own, hold, improve, use, and otherwise deal with, real or personal property, or any legal or equitable interest in property, wherever located;
- (5) Sell, convey, mortgage, pledge, lease, exchange, and otherwise dispose of all or any part of its property; ...
- (7) Make contracts; make guarantees that may reasonably be expected to benefit, directly or indirectly, the guarantor corporation; incur liabilities; borrow money; issue notes, bonds, and other obligations; and secure any of its obligations by mortgage or pledge of any of its property or income; ...

¹³⁸ *Id.*

¹³⁹ Washington Secretary of State, "What are Washington State Business Structures?," available at: <https://www.sos.wa.gov/corporations-charities/frequently-asked-questions-faqs/what-are-washington-state-business-structures>.

¹⁴⁰ RCW 24.03A.005.

- (9) Be a promoter, partner, shareholder, member, trustee, associate, or manager of any partnership, joint venture, trust, or other entity;
- (10) Conduct its activities, locate offices, and exercise the powers granted by this chapter within or without this state; ...
- (16) Carry on a business, ...; and
- (17) Make payments or donations, or do any other acts, not inconsistent with law, that further the purposes, activities, and affairs of the corporation.”¹⁴¹

93. We conclude that a nonprofit corporation may be formed, or an existing nonprofit corporation may agree, to become the DRE. It will have the authorities necessary to hold property interests in Enloe Dam, enter into a procurement contract for removal of the dam (including use of alternative procurement methods), apply for and receive permits, and obtain a comprehensive insurance program, provided that its bylaws authorize such responsibilities. The Klamath River Renewal Corporation was formed to remove the Lower Klamath Project, taking advantage of a similar range of authorities available under California law.¹⁴²

94. **LLC.** This is a form of corporation designed to undertake activities while limiting the liability of its founders and members. “A limited liability company may be formed under this chapter for any lawful purpose, regardless of whether for profit. Unless this chapter, its certificate of formation, or its limited liability company agreement provides otherwise, a limited liability company has the same powers as an individual to do all things necessary or convenient to carry on its activities.”¹⁴³

95. We conclude that an LLC may be formed, or an existing LLC may agree, to become the DRE, and that it will have the authorities necessary to discharge all of the responsibilities, provided the LLC agreement¹⁴⁴ authorizes such responsibilities.

96. Governance is the primary difference between a nonprofit corporation and LLC in terms of suitability to become the DRE. Other things being equal, governance is

¹⁴¹ RCW 24.03A.140.

¹⁴² See <https://klamathrenewal.org>.

¹⁴³ RCW 25.15.031.

¹⁴⁴ RCW 25.15.006(8).

simpler for an LLC, given the standards of conduct¹⁴⁵ and procedures¹⁴⁶ for the Board of Directors of a nonprofit corporation.

97. It is possible that an existing nonprofit corporation may form an LLC to undertake dam removal, providing additional liability protection for its Board of Directors while retaining the nonprofit's capacity to raise charitable donations. This arrangement is being used by Mainspring Conservation Trust, a nonprofit land trust, which formed an LLC to undertake the removal of the Ela Dam on the Oconaluftee River in western North Carolina.¹⁴⁷

IV. **DUE DILIGENCE AFTER FEASIBILITY STUDY**

98. This memo is intended to provide directional guidance for the selection of a DRE after Trout Unlimited completes a Feasibility Study including conceptual design for removal of Enloe Dam. If the District and key stakeholders agree that dam removal is feasible, the identity of the DRE will be ripe for decision.

99. The selection of a DRE will be primarily driven by non-legal factors. Some of these factors are:

- Is any existing entity interested in assuming the burden of the DRE's responsibilities? If yes, is the entity prepared to resolve issues related to its legal authorities to undertake and complete this project on time and within budget? It would be useful for the entity to prepare its own analysis focusing on specific mechanisms or strategies to address any limitations in such authorities as necessary for the success of this project. We emphasize that a state agency (or BLM) may seek special legislation to establish or confirm its authorities necessary to be the DRE for Enloe Dam.
- Is an entity prepared to negotiate the Transaction Agreement with the District as the basis for proceeding into the Permit Phase, as recommended in paragraphs 74 – 76 of the 2022 Memo?

¹⁴⁵ RCW 24.03A.495.

¹⁴⁶ RCW 24.03A Part II Articles 1 (Members and Memberships), 2 (Delegates), 3 (Membership Meetings and Voting), 4 (Board of Directors), 5 (Meetings and Actions of the Board), and 6 (Officers).

¹⁴⁷ Mainspring Conservation Trust, <https://www.mainspringconserves.org/news/efforts-to-restore-the-oconaluftee-river-advances/>.

- Does an entity have the capacity to manage all aspects of Permit and Implementation Phases? There will be routine and multiple demands requiring real-time responses. Is that capacity internal or via consultants?
- How will key stakeholders cooperate in the governance of this project? Whoever the DRE will be, such cooperation will be critical for success.
- Does an entity have independent funding capacity, supplementing whatever grant funds are secured, in the event that the cost of project completion exceeds grant funds?

V.
CONCLUSION

100. From a legal perspective, several entities are potentially eligible to become the DRE and assume the responsibilities described in paragraphs 70 - 76 of the 2022 Memo. This memo is intended as guidance for the future deliberations of Trout Unlimited, the District, Tribes, and other key stakeholders, if the Feasibility Study supports a “go” decision for removal of Enloe Dam.

Attachment 1



Dam and Reservoir Plan of Development

DRAFT

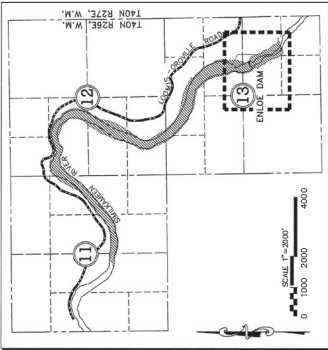
ORIGINAL SUBMITTED MAY 2010
REVISED OCTOBER 2013
REVISED NOVEMBER 2013

PREPARED BY



Sha i

VICINITY MAP



ACCESS ROAD CENTERLINE DATA

LINE NO.	BEARING	ASC. CURVE	CENTRAL ANGLE	CHORD LENGTH
L1	S 84°00'00" E	100.00'	180.00°	100.00'
L2	S 84°00'00" E	100.00'	180.00°	100.00'
L3	S 84°00'00" E	100.00'	180.00°	100.00'
L4	S 84°00'00" E	100.00'	180.00°	100.00'
L5	S 84°00'00" E	100.00'	180.00°	100.00'
L6	S 84°00'00" E	100.00'	180.00°	100.00'
L7	S 84°00'00" E	100.00'	180.00°	100.00'
L8	S 84°00'00" E	100.00'	180.00°	100.00'
L9	S 84°00'00" E	100.00'	180.00°	100.00'
L10	S 84°00'00" E	100.00'	180.00°	100.00'
L11	S 84°00'00" E	100.00'	180.00°	100.00'
L12	S 84°00'00" E	100.00'	180.00°	100.00'
L13	S 84°00'00" E	100.00'	180.00°	100.00'
L14	S 84°00'00" E	100.00'	180.00°	100.00'
L15	S 84°00'00" E	100.00'	180.00°	100.00'
L16	S 84°00'00" E	100.00'	180.00°	100.00'
L17	S 84°00'00" E	100.00'	180.00°	100.00'
L18	S 84°00'00" E	100.00'	180.00°	100.00'
L19	S 84°00'00" E	100.00'	180.00°	100.00'
L20	S 84°00'00" E	100.00'	180.00°	100.00'

LEGEND

- FOUND MONUMENT AS NOTED
- FOUND BEARING AS NOTED
- CALCULATED POINT ONLY; NOTHING FOUND OR SET
- SET 5/8" X 24" REBAR & CAP, L.S. 33098
- () RECORD USED DATA
- [] RECORD S.L.D. DATA
- FERC PROJECT BOUNDARY
- SECTION LINE
- QUARTER SECTION LINE
- CENTERLINE OF ABANDONED ROAD
- CENTERLINE OF ABANDONED PAVED ROAD
- ELEVATION CONTOUR, 10 FOOT INTERVAL

BASE OF BEARINGS

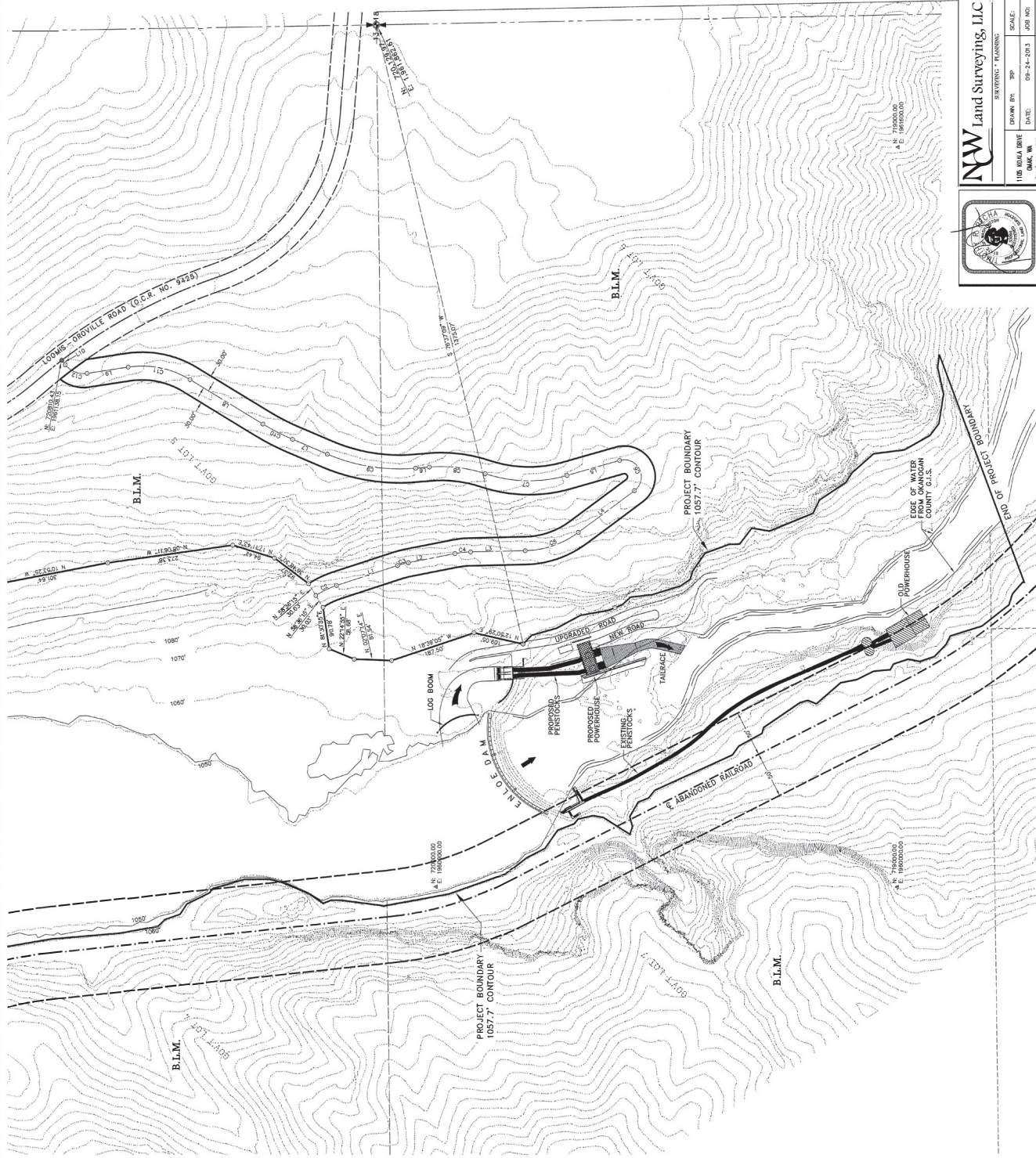
WASHINGTON STATE PLANE COORDINATE SYSTEM NORTH ZONE, NAD 83/2017 ADJUSTMENT, DERIVED FROM GPS OBSERVATIONS.

VERTICAL DATUM

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM, 1988 ADJUSTMENT (NAVD 88).

Public Utility District No. 1 of Okanogan County
 Enloe Hydroelectric Project
 FERC No. 12569

Exhibit C
 Sheet G-2



NW Land Surveying, LLC
 SURVEYING • PLANNING

DRAWN BY: JPP	SCALE: 1" = 100'
DATE: 09-24-2013	JOB NO: 11089
1105 KOLA DRIVE OMAK, WA (509) 824-7116	
DATE PLOTTED: 11-26-13 DWG NAME: EXHIBIT C V.DWG	

Attachment 2

March 25, 1911.

The Honorable,

The Secretary of the Interior.

Sir:

In accordance with your instructions, I recommend the withdrawal for water-power sites of the following areas involving 3,000 acres.

Very respectfully,

Director.

March 30, 1911.

Respectfully referred to the President with favorable recommendation.

(Signed) Walter L. Fisher.
Secretary.

ORDER OF WITHDRAWAL.

Power Site Reserve No. 179.

Similkamsen River, Washington.

It is hereby ordered that the following described lands be, and the same are hereby withdrawn from settlement, location, sale, or entry, and reserved for water-

power sites, subject to all the provisions, limitations, exceptions, and conditions contained in the Act of Congress entitled "An Act to authorize the President of the United States to make withdrawals of public lands in certain cases," approved June 25, 1910:

Willamette Meridian, Washington.

T. 40 N., R. 26 E., Sec. 4, lots 5, 6 and 7, S $\frac{1}{2}$ of SE $\frac{1}{4}$;
Sec. 5, lots 5, 6 7, and 8;
Sec. 7, lots 6 and 7;
Sec. 8, lots 1,2, and 4, NE $\frac{1}{4}$ of NE $\frac{1}{4}$;
Sec. 9, lots 1,2,3,4, and 5, S $\frac{1}{2}$ of NW $\frac{1}{4}$;
Sec.10, lots 1 to 8, inclusive, NE $\frac{1}{4}$ of
Sec.11, lots 1 to 8, inclusive, NE $\frac{1}{4}$ of
SE $\frac{1}{4}$ of SE $\frac{1}{4}$;
Sec. 12, lots 1 to 7, inclusive, W $\frac{1}{2}$ of
NE $\frac{1}{4}$, NE $\frac{1}{4}$ of NW $\frac{1}{4}$, W $\frac{1}{2}$ of SE $\frac{1}{4}$;
Sec. 13, lots 1 to 8, inclusive, NE $\frac{1}{4}$ of
NE $\frac{1}{4}$, S $\frac{1}{2}$ of NW $\frac{1}{4}$, E $\frac{1}{2}$ of SW $\frac{1}{4}$,
SW $\frac{1}{4}$ of SE $\frac{1}{4}$;
Sec. 24, N $\frac{1}{2}$ of NE $\frac{1}{4}$.

T. 40 N., R. 27 E., Sec. 18, lot 1, SE $\frac{1}{4}$ of SW $\frac{1}{4}$;
Sec. 19, lots 1 to 9, inclusive; NW $\frac{1}{4}$
NE $\frac{1}{4}$, SW $\frac{1}{4}$ of NW $\frac{1}{4}$, NE $\frac{1}{4}$ of SW $\frac{1}{4}$, SE $\frac{1}{4}$ of
NE $\frac{1}{4}$

(Signed) WM.M. TAFT,
President.

March 31, 1911.

Referred to the Commissioner of
the General Land Office for ap-
propriate action.

(Signed) Walter L. Fisher,
Secretary.

Waterville 010603

Order of Modification.

Power Site Reserve No. 179, created by Executive Order of March 31, 1911, under the provisions of the Act of Congress of June 25, 1910 (36 Stat., 847), is hereby modified in order to admit of the approval of the Secretary of the Interior of the application of the Oroville Land and Investment Company for right of way under the act of March 3, 1891 (26 Stat., 1095) and Section 2 of the act of May 11, 1898 (30 Stat., 404) from a point in Sec. 7, T. 40 N., R. 26 E., to a point on the east line of Sec. 19, T. 40 N., R. 27 E., W.M., Waterville, Washington, land district.

Nov. 23 _____, 1912.

Wm H. Taft,

President.

Order of Restoration No. 238.

Similkamean River, Washington.

So much of the order of withdrawal creating Power Site Reserve No. 179, Similkamean River, Washington, as affects the lands hereinafter described is hereby revoked, and hereby restored to the public domain and shall become subject to disposition under the laws applicable thereto upon such date and after such notice as may be hereafter determined upon and announced.

Willamette Meridian

T. 40 N. R. 26 E. Sec. 13, S $\frac{1}{2}$ of NW $\frac{1}{4}$, E $\frac{1}{8}$ of SW $\frac{1}{4}$.

Woodrow Wilson

President.

21 March 1917.

Jany 26.18. Copy to R.& R.

M.N.

C O P Y

128164

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
Washington

June 30, 1917.

The Honorable,

The Secretary of the Interior.

Sir:

In order that final power permit may be issued for the development of a powersite on Similkameen River, Washington, I recommend the issuance of the following order of modification.

Respectfully,

Geo. Otis Smith,
Director.

JUL 20, 1917
Respectfully referred to the
President with favorable recom-
mendation.

ORDER OF MODIFICATION

Power Site Reserve No. 179
Similkameen River, Washington.

The order of withdrawal of March 31, 1911, creating Power Site Reserve No. 179, affecting lands adjacent to Similkameen

River, Washington, is hereby modified to the extent of authorizing the Secretary of the Interior to issue final permit to the Okanogan Valley Power Company under the provisions of the act of February 15, 1901 (31 Stat., 790), to occupy and use certain lands of said reserve in T. 40 N., Rs. 26 and 27 E., Willamette Meridian, Washington, for the construction, maintenance, and operation of a reservoir, conduit, power house, and related works for power purposes.

Woodrow Wilson

23 July 1917.

Attachment 3



**DEPARTMENT OF
NATURAL RESOURCES**

AQUATIC RESOURCES DIVISION
1111 WASHINGTON ST SE
OLYMPIA, WA 98504-7027

360-902-1100
ARD@DNR.WA.GOV
WWW.DNR.WA.GOV

May 20, 2019

Curtis Bryan
Bureau of Land Management
Wenatchee Field Office
915 Walla Walla St
Wenatchee, WA 98801

Subject: State ownership assertion of the beds and shores of the Similkameen River beneath Enloe Dam

Dear Curtis,

This letter serves as notice of the current position of the Department of Natural Resources (DNR) regarding the ownership of the beds and shores of the Similkameen River beneath the footprint of the Enloe Dam.

Given that the Similkameen River was meandered by the General Land Office (GLO), DNR considers the entire river to the Canadian border to be navigable¹ and asserts state ownership of the beds and shores of the river that were not otherwise conveyed. However, in the specific case of the ownership of the beds and shores of the Similkameen River beneath the Enloe Dam, there are additional considerations that must be addressed prior to determining ownership assertion.

First, individual reaches of a waterbody may be considered non-navigable because of obstructions such as rapids or waterfalls without affecting the navigability status of the entire river. Coyote Falls are located immediately downstream of Enloe Dam and may create a non-navigable stretch of river. Additionally, the original conditions of the river before the dam was installed are not known. Given that dams were generally located where geography would assist in creating head pressure for power generation, additional non-navigable stretches of river may extend behind the dam as well.

Second, on March 31, 1911, the federal government created Power Site Reserve No. 179. This Power Reserve was subsequently modified in 1917. There is additional correspondence between the Washington State Department of Public Lands, the Okanogan Valley Power Company, and the General Land Office indicating the state was aware of and had no objections to the withdrawal of state lands for the purposes of building Enloe Dam and reservoir.

¹ By definition, the state of Washington considers all bodies of water meandered by government surveyors as navigable unless otherwise declared by a court (WAC 332-30-106(41))

Finally, RCW 90.28.170 (Ch. 95 Sec 1, Laws of 1911) allows for the construction of dams across the beds of rivers in the state for power and irrigation purposes. It is unclear to what extent this statute applies to the activities undertaken to construct Enloe Dam.

When the above considerations are overlaid onto the navigability status of the Similkameen River, DNR has concluded that it will not seek an authorization for Enloe Dam as it exists today or for its reservoir. DNR reserves the right to modify or reverse this decision should additional information be found. DNR would still like remain involved in the decision making processes and activities surrounding the disposition of Enloe Dam given the management authorities we retain immediately up and down river from Enloe Dam.

If you have any questions about the position described here or need any additional information, please do not hesitate to contact me at (360) 902-1075 or by email at michal.rechner@dnr.wa.gov.



Michal Rechner
Aquatic Resources Assistant Division Manager

Cc: Tim Thompson, Thompson Consulting Group
Jeri Timm, Okanogan PUD Director of Regulatory and Environmental Affairs

Attachment 4

IN REPLY PLEASE REFER TO ~~W~~ Waterville 012740 "F" MN.

961
root

DEPARTMENT OF THE INTERIOR

GENERAL LAND OFFICE

WASHINGTON

December 7, 1920.

ADDRESS ONLY THE
COMMISSIONER OF THE GENERAL LAND OFFICE

RECEIVED
DEC 13 1920
COMMISSIONER PUB. LANDS

Mr. C. V. Savidge,
Commissioner of Public Lands,
Olympia, Washington.

My dear Sir:

In reply to your letter of the 8th ultimo, you are advised that, January 9, 1918, the First Assistant Secretary of the Interior granted the Okanogan Valley Power Company a final permit, pursuant to the provisions of the act of February 15, 1901 (31 Stat., 790), to use the right of way for diversion dam, reservoir, conduit, power-house, and appurtenant structures, and electric transmission line, in T. 40 N., Rs. 26 and 27 E., W. M., Waterville, Washington land district. Copy of the permit and of the map showing the project is on file in the district land office, where they may be inspected, or, if desired, copies of the originals on file in this office will be furnished upon receipt of the estimated cost thereof, to wit: \$5.00.

Return to Mr. Doherty
No Answer

Very respectfully,

John M. Paul
Acting Assistant Commissioner.

Doherty
re Okanogan Valley
12-1-ABC *Power Co's*
daw

469-
X

November 8, 1920.

Commissioner of the General Land Office,
Washington, D. C.,

Dear Sir:

Receipt is acknowledged of yours of the 2nd instant enclosing copy of executive order of March 31, 1911, creating power site reserve No. 189 together with two orders modifying said reserve and I desire to thank you for same.

Information is requested regarding the permit issued to the Okanogan Valley Power Company for the construction, maintenance and operation of a reservoir, conduit, powerhouse, and related works for power purposes. As you are probably aware, the State of Washington claims the beds and shores of all navigable and meandered streams and this data is desired to eliminate the possibility of accepting applications which might conflict with certain rights granted by the government.

Very truly yours,

ECD:S

Commissioner.

Return to Mr. Dehm

IN REPLY PLEASE REFER TO ~~127~~

951713 "F" CBB

1 Inc.

CBB

1920
[Signature]

DEPARTMENT OF THE INTERIOR

GENERAL LAND OFFICE

WASHINGTON

November 2, 1920.

ADDRESS ONLY THE
COMMISSIONER OF THE GENERAL LAND OFFICE

RECEIVED
NOV 8 - 1920

COMMISSIONER PUB. LANDS

Commissioner of Public Lands,
Olympia, Washington.

My dear Sir:

In reply to your request of October 14, 1920,
there is transmitted herewith a copy of Executive Order
of March 31, 1911, creating Power Site Reserve No. 179.
Also copies of two orders modifying said reserve.

There is no map of this reserve on file in
this office.

Very respectfully,

[Signature]

Acting Assistant Commissioner.

~~Return to Mr. Dohm~~

10-29 MD

2 m D
in a file
Reserve No. 179

OKANOGAN VALLEY POWER COMPANY

521 FIRST AVENUE
SPOKANE, WASHINGTON

EUGENE ENLOE, PRESIDENT RAYMOND ENLOE, VICE PRESIDENT
W. C. SIVYER, SECRETARY AND TREASURER

Oct. 25, 1920.

OPERATING IN WASHINGTON

BRIDGEPORT
MANSFIELD
RIVERSIDE
OKANOGAN
BREWSTER
PATEROS
OMAK
OROVILLE
TONASKET

a
at
RECEIVED
OCT 27 1920
COMMISSIONER PUB. LANDS

Mr. C. V. Savidge,
Commissioner,
Olympia, Wash.

Dear Sir:

Replying to yours of the 22d, the Government permit for Dam on Similkameen River, is quite a bulky document, and we have but one copy. I therefore, am not in a position to send you a copy. The contract is made with the Interior Department, and signed "Alexander T. Vogel-sang". It is probable that the forms under the new law would be different, but see no reason why the Interior Department should not furnish you a copy of the standard contracts, or special ones if you desire.

Yours truly,

OKANOGAN VALLEY POWER COMPANY,

EE:B

BY Eugene Enloe

*Mr. John
re permit
for Similkameen
Dam*

*W. Amos
Return to Mr. Dohm*

a
/x

October 22, 1920.

Okanogan Valley Power Company,
521 First Ave.,
Spokane, Washington.

Gentlemen:

Receipt is acknowledged of yours of the 20th inst., regarding permit from the government covering your dam in the Similkameen River and I desire to thank you for the information contained therein.

If possible I would appreciate a copy of your permit from the government or information as to where such a copy could be procured from the Federal Bureau issuing same.

Very truly yours,

ECD:S

Commissioner.

Return to Mr. Dohm.

OKANOGAN VALLEY POWER COMPANY

521 FIRST AVENUE
SPOKANE, WASHINGTON

EUGENE ENLOE, PRESIDENT RAYMOND ENLOE, VICE PRESIDENT
W. C. SIVYER, SECRETARY AND TREASURER

OPERATING IN WASHINGTON

BRIDGEPORT
MANSFIELD
RIVERSIDE
OKANOGAN
BREWSTER
PATEROS
OMAK
OROVILLE
TONASKET

Oct. 20, 1920.

RECEIVED
OCT 22 1920
OCT 22 1920
COMMISSIONER PUB. LANDS

Mr. C. V. Savage,
Commissioner,
Olympia, Wash.

Dear Sir:

Reply to your letter of the 7th inst. has been delayed on account of the writer being out of the city. Replying to same will say we have a regular water power permit from the Government giving us the right to build a Dam some 60' high in the Similkameen River, in Township 40 N. Range 26 & 27 E.

As we understand the matter this permit takes precedence over any other rights in the land covered, all of the land submerged being on Government land. A survey has been made and the ground located, and a blue print showing it has been made, but we haven't a copy in the office at this time.

Hoping this information will answer your purpose, we are

Yours truly,

OKANOGAN VALLEY POWER COMPANY,

EE:B

BY

Eugene Enloe

*Mr. C. V. Savage
Olympia, Wash.
Oct 22 1920*

969^v
—
7

October 14, 1920.

Mr. S. S. Beggs, Receiver,
U. S. Land Office,
Waterville, Washington.

Dear Sir:

Receipt is acknowledged of copy of power-
site reserve No. 179 for which we wish to thank
you. Your prompt attention to this matter is
appreciated.

Very truly yours,

S

Commissioner.

Return to Mr. Dohm

October 14, 1920.

Commissioner of General Land Office,
Washington, D. C.

Dear Sir:

We have on file in this office certain applications affecting the beds and shores of the Similkameen River through township 40 north, range 26 east, and I am advised by the local land office that certain areas in this township were withdrawn by executive order dated March 31, 1911, and reserved for waterpower sites as power-site reserve No. 179.

I would appreciate a copy of a map showing this reserve and also a copy of the executive order relating to same. If you cannot furnish this information kindly advise me where same can be obtained.

Very truly yours,

ECD:S

Commissioner.

DEPARTMENT OF THE INTERIOR

UNITED STATES LAND OFFICE

.....Waterville, Washington.....
(Place)

.....October 12, 1920.....
(Date)

RECEIVED
OCT 14 1920
COMMISSIONER PUL. LANDS

Mr. C. V. Savidge
Commissioner of Public Lands
Olympia, Washington

Sir:

Replying to yours of the 11th inst, I am inclosing, herewith, a copy of power-site reserve No. 179 by Executive Order March 31, 1911. We have no maps in this office showing the portions so reserved, and I would suggest that you write to the General Land Office at Washington in the event that you are compelled to have one.

Very respectfully,

M. B. Beggs
Receiver.

SSB/RG

*John
re power site
reserve*

DEPARTMENT OF THE INTERIOR
UNITED STATES LAND OFFICE

RECEIVED
OCT 14 1920
COMMISSIONER PUB. LANDS

(Place)

WASHINGTON

April 11, 1911

(Date)

: Power-Site Reserve No. 179
: Similkameen River, Washington

Register and Receiver.

Waterville, Washington

Sir:

By Executive Order of March 31, 1911, the herein after described lands along Similkameen River, Washington, involving 3,000 acres, were withdrawn from settlement, location, sale or entry and reserved for water power sites as power site reserve No. 179, subject to all the provisions, limitations, exceptions and conditions contained in the act of June 25, 1910 (36 Stat., 847).

Willamette Meridian, Washington

T. 40 N., R. 26 E., Sec. 4, lots 5, 6 and 7, S $\frac{1}{2}$ SE $\frac{1}{4}$;
 Sec. 5, lots 5, 6, 7 and 8;
 Sec. 7, lots 6 and 7;
 Sec. 8, lots 1, 2 and 4, NE $\frac{1}{4}$ NE $\frac{1}{2}$;
 Sec. 9, lots 1, 2, 3, 4, 5, and S $\frac{1}{2}$ NW $\frac{1}{4}$;
 Sec. 10, lots 1 to 8, inclusive, NE $\frac{1}{4}$ NW $\frac{1}{4}$;
 Sec. 11, lots 1 to 8, inclusive,
 NE $\frac{1}{4}$ NE $\frac{1}{2}$ and SE $\frac{1}{4}$ SE $\frac{1}{4}$;
 Sec. 12, lots 1 to 7, inclusive,
 W $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{2}$, W $\frac{1}{2}$ SE $\frac{1}{4}$;
 Sec. 13, lots 1 to 8, inclusive, NE $\frac{1}{4}$ NE $\frac{1}{4}$,
 S $\frac{1}{2}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$;
 Sec. 24, N $\frac{1}{2}$ NE $\frac{1}{4}$

DEPARTMENT OF THE INTERIOR

UNITED STATES LAND OFFICE

(Place)

(Date)

T. 40 N., R. 27 E., Sec. 18 lot 1, SE $\frac{1}{4}$ SW $\frac{1}{4}$;
Sec. 19, lots 1 to 9, inclusive,
NW $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$.

You are directed to note the withdrawal by
Executive Order against the lands on your office records
and report action to this office.

Very respectfully,

(Signed) S. D. Proudfit
Assistant Commissioner

969

X

October 11, 1920.

Mr. S. S. Beggs, Receiver,
U. S. Land Office,
Waterville, Washington.

Dear Sir:

Receipt is acknowledged of yours of the 8th inst., stating that certain portions of township 40 north, range 26 east have been withdrawn as reservoir sites and information is requested as to where we can secure a map showing the portions so reserved and the proclamation covering the withdrawal.

Very truly yours,

ECD:S

Commissioner.

RECEIVED BY THE LANDS

DEPARTMENT OF THE INTERIOR

UNITED STATES LAND OFFICE

Waterville, Washington

(Place)

October 8, 1920

(Date)

RECEIVED
OCT 11 1920

COMMISSIONER PUB. LANDS

Mr. C. V. Savidge
Commissioner of Public Lands
Olympia, Washington

Sir:

In answer to your letter of October 7, regarding power site reserves in Township 40 North, Ranges 26 and 27 East, will say that there are no power site reserves in either of these townships. However, in Sections 4, 5, 7, 8, 9, 10, 11, 12, 13, and 24, T. 40 N., R. 26 E. W. M., there is land which has been withdrawn as reservoir sites.

The authority under which power site reserves are created is by presidential proclamation.

Very respectfully,

H. S. Beggs
Receiver

RG

Account to Mr. Savidge

*re power site
reserves*

969
7

October 7th, 1920.

Register and Receiver
U. S. Land Office
Waterville, Wash.

Dear Sir:-

Information is requested regarding any power site reserves, if any, which have been set aside in townships 40 north, 26 east and 40 north, 27 east on the Similkameen River.

Information is also requested as to the authority under which reserves of this nature are created.

As we have certain applications pending which might be affected by any reserves on this river, an early answer will be appreciated.

Very truly yours,

McD
McD

Commissioner.

Return to Mr. Dohm

a.
x

October 7th, 1920.

Okanogan Valley Power Co.
Spokane, Washington

Gentlemen:-

We have recently been advised that your company has secured from the Federal Government certain rights on the Similkameen River, thru township 40 north, range 26 east and information is requested regarding the nature of the rights secured and the authority for the grant. For your information I will state that we have certain applications pending affecting the beds and shores of the Similkameen River through this township and do not wish to conflict with any prior rights you may have secured.

An early reply will be greatly appreciated.

Very truly yours,

ECD
McD

Commissioner

Return to Mr. Dehm

Attachment 5

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT ~~TEMPORARY USE PERMIT~~

Issuing Office

Spokane District

Serial Number

OR 45490

1. A (right-of-way) ~~permit~~ is hereby granted pursuant to:

- a. Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);
- b. Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);
- c. Other (describe) _____

2. Nature of Interest:

a. By this instrument, the holder Okanogan County Public Utility District No. 1 receives a right to ~~construct~~ operate, maintain, and terminate ~~a~~ power generating facilities 1/ on public lands ~~(as defined in 43 U.S.C. 1702) (as of May)~~ described as follows:

Okanogan County Washington

T. 40 N., R. 26 E.

Sec. 12: Portion of Lots 1-7

Sec. 13: Portion of Lots 1-7

1/ Facilities authorized include, but are not limited to, reservoir pool, dam and associated structures, penstocks and surge tanks, powerhouse and associated structures, and north bank access and parking lot, existent upon effective date of the Grant and inclusive of all federal land lying below the 1055' contour as shown on Exhibit A.

b. The right-of-way ~~is hereby granted to the holder for the purpose of operating, maintaining, and terminating power generating facilities on public lands (as defined in 43 U.S.C. 1702) (as of May)~~ contains 49 acres, more or less. ~~It shall be subject to the terms and conditions of this instrument and any applicable Federal law or regulation.~~

c. This instrument shall terminate ~~on the expiration of ten (10) years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.~~ 10 years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

d. This instrument may may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

OR 45490

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

- a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.
- b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands _____ or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.
- c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.
- d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A and B, dated APR 3 1991, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.
- e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.
- f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF. The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

X [Signature]
(Signature of Holder)

David E Sinclair
(Signature of Authorized Officer)

X President
(Title)

acting District Manager
(Title)

X 3-26-91
(Date)

APR 3 1991
(Effective Date of Grant)

EXHIBIT "B"

ADDITIONAL TERMS, CONDITIONS, AND STIPULATIONS

1. This grant is issued subject to reconveyance of Recreation and Public Purposes Act Patent No. 1234121 to the United States.
2. This grant is renewable subject to Holder's satisfactory compliance with all grant requirements and acquisition of a FERC license authorizing Project No. 10536-000. If renewed, the grant will be renewed for a period coincident with said FERC license.
3. Holder agrees that rental shall be paid annually, in advance, subject to Bureau of Land Management's right to reappraise and collect additional fair market value rental when warranted.
4. The Secretary of the Interior, or his lawful delegate, reserves the right to grant additional rights-of-way or permits for compatible uses on, over, under, or adjacent to this grant.
5. The Authorized Officer, or his representative, may at any time inspect the on site construction, maintenance, and operation of Holder's project. Officials of State and other Federal agencies may also inspect such activities if necessary to the performance of official duties relating to the project. The right to inspect includes the right to use private roads belonging to the Holder in order to reach the site.
6. Holder, at least thirty (30) days prior to start of construction, reconstruction, or any surface disturbing activity shall notify the Authorized Officer of the intent to proceed with such work, the date it is to commence, and the delegated representative of Holder. Such delegated representative is the person authorized by Holder to carry out the terms and conditions of the grant and act on behalf of the Holder. The notice of the delegated representative shall include a current mailing address and telephone number.
7. If an archaeological resource is discovered during project operations, the Holder shall stop ground-disturbing activities and immediately notify the Authorized Officer. Ground disturbing activities shall remain suspended until a survey of the material is completed by an archaeologist acceptable to the Authorized Officer, including but not limited to archaeological salvage or protective measures to protect and preserve the materials. Such materials shall remain the property of the United States.
8. Holder shall remove or dispose of all waste in a manner consistent with federal, state, and local laws. Waste means all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, and equipment.
9. The United States will not be liable for any damage which may occur to facilities authorized by this grant, as a result of fire, wind, or other natural disasters, or as a result of its management of the public lands.

10. The Authorized Officer may order revocation or suspension of this grant, after notice and hearing, upon a final administrative finding of a violation of any term or condition of this grant, including, but not limited to, terms and conditions requiring compliance with regulations under Acts applicable to the public lands and compliance with applicable State or Federal air or water quality standard or implementation plan: Provided, That such violation occurred on public lands covered by this grant and occurred in connection with the exercise of rights and privileges granted by it: Provided further, That the Authorized Officer shall terminate any such suspension no later than the date upon which he determines the cause of said violation has been rectified: Provided further, That the Authorized Officer may order an immediate temporary suspension prior to a hearing or final administrative finding if he determines that such a suspension is necessary to protect health or safety or the environment: Provided further, That, where other applicable law contains specific provisions for suspension, revocation, or cancellation of a permit, license, or other authorization to use, occupy, or develop the public lands, the specific provisions of such law shall prevail.
11. Pesticide use shall comply with applicable Federal and State laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to pesticide use, Holder shall obtain from the Authorized Officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the Authorized Officer. Emergency pesticide use shall be approved in writing by the Authorized Officer prior to such use.
12. Holder shall comply with Toxic Substances Control Act of 1976 as amended (15 USC 2601 et seq. (1982)), regarding any toxic substances that are used, generated by, or stored on the right-of-way or in facilities authorized under this grant (40 CFR, Part 702-799, especially provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Any release (leaks, spills, etc.) of toxic substances in excess of the reportable quantity established by 40 CFR, Part 117, shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of toxic substances shall be furnished the Authorized Officer concurrent with filing of the report to the involved federal or state agency.
13. Holder agrees to indemnify the United States against any liability arising from the release or threatened release of any toxic substances on the right-of-way, or resulting from activity on the right-of-way.
14. Holder shall provide aerial photography and/or drawings of the existing facilities within one (1) year following issuance of this right-of-way. Said drawings shall be referenced to the cadastral survey grid. In the event a FERC license is granted for Project No. 10536-000, and reconstruction or renovation is begun within one (1) year following issuance of this right-of-way, "as built" drawings shall be submitted within 180 days of project completion.
15. Holder agrees to file all FERC applications, and applications for amendment, simultaneously with BLM.

16. Holder shall protect all survey monuments, witness corners, reference monuments, and bearing trees against destruction, obliteration, or damage. If a corner point (Monument) is in danger of being lost or damaged, the corner shall be referenced in such a manner that the point can be reestablished and remonumented or rehabilitated after construction. If a bearing tree or other corner accessory is damaged or lost, a new corner accessory shall be properly marked and referenced to the corner. All work shall be performed by a registered professional land surveyor who shall file a full and complete record of all action taken with the appropriate county surveyor's office. A copy of the record shall be sent to the State Director, Bureau of Land Management, P.O. Box 2965, Portland, Oregon 97208.

Attachment 6

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
RIGHT-OF-WAY GRANT

Issuing Office
WFO

Serial Number
WAOR-69895

1. A (right-of-way) (permit) is hereby granted pursuant to:

- a. Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);
- b. Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);
- c. Other (describe) _____

2. Nature of Interest:

- a. By this instrument, the holder, Okanogan Public Utility District No. 1, receives a right to construct, operate and maintain the Enloe Dam Safety Repair and Maintenance Project on public lands (or Federal land for FLPMA Rights-of-Way) described as follows:

Willamette Meridian, T. 40 N., R. 26 E., Sections 13; T. 40 N., R. 27 E., Sections 18 and 19.

- b. The right-of-way or permit area granted herein is approximately _____ feet wide, _____ feet long and contains 9.550 acres, more or less. If a site type facility, the facility contains _____ acres.
- c. This instrument shall terminate on December 31, 2071, 50 years from its effective date unless, prior hereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.
- d. This instrument may may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.
- e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

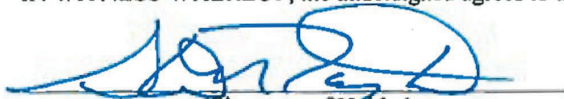
3. Rental

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined, by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions

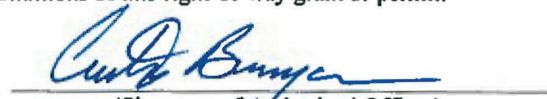
- a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.
- b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 120 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.
- c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.
- d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A and B, dated 12/19/2019, attached hereto, are incorporated in to and made part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.
- e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.
- f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, the undersigned agrees to the terms and conditions of this right-of-way grant or permit.


(Signature of Holder)

General Manager
(Title)

3-10-2021
(Date)


(Signature of Authorized Officer)

Field Manager, Wenatchee Field Office
(Title)

Signed Date: 3/29/21

3/29/21
(Effective Date of Grant)

Attachment 7

Focus on: Future of Enloe Dam



Enloe Dam is owned by the Okanogan Public Utility District (OPUD) and located on north central Washington's Similkameen River. It was constructed by the Okanogan Valley Power Company in the early 1920s to provide power to nearby communities. However, the dam has not operated or provided any benefits since hydropower production ceased in 1958. In the fall of 2018, the Okanogan Public Utility District (OPUD) determined that it would be uneconomical to repower the dam. The OPUD and interested parties are now considering the future of the facility, and with that, the future aquatic resources of the Similkameen River.

Fish production potential

Natural resource agencies, tribes and interested parties have long inquired about the fish production potential above Enloe Dam. Based upon a survey conducted in 1983, the river supports more than 340 miles of potential salmon and steelhead habitat, including access to substantial cold water spawning and rearing habitat in Washington and British Columbia. Just downriver of the dam is a falls, known as Similkameen Falls or Coyote Falls. While historically considered a barrier to upstream migration of salmon and steelhead (including a variety of interpretations of a tribal legend about coyote blocking the river to salmon), there is historical evidence of anadromous fish above the falls and the dam site. As recent as 2020, Chinook salmon were observed above the falls at the base of Enloe Dam. If Chinook can ascend the falls, it is likely that higher-jumping steelhead can as well. Furthermore, the Similkameen flows into the Okanogan River at the town of Oroville, which continues to the Columbia River. This connection provides opportunity for supporting regional and ocean fisheries.

Assessing the future of Enloe Dam

Now that OPUD has decided not to pursue repowering the dam, a number of state and federal agencies, tribes and organizations are interested in the future of the dam. There are at least two options to consider: leave the dam in the river or remove it.

Leaving the dam in place is the status quo and requires OPUD to be responsible for the ongoing cost and liability of safely managing the dam. To date, OPUD has demonstrated the ability and provided resources to do this. Although leaving the dam in place would avoid a substantial investment in dam removal, the structure is a barrier to habitat connectivity in and along the river. This includes blocking the passage of fish, such as Upper Columbia Spring Chinook salmon and steelhead, listed under the U.S. Endangered Species Act.

Removing the dam and restoring the impacted area would return the landscape to a more natural configuration and have significant environmental benefits. However, dam removal, including managing the sediment trapped behind the dam, will require substantial funding. OPUD is not actively pursuing this option due to the uncertainty about the cost of dam removal, who would be responsible for it, and who would pay for it, but it has expressed openness to considering the option.

Where are we now?

The OPUD is currently making repairs to the penstocks as part of compliance with State Dam Safety Regulations. This will allow them to regain some control of flow over the dam and to assess the structural integrity of the dam. The repair work improves OPUD's operational capabilities at the dam while the assessment will provide structural safety information. These outcomes support ongoing safety needs as well as dam removal.

Sediment surveys and investigations were conducted by the U.S. Geological Survey in 2019 and 2020 to determine sediment volume and contamination. A report should be complete by Spring 2021 and will help inform how to manage the sediment. It will also inform a conceptual dam removal plan being commissioned by the Confederated Tribes of the Colville Reservation from the company Interfluve.

The Colville Tribes, local and national non-governmental conservation organizations, federal agencies, and Washington state agencies have expressed interest in working with the OPUD to assess the feasibility and cost of dam removal. Once these parties have a clearer idea of the cost and any technical challenges associated with dam removal, it will be possible to develop a funding plan and timeline.

Interested Washington state agencies include:

Department of Fish and Wildlife

The Department of Fish and Wildlife seeks to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. It plays an important role in promoting, assessing, and implementing salmon and steelhead recovery in the Columbia Basin and statewide, and permits and provides technical advice for dam removals and other restoration projects. Contact Michael Garrity at 360-810-0877 or michael.garrity@dfw.wa.gov

Recreation and Conservation Office Salmon Recovery Funding Board

The board is a governor-appointed group charged with administering federal and state funding to restore salmon populations. The Recreation and Conservation Office provides support to the board and manages the distribution of that funding to acquisition and restoration projects. Fish passage construction projects, along with all levels of feasibility, design, and permitting are eligible grant activities. Grant applications are accepted yearly, beginning in March and concluding in June, with funding decisions in September. Contact Marc Duboiski at 360-867-8646 or marc.duboiski@rco.wa.gov

Department of Ecology

Ecology's Dam Safety Office (DSO) ensures OPUD manages the dam safely. DSO is working with them on their penstock repair project and will permit dam removal if that option is pursued. Ecology also ensures actions at the dam comply with regulations for water quality, toxic sediments, and environmental review. Ecology completed this for the repair project and would be involved in any effort to remove the dam. Contact Sage Park at 509-457-7120 or sage.park@ecy.wa.gov

Department of Natural Resources

DNR manages state-owned aquatic lands, which are lands defined by the Washington State Constitution and further clarified by state and federal laws. DNR will continue to engage in management of the Similkameen River consistent with the guidelines of its jurisdiction. The Similkameen River was meandered (a type of survey) by the federal government. Based on this, DNR considers the entire river to the Canadian border to be navigable, asserting state ownership of the beds and shores of the river that were not otherwise conveyed. However, given the uncertainties regarding ownership in the immediate vicinity of Enloe Dam, DNR has concluded that it will not seek a use authorization for Enloe Dam as it exists today or for its reservoir. Contact Thomas Gorman at 360-701-7692 or thomas.gorman@dnr.wa.gov

ADA accommodations

To request ADA accommodation, call Ecology at 360-407-6872, email WRpubs@ecy.wa.gov or visit <https://ecology.wa.gov/accessibility>. For Relay Service or TTY call 711 or 877-833-6341.

Appendix E: Sediment Removal and Options Memorandum

Technical Memorandum

April 14, 2023

To: Warren Colyer and Lisa Pelly, Trout Unlimited
From: Michael Whelan, PE, and Kyle Gustafson, PE, Anchor QEA, LLC
cc: Heather Page and Chris Andersen, Anchor QEA, LLC

Re: Enloe Dam Removal Project – Sediment Removal and Management Options

The Enloe Dam, located on the Similkameen River (river) northwest of Oroville, Washington, is being considered for removal to allow access to improved river habitat and support recovery of impacted fish populations. Sediment that has accumulated behind the dam may need to be removed and managed to support dam removal, while avoiding adverse impacts to aquatic resources downstream as well as properties adjacent to the river. Determining how to manage the accumulated sediment is a critical project consideration and cost driver for planning efforts associated with dam removal.

The purpose of this technical memorandum is to document the results of a desktop study of sediment removal and management options related the removal of Enloe Dam. This document will discuss the characteristics of the accumulated sediment, potential methods for removal, placement alternatives, environmental and construction permitting considerations, and a preliminary cost estimate for sediment removal.

Executive Summary

This technical memorandum summarizes an assessment of sediment management at Enloe Dam and has been prepared to aid in the feasibility evaluation of dam removal. There is currently approximately 2.94 million cubic yards (cy) of accumulated sediment behind Enloe Dam that must be managed during dam removal activities. Previously conducted sediment characterization studies were reviewed to inform this memo, including work conducted by the US Geological Survey (USGS) and the Washington State Department of Ecology (Ecology). Sediment composition, including grain size distribution and chemical contamination, is discussed based on the findings from the USGS and Ecology studies. These studies found the sediment is predominantly fine- to medium-grain sand with some silt and coarse-grained material and pebbles, without significant horizontal bedding structure apparent in the deposit.

Certain metals, including arsenic, were found to be present in the sediment at elevated concentrations, likely enhanced by historic mining and milling operations in the upstream watershed. The distribution of elevated metals concentrations is not uniformly distributed, varying depending on depth and proximity to the dam. While certain metals were found at relatively elevated

concentrations, the Ecology study indicated that sediment would not be considered a dangerous or hazardous waste by state or federal regulations.

Sediment removal techniques relevant to site conditions are presented, including staged sediment release downstream, mechanical dredging, hydraulic dredging, and the use of traditional (land-based) excavation equipment. The use of land-based excavation equipment, paired with a staged lowering of the impoundment water level, appears well-suited to site and sediment conditions, in part because it reduces the need to implement extensive sediment dewatering operations. Sediment placement and disposal options are discussed, including opportunities for beneficially using portions of the removed sediment volume. Additional work is required to identify and obtain approvals for a feasible area for final sediment placement or disposal, which will involve additional discussions with Bureau of Land Management (BLM) and potentially with local land and business owners.

Environmental and construction permitting are discussed, including regulatory classification of the sediment that would be removed, and how permitting efforts may affect sediment management techniques. Additional sampling and data collection needs will be driven in part by discussions with relevant permitting and environmental agencies in future phase(s) of this effort.

A preliminary cost estimate is presented that includes a range of potential sediment removal quantities. A preliminary cost projection for removing all accumulated sediment and placing the material on an adjacent land parcel is approximately \$90,000,000, but costs would rise significantly, to as much as \$290,000,000 in the cost projection presented here, if disposal at a commercial landfill is required.

In conclusion, sediment management will be a major consideration in the feasibility assessment of dam removal. Several construction methods appear well suited to sediment management, but additional clarification is anticipated as part of subsequent feasibility studies on topics of permitting, final sediment placement or disposal, and potential sediment removal volume.

Overview

Enloe Dam (hereafter referred to as the dam) was constructed in the early 1920s to provide a source of hydropower to Oroville, Washington, and customers in the Okanogan Valley. Hydropower generation at the dam ceased in 1958, but the dam remains in place on the river (Inter-Fluve 2021). Currently, the dam does not produce electricity, provide flood protection, or act as a point of irrigation diversion. Dam removal is being considered by Trout Unlimited, the Confederated Colville Tribes, and other interested parties to open access to cold water habitat, strengthen native anadromous salmonid populations, improve fishing opportunities, and reconnect natural processes such as gravel recruitment and debris transport downstream.

A significant aspect of dam removal will be to determine how to effectively manage the sediment that has accumulated behind the dam. Dams prevent the natural transport of sediment, which

typically accumulates upstream of the structures due to the barrier formed by the dam, the decreased flow velocity in the upstream river reach, and the lack of downstream transport options. The most recent estimate of the volume of sediment accumulated behind the dam is between 2.78 million and 2.94 million cy, which was measured by USGS using a bathymetric survey conducted in 2020 (USGS 2022a).

Three sediment management alternatives were identified for dam removal in previous studies (Inter-Fluve 2016, 2021):

- Passively allowing the accumulated sediment to transport naturally downstream after dam removal
 - This alternative would involve no sediment removal via dredging, and all accumulated sediment would be eventually be released downstream, particularly during high runoff or flood events.
- Dredging and disposal of all accumulated sediment prior to dam removal
- A combination of those two approaches
 - An intermediate situation between releasing all material downstream and dredging all the accumulated sediment

Releasing all the accumulated sediment downstream would be expected to impact downstream segments of the river, especially in areas with reduced channel slopes, although it would re-establish a form of natural riverine sediment transport that existed historically, prior to dam construction. A preliminary study concluded that whatever sediment is released will tend to redistribute downstream in the channel between the towns of Oroville and Tonasket due to reduced channel slope (Inter-Fluve 2021). Fine grained material that does not end up deposited in this channel reach will likely be further transported past the area with reduced channel slope. Releasing a considerable volume of accumulated sediment could therefore reconfigure sediment deposition patterns, create an expansion of the floodplain, and impact habitat and properties adjacent to the river.

Meanwhile, dredging or excavating the sediment behind the dam will significantly affect the logistics and economic realities of dam removal due to its relatively high costs. Dredging can be very expensive and requires identification of a suitable location for disposing of the sediment as part of any viable alternative, as is discussed further herein.

Review of Sediment Conditions

Several studies have been conducted on either the dam or the accumulated sediment within the dam impoundment (Nelson 1972; Entrix 2007; Inter-Fluve 2016, 2021; USGS 2022a; Ecology 2023). Findings from these reports related to sediment management are summarized in this section, including volume estimates of the total quantity of accumulated sediment, material composition, and potential contamination.

Sediment Volume Estimates

The existing dam has formed a reservoir approximately 2 miles long and averages 250 feet wide (Entrix 2007). This reservoir causes substantially reduced streamflow velocities, which results in sediment deposition behind the dam. Several studies have been conducted to estimate the volume of sediment in the dam (Nelson 1972; Entrix 2007; USGS 2022a). Those estimates and the year they were performed are listed in Table 1.

Table 1
Summary of sediment volume estimates in the Enloe Dam impoundment

Source of Estimate	Estimated Sediment Volume (cy)	Reference
USGS 1972	1,790,000	Nelson 1972
MaxDepth Aquatics 2006	2,430,000	Entrix 2007
USGS 2020	2,780,000 to 2,940,000	USGS 2022a

The most recent estimate, performed by USGS in 2020, was based on a comparison with bathymetric survey data and riverbed profiles conducted in 2020 to historic survey data collected prior to dam construction. This range of sediment volume is the most representative estimate of sediment accumulation within the dam impoundment area. The high range of this estimate (2.94 million cy) is used later in this memorandum as the highest potential volume of sediment removal currently in the impoundment. The volume estimates performed in different years indicate that the total volume of sediment is increasing as time progresses.

To put the volume of sediment within the dam impoundment area into perspective, if placed over the area of a standard football field, the total height of sediment would be approximately a quarter mile (1,300 feet). Examples of sediment removal operations that dredge volumes of this magnitude include dredging for improving vessel access to ports, harbors, or industrial river channels.

Depths of sediment accumulation were quantified in the Ecology report (2023). Continuous resistivity profiling was used to provide estimates of sediment thickness from the sediment surface to cobbles or bedrock. Sediment thickness ranged from 6.5 feet at the upstream end of the impoundment to 40 feet immediately upstream of the dam, which represents the thickest portion of the deposit.

Material Composition

Material composition is an important aspect of sediment management because it influences dredging methodology and potential options for disposal or use of the dredged material. The following sections describe the physical and chemical properties of the sediment in the dam impoundment.

Grain Size Distribution and Organic Carbon Content

The USGS conducted sediment sampling within the dam impoundment in 2019, which included an assessment of sediment grain size distribution, organic carbon content, and concentrations of select elements (USGS 2022b). Sediment cores were collected at six locations upstream of the dam during the 2019 sampling event, with 27 surface grab samples analyzed within the dam impoundment. The surficial grab samples were analyzed for grain size distribution, which was described as follows: “Surficial sediment was typically medium to coarse grain sand with limited silt-sized material. Very coarse sand sediment was deposited in areas where the overlying surface water was shallow enough to allow wind-induced waves to resuspend and remove finer grain material from the sediment bed surface” (USGS 2022b).

Grain size distribution results from the six deeper sediment cores collected within the impoundment were similar to the surficial samples: “The cored sediment appeared to consist of generally well-sorted and rounded medium sands without appreciable horizontal bedding of sedimentary structure [...] The general sediment size distribution in both surficial and subsurface sediment samples was similar, predominantly fine and medium sand” (USGS 2022b).

Sediment samples were analyzed for organic carbon, the results of which are summarized thus: “TC [total carbon] in surficial sediment ranged from 0.07 to 0.78 percent, with a median 0.22 percent [...] higher carbon concentrations were present in the buried sediment with TC concentrations ranging from 0.36 percent to 5.78 percent, with a median of 2.07 percent” (USGS 2022b).

Based on the USGS sampling effort, the accumulated sediment is predominantly fine- to medium-grain sand with some silt and coarse-grained material and pebbles, without significant horizontal bedding structure apparent in the deposit. Very little silt, clays, or organic carbon was identified in the samples. The material composition indicated by the USGS and Ecology sampling efforts are conducive to most common methods of sediment dredging as minimal cobble, boulders, or debris were identified that may complicate removal efforts.

Chemical Analysis

During their sediment investigation, the USGS also conducted an analysis of trace elements in the impounded sediment, to determine whether certain metals of concern, such as mercury, cadmium, or arsenic, are present in elevated concentrations, a potential result of currently operating and historic mining and milling operations upstream of the dam as well as naturally occurring minerals in the contributing watershed (USGS 2022b). Elemental sampling analysis found that several elements were substantially enriched, including silver, arsenic, gold, bismuth, cadmium, copper, manganese, antimony, selenium, tin and tellurium. Elemental concentrations in deeper sediments were often higher than concentrations found in surficial sediments. Concentrations of arsenic are discussed further, relative to various established reference criteria, in this subsection.

Ecology recently completed a Site Sediment Characterization Study to reduce the data gaps associated with sediment characterization (Ecology 2023). The Ecology study focused on the following objectives:

- Assess the accumulated sediment thickness throughout the impoundment.
- Fill in data gaps from other sediment studies to thoroughly characterize trace element and other chemical concentrations, including organic compounds such as pesticides and volatile organic compounds.
- Characterize surface sediments downstream of the dam.
- Assess metals mobility through the use of leachability tests.

Several high-level conclusions can be drawn from the Ecology study:

- Arsenic is present in the sediment deposits, but leaching test results indicated that the sediment would not likely be considered a hazardous or dangerous waste per Washington waste disposal regulations (WAC 173-303-09). Additionally, arsenic leachability levels were found to have a low potential to influence groundwater quality if the sediment were to be dredged and relocated to an upload area for disposal.
- The distribution of elevated arsenic concentrations does not follow a consistent spatial distribution but appears to exist in variable “pockets” of elevated concentrations.
- Sulfide concentrations were elevated compared to both the Washington Cleanup Screening Level (CSL) and Sediment Cleanup Objective (SCO) levels.
- Organic contamination testing results for the core and grab samples collected within the dam impoundment indicate that polychlorinated biphenyls (PCBs) and pesticides were all below laboratory non-detect values. Some polycyclic aromatic hydrocarbons (PAHs) were above detection limits, but all samples were substantially lower than both the Washington CSL and SCO levels.

Additional sediment characterization efforts may be required to fill in remaining data gaps, and further refine understanding of areas with relatively elevated chemical concentrations, prior to finalizing a sediment management plan. The Ecology report will provide useful information to better characterize the sediment deposit and identify any remaining data gaps in sediment characterization. This is beneficial for sediment management planning to determine what additional procedures may need to be followed to mitigate contamination or to assess potential beneficial reuse opportunities.

Arsenic and Sulfide Discussion

In both the USGS study (2022b) and Ecology report (2023), certain metals were found to be present at relatively high concentrations. Arsenic was identified in both reports as being present at elevated concentrations, while elevated sulfide concentrations were identified in the Ecology study. This

section discusses the range of concentrations assessed in these two reports and the implications that elevated concentrations may have on sediment management in the dam impoundment.

The USGS study (2022b) identified elevated concentrations of arsenic within the impoundment sediment, but sulfide was not assessed. The USGS study indicated that the mean surface sediment arsenic concentration was 29.3 milligrams per kilogram (mg/kg), whereas a slurry mixture of surface sediments produced a mean concentration of 350 mg/kg. The same study indicated that subsurface core arsenic had a mean concentration of 166 mg/kg.

The slurry concentration is elevated due to a higher proportion of fine-grained material within the slurry sample, which typically contains more elevated levels of certain elements than coarse-grained material. Although the sediment within the impoundment contained a low proportion of fine-grained material (less than 5% of the total sediment mass), fine-grained material contains a larger proportion of the total arsenic concentration than medium- and coarse-grained material.

Samples analyzed in the USGS study were compared to toxicity reference values (TRVs) used to assess biological harm associated with exposure to certain elements. The TRVs used in the USGS for comparison include the following:

- Threshold Effects Concentrations (TECs):
 - Concentration below which adverse biological effects are considered unlikely to be observed
 - 9.79 mg/kg for arsenic
 - Median arsenic concentrations in surface and subsurface bulk sediment exceeded the TEC
- Probable Effects Concentrations (PECs):
 - Concentration above which it is considered likely to expect adverse biological effects to be observed
 - 33 mg/kg for arsenic
 - Median arsenic concentrations in subsurface bulk sediment exceeded the PEC
- CSLs:
 - Ecology concentrations for screening contaminated sediment
 - CSLs are used to identify, or screen, potential sediment cleanup sites (Ecology 2021).
 - 120 mg/kg for arsenic
 - Arsenic concentrations in this study did not exceed the CSL in bulk sediment, but exceedances were observed in fine-grained samples
- SCOs:
 - Ecology concentrations for remediating contaminated sediment
 - SCOs are long-term sediment quality goals established to reduce biological effects of ongoing exposure (Ecology 2021).

- 14 mg/kg for arsenic
- Median arsenic concentrations in subsurface bulk sediment exceeded the SCO

The TEC and PEC levels are relevant to aquatic ecology, whereas the CSL and SCO levels may have implications on upland disposal or placement of sediment. This study indicated that along with arsenic, copper also exceeded certain TRVs.

The Ecology study (2023) included additional sediment sampling conducted in 2022. Consistent with the findings of USGS (2022a), Ecology's chemical analysis indicated elevated concentrations of arsenic within the impoundment sediment. The Ecology study indicated the following concentrations for these constituents:

- Arsenic concentrations in bulk subsurface sediment averaged 153 mg/kg, with a median value of 7.26 mg/kg and a maximum detect of 1,950 mg/kg.
- Sulfide concentrations in bulk subsurface sediment averaged 150 mg/kg, with a median value of 152 mg/kg and a maximum detect of 214 mg/kg.

The Ecology report indicated that their field investigation did not detect other metals or constituents other than sulfide and arsenic above the SCOs and CSLs. While this supports the role of arsenic as the main constituent of concern in the sediment within the dam impoundment, the USGS study identified various other metals at relatively elevated concentrations in the sediment deposit, including copper. Additional sediment characterization would allow for further delineation of the distribution of elevated metals concentrations in the dam impoundment.

The presence of arsenic and other constituents can have a substantial effect on sediment management activities. Sediment containing excess concentrations of certain metals may not be suitable for placement on adjacent properties or in areas without engineered containment systems to contain runoff or groundwater intrusion. Suitability for sediment reuse or placement will depend on applicable environmental regulations from local, state, and federal agencies. An additional discussion about potential permitting requirements associated with contaminated sediment is provided in the "Environmental and Construction Permitting Considerations" section.

If arsenic, or other constituents, exceed certain reference levels, additional engineering controls on placement and disposal may be required. Engineered controls for sediment placement may include elements such as lined disposal areas or limited-use landfills, which would likely require long-term leachate treatment or management and would require substantial permitting and long-term monitoring requirements. Disposal at an approved landfill facility is an additional option for final placement of sediment containing high concentrations of arsenic or other constituents. Implications of managing metal-laden sediment will increase project costs, design complexity, construction sequencing, and permitting requirements.

Ecology noted that the distribution of elevated arsenic concentrations is not spread throughout the impoundment but rather in pockets or lenses within certain depositional areas. Generally, higher concentrations were observed near the dam and at depth in the deposit. This observation is important for sediment management, as isolated areas of elevated arsenic could potentially be removed and segregated from material with lower arsenic concentrations. Sediment containing elevated arsenic could then be placed in an area with engineered controls to prevent arsenic release. Sediment containing low levels of arsenic could potentially be placed on adjacent property or sent to another disposal site without the need for engineered controls. Segregating sediment by concentration distribution would require a thorough site characterization study to delineate where elevated concentrations of arsenic are present. An additional site characterization study would likely include the collection of additional sediment cores in areas not previously sampled or near areas with very elevated concentrations of certain contaminants. Sediment cores would then be sampled within distinct sediment layers to provide horizontal and vertical contaminant distribution data.

Importantly, sediment reuse, placement, or disposal may depend on the leachability of contaminants present in the deposit. Leachability is a measure of how much of a certain contaminant may dissolve or desorb from sediment into percolating water. Ecology performed three types of leachability tests on the impoundment sediment. Leachability tests and results are summarized as follows:

- **Toxicity Characteristic Leaching Procedure (TCLP):** Used to determine if the sediment meets the definition of a federal Resource Conservation and Recovery Act (RCRA) characteristic waste or a Washington State dangerous waste per WAC 173-303-090(8)(a). Sediment may be considered an RCRA waste or a dangerous waste if TCLP tests indicate that arsenic concentrations exceed 5 milligrams per liter (mg/L).
 - Eight samples were analyzed with TCLP, and all results were below 5 mg/L.
 - Test results indicate the sediment would not be considered an RCRA waste or dangerous waste per WAC 173-303-090.
- **Synthetic Precipitation Leaching Procedure:** Used to predict the concentration of arsenic that may leach out of a constructed upland landfill exposed to acidic precipitation.
 - Test results indicate very low concentrations of arsenic, and that minimal arsenic mobility is predicted under acidic precipitation conditions.
- **Wenzel Sequential Extraction Procedure Method for Arsenic:** Used to predict changes to the mobility of arsenic in solid phases.
 - Test results indicate limited potential for mobility of arsenic under environmental conditions.

The leachability test results indicate low concentrations of leachable arsenic from the impoundment sediments, and arsenic mobility is minimal. The sediment would not be classified as an RCRA characteristic waste or a dangerous waste per WAC 173-303-090. These results suggest that arsenic, though present in impoundment sediment, is unlikely to restrict the material from being placed in an

upland placement area, and engineered controls to treat leachate may not be required. The impact of arsenic levels exceeding certain TRVs may still have an impact on sediment management, and additional discussions with Ecology will be required to determine appropriate mitigation strategies.

Sediment Removal Techniques

Several options are available for removing the accumulated sediment within the dam impoundment. These include a partial drawdown sediment release, hydraulic or mechanical dredging, and mechanical excavation. Although each of these methods would be capable of removing the sediment from the impoundment, variables such as cost, dewatering procedures, and availability of final sediment placement or disposal locations must be considered when selecting a method. Additionally, construction sequencing and dam removal procedures impact which methods can be used. Each of these dredging alternatives are described in more detail in the following sections.

Sediment Release in Response to Staged Lowering of Dam Spillway

Passive removal of the sediment deposit would occur naturally in response to progressively lowering of the dam spillway. This is partially discussed in the "Partial Drawdown and Mechanical Excavation" subsection that follows and in the *Enloe Dam Removal Concept Plan* (Inter-Fluve 2021). Sediment would be scoured from the impoundment as flow velocities increase due to a staged dam removal. Passive sediment release would be the least expensive method of sediment management associated with dam removal. Sediment release downstream could be utilized to reduce the volume of sediment required to be removed using dredging, which would reduce overall project costs.

Progressive sediment release could be used as a sediment removal method only if it is acceptable to discharge sediment downstream. As discussed in the "Overview" section, discharging a substantial volume of sediment downstream would likely cause changes in the river geomorphology. Release of the accumulated sediment deposit would occur at an initially accelerated rate and could cause initial impacts to the ecology of the river by introducing large volumes of fine-grained sediment and associated metals concentrations. Impacts to the river would likely be highest in the stretch between the towns of Oroville and Tonasket due to the reduced slope of the river (Inter-Fluve 2021).

On the other hand, downstream sediment release would represent a return to a more natural sediment movement regime closer to historic conditions as existed prior to dam construction. A potential related benefit of downstream sediment release is the reintroduction of a natural distribution of sediment grain sizes downstream of the dam. Dams reduce naturally occurring sediment loads from being transported downstream, which can create a sediment-starved condition below dams. Aquatic ecology may benefit from a broad distribution of sediment sizes for macroinvertebrate habitat (Kondolf et al. 2014). Additionally, a broad distribution of sediment sizes can reduce shoreline erosion and habitat loss (Kondolf et al. 2015). Allowing sediment to discharge downstream from the impoundment may replenish sediment in starved reaches of the river.

The rate of sediment release could be controlled to some degree by the sequence and schedule by which the dam and spillway are lowered. A lowered rate of sediment release could minimize impacts to the river downstream. Sediment transport modeling, as proposed in Inter-Fluve (2021), would be beneficial to determine acceptable rates of sediment release and the positive and negative impacts associated with sediment release.

Mechanical Dredging

Mechanical dredging involves the use of floating barge-mounted equipment, such as a clamshell bucket on a derrick barge or a barge-mounted long-reach excavator. These dredges remove sediment at approximately the same water content as the in situ material, thereby minimizing the amount of water removed compared with hydraulic dredging (USEPA 2005). Mechanical dredges operate in areas with limited space and are highly maneuverable. They are also capable of removing large debris and hard material. Mechanically dredged material is typically transported to sediment management or dewatering areas via floating barges or haul trucks. Due to the nature of barge-mounted equipment, mechanical dredging requires sufficient water depth in the dredging area to allow access; the impoundment cannot be completely drawn down prior to the completion of dredging. Figure 1 shows an example of a typical mechanical dredging operation.

Figure 1
Example of Typical Mechanical Dredge Equipment in Use (crane-mounted clamshell bucket)



Source: Liebherr Maritime Cranes

Mechanical dredges typically utilize crane systems with clamshell buckets to remove sediment. After the clamshell bucket is lowered to the sediment surface, the clamshell closes and grabs a portion of

material, then the bucket closes and is brought to the water surface. Vertical dredging position can be verified by using specialized equipment and sensors located on the clamshell bucket. Dredging operations in shallower waters typically use either standard anchors or vertical “spuds” driven temporarily into the subsurface to maintain horizontal position. Once at the water surface, the bucket releases its load into a barge or storage container. The dredged material is then transferred to a landside staging area for transportation or dewatering.

Mechanical dredging is most efficient in situations with loosely consolidated material and debris. The presence of highly consolidated material, wood, or other debris typically slows dredging production rates. Mechanical dredging generates turbidity around the work area due to sediment disruption, but this can be controlled using turbidity mitigation techniques if required by environmental water quality regulations.

Dredging production rates are an important point of comparison for understanding how long a particular dredging method would take to remove a certain volume of sediment. Production rates are a product of equipment selection, such as the size of the clamshell bucket, cycle times, hours operated per day, and sediment unloading. The scale of the project, as well as the required construction schedule, typically determines equipment selection and the resultant dredging production rate.

After the sediment is dredged, it must be transported to shore, dewatered, and transported to a final disposal or stockpiling area. Due to the potential large sediment removal volume for this project, the stockpiling facilities would require a large area as well as equipment to move sediment and improving drying. Final disposal locations are discussed in the “Potential Sediment Disposal Sites” section.

Hydraulic Dredging

Hydraulic dredging involves the removal of sediment by pumping through a pipeline, during which the sediment is mixed with surrounding water to produce a flowable slurry. Hydraulically dredged material is removed by a cutterhead or similar device and then transported via piping directly to a staging/processing area. Booster pumps may be required to account for distance and elevation increases between the dredge and processing areas. The solids content of hydraulically dredged slurry normally averages less than 10% by weight, thereby resulting in significant amounts of water requiring treatment. Additionally, solids content can vary considerably with the specific gravity, the grain size and distribution of the sediment, and the depth and thickness of the dredge cut. Technical limitations associated with hydraulic dredging include the inability to remove large debris and the clogging of the cutterhead or pipeline with weeds, wood, rocks, and other materials. Figure 2 shows an example of a hydraulic dredging barge with a cutterhead.

Figure 2
Example of Hydraulic Dredging Barge with Cutterhead Shown in Red



Source: Contractors Marine, LTD

Hydraulic dredging would require the dam impoundment area to be filled with water to allow the rig to access the full area of the sediment deposit. Hydraulic dredging requires water coverage to generate a slurry that can be piped to the dewatering area. This means that partial drawdowns of the dam or impoundment could only be performed after dredging is complete or sequenced in a way to maintain water cover over areas that remain to be dredged. Dredging up to 2.94 million cy of material using hydraulic methods would require extensive dewatering and water treatment operations on the sediment slurry stream. Because hydraulic slurry contains a relatively low proportion of sediment to water, water treatment would become a substantial project aspect.

Dredging production rates with hydraulic dredging operations are dependent on the scale and schedule of the project, similar to using mechanical dredging equipment. Pumping requirements, pipeline sizes, booster pump stations, and dewatering facilities are typically sized based on the dredging production rate requirements of the project. Due to the abrasive nature of pumping sediment-laden slurry, a thorough sediment investigation must be conducted to inform equipment design and selection.

For a hydraulic dredging operation of this magnitude, a large area would be required to stage dewatering and water treatment operations. Sufficient land area appears available near the existing dam access road for staging and dewatering operations but ownership of the land is split between

BLM and a private landowner. The extent of water treatment would be determined by environmental regulations and the volume of sediment that is allowed to be discharged downstream during construction. Dewatering operations would be required to separate most of the sediment from the water in the slurry. Several construction methods are available to conduct dewatering operations – either passively through appropriately sized settling and decanting basins, potentially augmented by pumping slurry directly into geotextile cylinders (“geobags” or “geotubes”), or by the use of active mechanical systems—such as mechanical screens, filter systems, presses, or hydrocyclones. The sediment is then transported to a placement or disposal location, while the water generated then undergoes treatment if required. Environmental regulations or construction dewatering permits typically specify water treatment requirements. Reducing suspended solids, fuel oils, and grease and maintaining water temperature and pH within specified ranges are common water treatment requirements prior to discharge into the nearest surface water body.

Hydraulic dredging is typically well suited to remove large volumes of sediment. The sediment appears relatively consistent in terms of grain size throughout the extents of the impoundment (USGS 2022a), which is beneficial for implementing hydraulic dredging methods. Dewatering operations would be a major project aspect, requiring a large staging area and considerable labor to maintain operations. Hydraulic dredging may be more cost-effective than mechanical dredging when large removal volumes are targeted, if an appropriate endpoint for the pumped slurry is available. In such conditions, the costs associated with installation and maintenance of the slurry pipeline and dewatering operation may be justified by increases in dredging production rates and reduced labor.

Partial Drawdown and Mechanical Excavation

Mechanical excavation involves using standard earthwork equipment to remove sediment in dry or semi-dry conditions. Mechanical excavation could be used in a situation where the water level in the impoundment were drawn down in stages, which would provide access to the sediment deposits by land-based equipment. Equipment typically used in mechanical excavation removal operations includes excavators, loaders, and graders. This method of sediment management was used to manage a portion of the sediment removal effort at the Elwah Dam removal project conducted from 2011 to 2012 (Bureau of Reclamation 2015).

Construction sequencing for mechanical excavation would involve the following procedures:

1. Perform a partial drawdown of the impoundment by either lowering the crest of the dam or allowing some flow to bypass the dam. This would lower the water level and expose some of the sediment deposits.
2. Use land-based equipment to remove as much exposed sediment as feasible.
3. Use haul trucks to transport the material from the excavation areas to a dewatering or staging area for processing.

4. Place the dewatered sediment at an appropriate final placement location or off-site disposal location.
5. After all exposed sediment is removed, repeat the process by further reducing the impoundment water level, and continue to excavate exposed sediment until sufficient removal has occurred.

The partial drawdown step may release some sediment to downstream, depending on which method is used and the procedures implemented. Drawdown via discharge bypass could be used to reduce the amount of discharged sediment but would require a substantial bypass configuration to be maintained throughout construction. As mentioned by Inter-Fluve (2021), the existing decommissioned dam penstock could be used to drawdown the impoundment.

Land-based equipment would require access points to reach all the sediment deposits. Access roads currently provide access to both sides of the river for approximately 1 mile upstream of the dam. Further upstream of the dam, Loomis-Oroville Road could provide access to the north side of the river for the length of the impoundment. Additional temporary access roads would likely be necessary to allow excavators and haul trucks to access the entire impoundment area.

The main benefits of mechanical excavation methods would be reduced equipment and labor costs as well as reduced dewatering requirements compared to hydraulic or mechanical dredging. Drawing the reservoir down prior to excavating will reduce the amount of water within the sediment, leading to less stringent dewatering requirements after excavation. After the material is removed, it would be transferred to a staging area for further processing, if necessary, before being sent to the final placement or disposal location. Mobilization costs associated with earthwork equipment would likely be lower than mobilizing specialized dredging equipment to the site.

In a situation where the sediment is determined to contain elevated concentrations of arsenic or other constituents that would restrict reuse or placement, mechanical excavation of sediment would provide an accurate method of removing specific sediment layers to aid in material segregation. Reduced water management associated with mechanical excavation is another advantage over mechanical or hydraulic dredging if arsenic is determined to be a substantial issue.

Due to the reduced water management requirements, mechanical excavation using staged reservoir level drawdown is anticipated to be the most cost-effective construction method. This method has been successfully implemented in the Elwha Dam removal project, which has some similarities to this project. A cost estimate has been prepared for sediment management using mechanical excavation and is presented in the "Preliminary Cost Estimate" section.

Potential Sediment Placement Sites

Determining the final location for storing, placing, or disposing of the accumulated sediment in the dam impoundment is a significant project consideration. Several options have been considered for managing the sediment if it were to be removed from the impoundment. Those options include placement on adjacent federal lands or other nearby off-site locations, placement on nearby beneficial reuse locations, and distant landfill disposal, all of which are discussed in the following sections. An additional discussion is provided on the implications for disposal if the sediment is found to be contaminated.

Staging and Dewatering Areas

Dredged sediment typically contains a high proportion of water that must be removed so that it can be either transported off site or compacted to certain construction specifications. Staging areas and dewatering areas will be required regardless of where the sediment will ultimately be placed or disposed of. Staging areas will be used to store equipment and materials during construction, and facilities will be used for construction management. Although some dewatering may occur at the point of removal – particularly when coarse-grained sediment is mechanically removed during impoundment drawdown – a devoted dewatering area would be useful for allowing remaining water to drain from the dredged material prior to final placement or disposal.

Staging and dewatering areas are most effective when located in proximity to the dredging operations. Staging areas would simply require adequate space to store equipment, materials, and potentially work trailers or storage containers, for the duration of construction activities. Dewatering areas would require sufficient land area to conduct dewatering activities and could be located several miles away from the sediment removal area. Dewatering requirements are dependent on the type of dredging equipment selected for sediment removal and method of dewatering.

Federal Land

The area surrounding the dam and the impoundment stretch of the river is predominantly managed by the Bureau of Land Management (BLM). Placing the sediment on BLM property would likely provide the most cost-effective and efficient area for sediment management due to the close proximity to the sediment deposits in the dam impoundment. As discussed in Inter-Fluve (2021), there appears to be adequate space for all of the accumulated sediment on BLM property adjacent to the impoundment. Inter-Fluve has provided some preliminary areas for sediment placement on BLM property that appear feasible, pending further discussions with BLM management and further geotechnical investigation. An initial coordination meeting was held with BLM and project stakeholders and is discussed later in this section.

Some locations on BLM property other than those identified by Inter-Fluve appear to be feasible candidates for final sediment placement, from a physical and geographic standpoint. An example

would be a relatively flat portion of land located between Loomis-Oroville Road and Enloe Dam Road. This area covers approximately 45 acres and could provide benefits to constructability, such as reduced travel distances and easier access by haul trucks.

Other areas of nearby BLM land nearby appear to be less suitable for sediment placement, owing to relatively steep slopes (mountainous/canyon terrain), a lack of flat areas for dewatering activities adjacent to the impoundment, and reduced accessibility by trucks and large equipment due to the terrain. Additional access roads or access improvements would likely be required to use large earthwork equipment during sediment placement activities.

Sediment would need to be dewatered prior to placement, as saturated sediment may be difficult or impossible to adequately compact and place in a final placement configuration. A temporary dewatering area would need to be constructed to remove excess water and moisture from dredged material. Dewatering areas typically involve an area that promotes drainage and a method to collect and convey water away from the dredged material, usually a perforated underdrain system. Water removed during the dewater activities may contain elevated concentrations of suspended solids as well as dissolved metals, both of which may need to be treated prior to discharge back to the river. Sufficient land for staging and dewatering appears available near the dam adjacent to Loomis-Oroville Road.

After dewatering, the material could be placed on BLM property using earthwork equipment such as loaders or scrapers. Placing the material on shallow slopes of less than 3:1 (horizontal to vertical) would reduce the risk of slope instability related to variable material composition. After placement and grading, the slopes could be seeded with native seed mixtures to improve the aesthetics and reduce erosion potential. Landscaping amendments may be required to revegetate the slopes, as the sediment is mostly sand with low organic carbon content (USGS 2022b).

Approvals would be required by BLM for placement of sediment on BLM managed property. A meeting was held with BLM managers, Anchor QEA, LLC staff, and representatives from Trout Unlimited and the Colville Tribe on March 7, 2023, to discuss sediment placement on BLM managed land. Sediment placement locations identified in the Inter-Fluve conceptual project development report (Inter-Fluve 2021) were shared with BLM to garner feedback on the conceptual sediment placement layout. During the meeting, BLM noted that an environmental study, or equivalent report frequently required by various permitting agencies, would be required for BLM to make an informed decision on whether sediment placement would be allowed on BLM property. The environmental study would likely need to discuss the aesthetic impacts, health and safety risks, ecological implications, and other impacts associated with the project and sediment management. After the environmental study is prepared, sufficient information should be available for BLM to make an informed decision about sediment placement options.

At this point in project development, the areas identified by Inter-Fluve (2021) appear feasible for sediment placement and site restoration. The cost estimates presented in the "Preliminary Cost Estimate" section consider the locations proposed by Inter-Fluve for final sediment placement on BLM property. Final sediment placement locations can be further refined pending further discussion with BLM.

Private Land

Aerial imagery and property boundaries were evaluated to determine if locations other than BLM property around the dam impoundment would be suitable for sediment placement. Some areas of privately owned land are intermixed with BLM property along the dam impoundment, but the layout is less conducive to long-term sediment placement than BLM property. These parcels are relatively small compared to the BLM properties and many contain steep slopes that would be less conducive to long-term sediment placement. Sediment placement on privately owned parcels would require an easement through BLM property for equipment access, which may be prohibitive. Due to these restrictions, along with complications associated with negotiating with private property owners, it is unlikely that sediment placement on private properties would be a feasible alternative.

Significantly downstream of the dam, closer to Oroville, the channel slope decreases, and a wider valley is formed along the river channel. This area contains a significant area of relatively flat privately owned farmland, the majority of which appears to be actively used and irrigated annually. Although these relatively flat areas of land would be beneficial to dewatering activities and sediment management due to their proximity to the dam, it is unlikely that these areas would consider long-term sediment placement due to the high value of irrigated farmland in the region. Furthermore, the relatively low organic content apparent in the sediment would lessen its viability for subsequent planting. However, this option could be explored further in future studies, if placement opportunities become evident.

Off-Site Placement Locations and Beneficial Reuse

Aerial imagery and business searches were performed to identify additional areas away from the dam that could serve as off-site placement opportunities for the accumulated sediment, as well as for beneficial reuse.

Beneficial reuse of dredged sediment is a sustainable solution to using the material removed from the dam impoundment. The following are some examples of beneficial sediment reuse associated with dredging operations include:

- Construction fill material
- Beach sand nourishment
- Sand bank or island creation for tidal protection
- Dike or levee construction

- Concrete production
- Fill for non-operational quarries or mines

Beneficial reuse opportunities are site-specific, and the material composition—including grain size distribution, organic carbon content, and contamination—greatly affects how the material could be used. Based on previously conducted sediment investigations, the material in the dam impoundment is predominantly fine- to medium-grain sand with some silt and coarse-grained material and pebbles (USGS 2022b). This type of material may be useful as construction fill or in applications that utilize sand (i.e., concrete production or brick making). The analysis performed by USGS and Ecology indicates chemical contamination may not be a barrier to sediment reuse.

Several locations were identified that may have some capacity for or interest in material dredged from the dam impoundment. Sand and aggregate suppliers, and occasionally concrete plants, may be interested in receiving dredged material if the grain size distribution of the sediment meets their required specifications. This type of application is considered a beneficial reuse of dredged material and should be pursued where feasible. Sand and aggregate operations receive the benefit of reducing excavation and processing costs in exchange for potentially viable materials, usually with some sort of cost sharing agreement with the dredging operation. For this reason, nearby quarries have been identified as potential areas for off-site placement locations. Table 2 lists quarries or construction aggregate operations near Oroville.

Table 2
Summary of Quarries with Potential for Off-Site Placement

Location	Coordinates (latitude, longitude)	Driving Distance (one-way)	Notes
Gavin Road	48.8922, -119.4222	8 miles	Small unlisted quarry likely used for construction aggregate. Appears to be frequently used.
Havillah Road	48.7610, -119.3235	28 miles	Small unlisted quarry likely used for construction aggregate. Potentially not in use.

The quarries and aggregate operations identified appear to be local operations and do not appear to be sufficiently large enough to receive a considerable portion of the dredged material. Additional discussions and coordination will be required to assess the feasibility of sediment placement at the locations identified in Table 2.

Other locations that have been used as repositories for dredged material include abandoned mines that require reclamation efforts. Due to the history of mining operations in Okanogan County, some historic mining sites may be candidates for receiving a portion or all of the dredged material. Filling in historic mines can reduce or eliminate water exfiltration, which can reduce ecological impacts from

high acid drainage, and improve public safety by eliminating a potentially hazardous area for recreational exploration. Example locations for potential sediment placement in historic mines near the impoundment area are summarized in Table 3, along with driving distances from the dam.

Table 3
Abbreviated Summary of Historic Mining Sites in Okanogan County

Mine Name	Coordinates (latitude, longitude)	Driving Distance (one-way)	Notes	Reference
Ruby Mine, Nighthawk Mining District	48.9362, -119.6941	16 miles	Underground mine currently abandoned with existing open adits	Wolff, McKay, and Norman 2010
Bodie Mine, Wauconda Mining District	48.8327, -118.8972	40 miles	Located near the historic townsite of Bodie	Wolff et al. 2007
Several historic mining operations in the Oroville-Nighthawk Mining District	Various	Various distances	Several historic mining operations listed in the USGS MRDS near the Dam and Oroville	Umpleby 1911

Notes:
MRDS: Mineral Resource Data System

The ability to use specific historic mines for sediment placement will depend on the fillable size of the mine, coordination with the current landowner or agency, distance from the dam to the mine, and interest/desire to fill in the mine.

Limited industrial or commercial operations have been identified around the Oroville area that could utilize a substantial portion of the accumulated sediment. Several quarries were identified that may be interested in receiving some quantity of material, but these operations do not appear to be of sufficient size to receive a majority of the accumulated sediment. The site is in a relatively rural portion of central Washington, and transportation of material to markets in larger population centers is likely cost prohibitive due to transportation fees.

In Washington State, beneficial reuse of dredged material may require an exemption from solid waste permitting requirements. A Beneficial Reuse Determination (BUD) may be required to determine if the dredged material is suitable for reuse. During the application process for a BUD, sufficient evidence must be presented to Ecology to characterize the material and adhere to restrictions on chemical contamination. Additional discussions with Ecology would be required to determine whether a BUD would be required for beneficial reuse. A BUD may also be required for permanent placement of the dredged material on BLM or private property. Due to the presence of elevated arsenic concentrations, it may not be feasible to acquire a BUD for all of the dredged material. Additional sediment characterization may be required to make a final determination.

Off-site placement is considered in the cost estimate, along with transportation considerations. Off-site placement of sediment may be feasible for portions of the dredged material or if the total volume of sediment removal is only a portion of the material currently in the dam impoundment.

Landfill Disposal

Landfill disposal is another alternative for sediment disposal that is worthy of consideration if on-site or off-site disposal options are determined not feasible. Landfill disposal would still require dewatering prior to transportation off site. Landfills typically require a paint filter test, which tests to determine whether disposal loads contain free liquids. Occasionally, fine-grained sediment requires the addition of amendments, such as Portland cement, to pass paint filter tests for landfill disposal.

Municipal landfills may require testing results to verify that the sediment does not contain any hazardous materials. If hazardous materials are present, disposal may only be permitted at certain types of landfills that receive hazardous or dangerous materials. Based on the preliminary chemical analysis results distributed by Ecology (2023), it is unlikely that the accumulated sediment would be classified as hazardous or dangerous, and disposal at municipal landfills would likely be allowed.

The nearest landfill to the site is the Okanogan Central Landfill, which is operated by Okanogan County and located 54 miles from the dam (one-way). The Okanogan Central Landfill may not have sufficient storage capacity to receive the total volume of accumulated sediment from the dam impoundment. Municipal landfills are typically small-scale operations in rural areas, with limited ability to expand operations to receive a large influx of material. Costs associated with transportation and disposal are also likely prohibitive.

Landfill disposal is considered the least viable option, and other methods of storage or disposal should be prioritized for disposal or storage. Additionally, landfill disposal costs, testing requirements, and transportation costs make landfilling the dredged material the least preferred method of material disposal.

RCRA Waste Discussion

The sediment within the dam impoundment has been characterized during multiple field studies. According to the Ecology study (2023), minimal contamination was present that would classify the material as a dangerous or hazardous waste using RCRA or Washington State classification criteria. While this is compelling evidence that minimal contamination is present in the targeted sediment, elevated concentrations of arsenic and other constituents may require additional treatment and handling requirements. Additionally, isolated pockets or lenses of material may still be found that contain elevated concentrations of other contaminants.

If any additional contamination is discovered during additional site investigations or during construction, additional coordination and design efforts will likely be required. This could include

classification of hazardous wastes under RCRA. Additional reporting requirements would be necessary to local, state, and federal environmental quality agencies, and the overall approach to sediment removal will likely need to be modified.

Dredging projects associated with contaminated sediment typically require more involved safeguards against mobilizing contamination into surface waters from their in situ location. Additional equipment, such as environmental clamshell dredging buckets, silt or turbidity curtains, and methods to reduce sediment leaching would likely be necessary to reduce the spread of contamination. Sediment disposal permitting efforts would also be substantially more involved. Unlined permanent sediment placement, such as placement on BLM property, would not be permitted if hazardous materials are present. Disposal options for RCRA wastes would be limited to disposal at approved hazardous waste landfills or in specially designed solid waste disposal cells that are approved for accepting hazardous waste.

Environmental and Construction Permitting Considerations

Removal of the dam and the associated sediment dredging, management, and disposal activities will require permits and approvals from multiple federal, state, and local government agencies. A list of permits and approvals anticipated to be required is provided in Table 4. Additional building and trade permits may be required pending final design.

Table 4
Summary of Anticipated Permits and Approvals

Agency	Permit/Approval	Requirement
Federal Level		
TBD; lead agency could be either BLM or USACE	NEPA Review	NEPA requires federal agencies to review the potential environmental impacts of their projects before taking action. The removal of the dam would entail multiple federal agency project actions, including BLM issuance of Right of Way Grant(s), USACE issuance of CWA Section 404 Permits, and potentially other federal agencies providing project grants or loans.
USACE	Section 404 Permit, CWA	A Section 404 Permit may be required if dredge or fill materials are placed in Waters of the United States, including wetlands.
TBD; lead agency could be either BLM or USACE	Section 106, NHPA	NHPA Section 106 requires federal agencies to assess the effects of its actions on cultural resources. It also requires consultation with SHPO, Tribal nations, and other interested parties.
TBD; lead agency could be either BLM or USACE	Section 7, ESA	ESA Section 7 requires federal agencies to formally consult with NMFS and USFWS prior to carrying out any action that is likely to jeopardize the

Agency	Permit/Approval	Requirement
		continued existence of any listed species or adversely modify its critical habitat.
BLM	ROW grant, FLPMA	Under FLPMA, BLM has the authority to issue ROW grants for use of the federal lands under its administration. ROW grants would be required for additional areas associated with the removal of the dam, including areas needed for sediment removal, dewatering or other sediment processing, and staging of sediment for disposal. If dredged material is permanently placed on BLM land, additional ROW grants or other real property authorization will be required for the disposal sites.
State Level		
TBD; lead agency could be Okanogan Public Utility District No. 1 [as the project owner], Okanogan County, Ecology, or any state or local agency as long as all agencies with jurisdiction agree	SEPA review	SEPA requires lead agencies to review the potential environmental impacts of their project before taking action.
Ecology	CWA Section 401 Water Quality Certification	CWA Section 401 is a certification that the permitted federal activities comply with Washington State water quality standards.
	NPDES CSGP	A CSGP is required for construction sites with a disturbance of one or more acres that have the potential to convey stormwater to surface waters, or sites of any size discharging stormwater to state waters (Waters of the State) that Ecology determines to be a significant contributor of pollutants or that are reasonably expected to cause a violation of any water quality standard.
	MTCA Clean-Up Order for Hazardous Substances	MTCA cleanup actions depend upon a number of factors (e.g., characteristics of sites and contaminants and the number of parties involved). For Ecology-supervised cleanups, MTCA authorizes Ecology to enter an agreed order that provides for some certainty with respect to remedial actions. If the contaminant concentrations in the impounded sediments behind the dam exceed cleanup thresholds in WAC 173-340, an MTCA cleanup action, if necessary, could proceed as a voluntary action or as a formal cleanup action under Ecology oversight.
	Shoreline Conditional Use Permit/Variance	Upon local jurisdiction approval, Shoreline Conditional Use Permits and Shoreline Variances are sent to Ecology for state review and approval (see Okanogan County requirements in this table).

Agency	Permit/Approval	Requirement
	Dam construction permit	Dam construction permits are required for modification or removal of a dam regulated by the Washington Dam Safety Office.
WDFW	HPA	An HPA is required for any work in or near state waters that will use, divert, obstruct, or change the natural flow or bed of any of the salt- or freshwaters of the state.
WDNR	Aquatic Use Authorization	WDNR manages state-owned aquatic lands, including the bed and banks of the river above and below the dam. An Aquatic Use Authorization is required for projects and activities that take place on state-owned aquatic lands.
Local Level		
Okanogan County Department of Planning and Development	SSDP	The Okanogan County SMP requires an SSDP for substantial development located in shorelines of the state.
	Shoreline Conditional Use Permit	The Okanogan County SMP requires a Shoreline Conditional Use Permit for dredging within shoreline jurisdiction.
	Shoreline Variance	The Okanogan County SMP requires a Shoreline Variance for clearing or grading of vegetation conservation areas that exceed limits established for shoreline environments.
	Conditional Use Permit	The Okanogan County Code requires a Conditional Use Permit approval for gravel pits and quarries larger than 3 acres, mines, sanitary landfills, solid waste transfer stations.
	Temporary Use Permits	The Okanogan County Code require Temporary Use Permits to be obtained for temporary construction offices, contractor equipment, and supply storage.
	Floodplain Development Permit	The reservoir upstream of the dam is mapped by FEMA as Special Flood Hazard Area, Zone A. Chapter 15.08 of the Okanogan County Code requires a Floodplain Development Permit for all development within the Special Flood Hazard Area.
	Critical Areas Review	The Okanogan County Code requires the County to review development in wetlands, aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas to ensure the natural functions of these areas are preserved.
Okanogan County Public Health District	Solid waste permit	A solid waste permit is required for facilities that dispose of materials that meet the definition of solid waste under Washington State's Solid Waste Handling Standards (WAC 173-350).

Notes:
CSGP: Construction Stormwater General Permit

CWA: Clean Water Act
ESA: Endangered Species Act
FEMA: Federal Emergency Management Agency
FLPMA: Federal Land Policy and Management Act
HPA: Hydraulic Project Approval
MTCA: Model Toxics Control Act
NEPA: National Environmental Policy Act
NHPA: National Historic Preservation Act
NMFS: National Marine Fisheries Service
NPDES: National Pollutant Discharge Elimination System
ROW: Right of Way
SEPA: State Environmental Policy Act
SHPO: State Historic Preservation Office
SMP: Shoreline Master Program
SSDP: Shoreline Substantial Development Permit
TBD: to be determined
USACE: U.S. Army Corps of Engineers
USFWS: U.S. Fish and Wildlife Service
WDFW: Washington Department of Fish and Wildlife
WDNR: Washington Department of Natural Resources

Regulatory Classification of Dredged Sediments

If removal of Enloe Dam were found to be feasible, sediment management will largely depend on the regulatory classification of dredged sediments with respect to contaminant levels and, potentially, the extent to which the dredged sediments can be segregated by level of contamination and managed under different regulatory classifications. Additional discussions with regulatory agencies will be required to clarify the contaminant concentrations at which the removed sediment may require additional storage or treatment requirements.

Further sampling and analysis of the sediments impounded behind the dam may be required to determine whether and how the sediments are likely to be regulated as removed material, pending additional agency coordination. A brief overview of the regulatory classifications of dredged sediments under Washington's Solid Waste Handling Standards (WAC 173-350) and Dangerous Waste Regulations (WAC 173-303) is provided in the following subsections. Additional sampling and data collection needs will be driven by discussions with relevant permitting and environmental agencies in future phase(s) of this effort.

Washington Solid Waste Handling Standards (WAC 173-350)

The Washington State Solid Waste Handling Standards contain criteria for the designation of both clean dredged material and contaminated dredged material. Sediments meeting the criteria for clean dredged material are not regulated under the Solid Waste Handling Standards. Material meeting the criteria for designation as contaminated dredged material are considered solid waste and are required to be managed and disposed of at a permitted solid waste disposal facility or site as provided under the Solid Waste Handling Standards.

One potential alternative to disposal of contaminated dredged material at an existing permitted solid waste facility is the creation of a limited purpose landfill. A limited purpose landfill is a disposal facility permitted under the solid waste handling and disposal requirements of WAC 173-350 that may only receive wastes that are designated as nonhazardous and are not municipal solid wastes. Contaminated dredged material is specifically listed under WAC 173-350 as a solid waste that may be disposed of at a limited purpose landfill.

A potential alternative to disposal of contaminated dredge materials at a permitted disposal facility would be to obtain a Beneficial Use Permit exemption from Ecology. "Beneficial use" as defined in the Solid Waste Handling Standards means the use of solid waste as an effective substitute for natural or commercial products or as a soil amendment. The use of dredged materials under a Beneficial Use Permit exemption is subject to a determination by Ecology that contaminant concentration levels in the material are sufficiently low to ensure that the material does not pose a threat to human health or the environment.

Washington Dangerous Waste Regulations (WAC 173-303)

Washington State's Dangerous Waste Regulations specify the procedures and criteria for designating solid waste as dangerous waste. Materials with higher levels of contaminants that meet the criteria in the regulations for designation as dangerous waste are required to obtain a U.S. Environmental Protection Agency (USEPA) RCRA/Washington State dangerous waste identification number. These materials are subject to the handling and disposal requirements under Washington's dangerous waste regulations and the RCRA requirements administered by USEPA, including prohibitions and restrictions on land disposal. Dangerous wastes are not eligible for use under a Beneficial Use Permit exemption.

Dredged sediments that meet the criteria for clean dredged material would not be subject to Washington State solid waste permit requirements, whereas sediments meeting the criteria for contaminated dredged material would be subject to the requirements for solid waste permitting and need to be disposed of at an existing permitted solid waste facility or, alternatively, at a limited purpose landfill created for the project. Additionally, contaminated sediments could potentially be used for beneficial purposes in lieu of disposal at a permitted solid waste facility if the project is able to demonstrate that contaminant levels are sufficiently low to ensure that the material does not pose a threat to human health or the environment and obtain a Beneficial Use Permit exemption from Ecology. Sediments with higher levels of contamination that meet the criteria for designation as dangerous waste would not be eligible for reuse under a Beneficial Use Permit and would need to be disposed of at a facility permitted to receive dangerous waste.

As discussed in the "Arsenic and Sulfide Discussion" section, the impoundment sediment is not likely to be characterized as a Washington dangerous waste that would require additional management strategies for contaminate mitigation. Additional discussions with Ecology will be required to determine how the sediment would be classified and what placement options will be allowed.

Preliminary Cost Projections

Feasibility-level cost projections were prepared for a range of sediment removal volumes using relevant construction methodology to this project. This cost projection is intended to inform project planners of potential costs associated with sediment removal, processing, and final placement or disposal. Each of these areas have costs associated with engineering, planning, and construction. Several scenarios were developed to cover a range of dredging conditions, processing conditions, and final placement or disposal.

Three sediment volume removal scenarios were developed that cover a range of potential removal volumes:

- **Sediment Removal Scenario 1:** Remove all the accumulated sediment within the dam impoundment.
 - Represents a situation where no sediment is allowed to be discharged downstream
 - Includes dredging a volume of 2,940,000 cy from the impoundment
- **Sediment Removal Scenario 2:** Remove one-half of the accumulated sediment within the dam impoundment.
 - Represents a situation where one-half of the sediment within the impoundment can be discharged downstream.
 - Includes dredging a volume of 1,470,000 cy from the impoundment.
- **Sediment Removal Scenario 3:** Remove one-quarter of the accumulated sediment within the dam impoundment.
 - Represents a situation where three-quarters of the sediment within the impoundment can be discharged downstream
 - Includes dredging a volume of 735,000 cy from the impoundment

Several methods appear feasible for construction at this stage in project planning; at this stage, sediment removal using mechanical excavation equipment was used for preparation of the cost projections. Importantly, note that these cost projections apply only to the sediment removal and management processes; costs associated with dam removal would be separate.

Several additional assumptions were used to prepare meaningful feasibility-level cost projections associated with sediment management activities:

1. Dewatering activities will occur within or along the reservoir and at a prepared dewatering/staging area.
2. Silt/turbidity curtains would not be required around the sediment removal operation; rather, operational practices are assumed to be sufficient to control in-river turbidity.
3. After dewatering, sediment is transported to adjacent BLM-owned property, consistent with concepts presented in Inter-Fluve (2021).

4. Placement of sediment on adjacent properties would require topsoil placement and revegetation over the entire placement area.
5. No economic benefits or savings from beneficial reuse or material sale are included in the cost estimate.
6. Costs presented do not include material segregation as regulated waste due to elevated contaminant concentrations. Costs instead reflect a situation where excavated sediment can be placed or disposed of without contamination-based restrictions.
7. Costs for permits and approvals are anticipated to apply but are not yet determined or incorporated into the preliminary cost projections.

These assumptions provide a conservative basis for the preliminary cost projections. Certain project components, such as topsoil placement or turbidity curtains, may or may not be required in the final design but additional assessment is required to determine if they are or are not necessary.

Each of the dredging scenarios include costs for mobilization/demobilization, site preparation for staging and dewatering areas, access road improvements, environmental controls, design, and permitting. Cost for placement of sediment on adjacent properties are considered for each of the dredging scenarios to evaluate feasibility. Costs for off-site placement and landfill disposal are considered in the following section.

Cost Implications of Off-Site Placement and Landfill Disposal

If it is determined that material placement on adjacent BLM property is not feasible, material would need to be transported off site for placement or disposed of in an approved solid waste facility. As shown in Tables 2 and 3, some alternative off-site locations have been identified that could potentially receive dredged material if placement on BLM property is not feasible. Additionally, the nearest landfill could be utilized as an alternative to BLM property placement or other off-site placement locations.

A situation may arise where placement on the BLM property adjacent to the dam impoundment is not feasible but placement on other tracts of BLM property that are located farther from the impoundment is allowed. This would require additional transportation of the sediment to the final placement area—potentially a similar situation to the off-site placement described for beneficial reuse or landfill disposal.

Off-site placement would require additional transportation costs associated with the use of haul trucks. No railways were identified near the site that could transport the material more cost-effectively than haul trucks. An example cost estimate for off-site placement was prepared for material transportation and placement at the former quarry site along Havillah Road, which is located 28 miles from the dam impoundment, or similar or equivalent options. Transportation and placement at such a location indicates the increased costs associated with off-site placement at a location that is relatively distant

from the site. Costs were also prepared for transportation and disposal at the nearest landfill, which is the Okanogan Central Landfill (located 54 miles from the dam impoundment).

Costs include the same project costs associated with dredging and dewatering but incorporate additional transportation costs for the increased distance for off-site placement. No costs were added for additional sediment amendments to reduce free liquids in the sediment. Many landfills require loads of sediment to pass a paint filter test that quantifies the amount of free liquids in the waste. If liquids are present, certain amendments can be added to the sediment, such as Portland cement, that absorb the free liquids and allow the loads to pass the paint filter test. Amendments may or may not be necessary depending on the landfill and dewatering procedures.

Summary of Projected Costs for Sediment Management

Table 5 summarizes sediment management cost projections for Dredging Scenarios 1, 2, and 3, covering the relative cost effects of material placement on BLM property, off-site transportation and placement, and landfill transportation and disposal. Costs displayed in Table 5 include construction costs as well as costs for construction management, project management, engineering design, profit and overhead, and a 30% contingency. For the different placement or disposal alternatives, project costs were assumed to be the same with the exception of transportation and placement/disposal costs. Detailed feasibility-level cost estimates are provided in Attachment 1 for the three dredging scenarios.

Table 5
Sediment Management Cost Projections for Removal Scenarios 1, 2, and 3 Under Various Sediment Placement or Disposal Alternatives

Sediment Removal Scenario	Dredging Volume (cy)	Feasibility-Level Cost Estimate		
		Placement Along Adjacent Slopes on BLM Property	Off-Site Transportation and Disposal	Landfill Transportation and Disposal
1: Complete Removal	2,940,000	\$89,800,000	\$221,700,000	\$290,400,000
2: Half Removal	1,470,000	\$49,900,000	\$114,100,000	\$148,500,000
3: Quarter Removal	735,000	\$28,800,000	\$59,300,000	\$76,500,000

Notes:

Cost projections assumes sediment removal by mechanical excavation using land-based equipment and temporary drawdown of water levels. Dam removal and permitting costs not included.

The feasibility of off-site placement and landfill disposal must be determined prior to additional project planning. The least expensive alternative would be placement on BLM property due to reduced costs associated with transportation. Costs associated with intermediate dredging volumes may scale to some extent, but equipment requirements will change depending on the planned sediment removal volume.

The construction alternatives included in the feasibility-level cost projections do not represent a final recommendation for design. The selected alternatives represent methods that are frequently applied to dredging projects of this magnitude, but a thorough alternatives analysis is recommended to determine which methods are best applied for this project. An alternatives analysis should consider spatial requirements for equipment and dewatering, required dredging production rates, construction schedules, and beneficial reuse opportunities.

The most significant cost drivers of the project include the overall dredging volume, dewatering activities, and sediment placement or disposal. The total project cost increases with increased dredging volume. Dewatering costs are substantial but necessary to prepare the dredged material for placement, grading, compaction, and revegetation. Site restoration costs, which include final grading, topsoil application, and reseeding, are also substantial but necessary to reduce erosion and aesthetic impacts.

Conclusions

This technical memorandum has presented a discussion on topics related to sediment management for the Enloe Dam Removal Project. Sediment conditions, including physical sediment composition and chemical constituents, dredging methods and dewatering requirements, sediment placement and disposal alternatives, anticipated permitting requirements, and a feasibility-level cost estimate were presented. Due to the substantial volume of sediment within the dam impoundment area, sediment management will be a major consideration in dam removal planning.

As illustrated in the "Preliminary Cost Estimate" section, the volume of dredged sediment is a leading cost driver for the project, along with final placement or disposal location. Additional analysis may be required to determine what volume of material will be necessary to remove from the dam impoundment prior to dam removal to reduce impacts to downstream properties and river ecology. Continued coordination with BLM will be necessary to determine whether dredged material can be placed on BLM-owned land and what conditions or specifications the placement and site restoration would need to follow.

Although sediment management activities associated with dam removal appear to require a substantial effort, the maximum extent of dredging is technically feasible using existing equipment and construction methodology.

References

Bureau of Reclamation, 2015. *Role of Adaptive Sediment Management in Elwha Dam Removal*. 5th Federal Interagency Hydrologic Modeling Conference and 10th Federal Interagency Sedimentation Conference; April 2015.

- Ecology (Washington State Department of Ecology), 2021. Sediment Cleanup User's Manual (SCUM). Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC. Third Revision. December 2021.
- Ecology, 2023. *Site Sediment Characterization Report*. Enloe Dam. Prepared by Kennedy Jenks. March 3, 2023.
- Entrix, 2007. Enloe Hydroelectric Project Federal Energy Regulatory Commission License Application. Project No. 12569. November 2007.
- Inter-Fluve, 2016. *Enloe Dam Provisional Removal Plan*. Prepared for Trout Unlimited. April 21, 2016.
- Inter-Fluve, 2021. *Enloe Dam Removal Concept Plan*. Prepared for Wells Habitat Conservation Plan Tributary Committee. June 1, 2021.
- Kondolf, G.M., Y. Gao, G.W. Annandale, G.L. Morris, E. Jiang, J. Zhang, Y. Cao, P. Carling, K. Fu, Q. Guo, R. Hotchkiss, C. Peteuil, T. Sumi, H. Wang, Z. Wang, Z. Wei, B. Wu, C. Wu, and C.T. Yang, 2014. "Sustainable Sediment Management In Reservoirs and Regulated Rivers: Experiences From Five Continents." *Earth's Future* 2(5):256–280. May, 2014.
- Kondolf, G.M., G. Annandale, and Z. Rubin, 2015. *Sediment Starvation from Dams in the Lower Mekong River Basin: Magnitude of the Effect and Potential Mitigation Opportunities*. 36th International Association for Hydro-Environment Engineering and Research World Congress; July 2015.
- Nelson, L.M., 1972. *Potential Transport of Sediment from Enloe Reservoir by the Similkameen and Okanogan Rivers, Washington*. U.S. Geological Survey. 1972.
- Umpleby, J.B., 1911. "Geology and Ore Deposits of the Oroville-Nighthawk Mining District." *Washington Geological Survey Bulletin No. 5*. 1911.
- USEPA (U.S. Environmental Protection Agency), 2005. *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*. EPA-540-R-05-012. December 2005.
- USGS (U.S. Geological Survey), 2022a. *Grain Size, Chemistry, and Volume of Sediment from the Similkameen River Above Enloe Dam, Fall 2019*. Presented by Andrew Spanjer, USGS hydrologist (Tonasket, Washington); May 25, 2022.
- USGS, 2022b. *Element Concentrations and Grain Size of Sediment from the Similkameen River Above Enloe Dam (Enloe Reservoir) near Oroville, Okanogan County, Washington, 2019*. Scientific Investigations Report 2022-5073. March 2022.

Wolff, F.E., M. Brookshier, D. McKay, and D. Norman, 2007. *Inactive And Abandoned Mine Lands – Bodie Mine, Wauconda Mining District, Okanogan County, Washington*. Washington Division of Geology and Earth Resources Information Circular 106. November 2007.

Wolff, F.E., D.T. McKay, and D. K. Norman, 2010. *Inactive and Abandoned Mine Lands – Ruby Mine, Nighthawk Mining District, Okanogan County, Washington*. Washington Division of Geology and Earth Resources Information Circular 111. May 2010.

Attachment

Attachment 1 Sediment Removal and Management Options – Feasibility-Level Cost Estimate

Attachment 1

Sediment Removal and Management Options – Feasibility-Level Cost Estimate

Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 1: Placement on BLM Property					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$2,491,935	\$2,491,900
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	15	\$4,700	\$70,500
2.2	Site Grading	ACRE	15	\$4,600	\$69,000
2.3	Staging Area Construction	LS	1	\$1,088,000	\$1,088,000
2.4	Roadway Construction	LF	2000	\$38	\$76,000
2.5	Site Facilities	MO	24	\$10,000	\$240,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	2,940,000	\$5	\$14,700,000
3.2	Material Processing/Dewatering	CY	2,940,000	\$3	\$8,820,000
3.3	Surveying	EA	24	\$11,800	\$283,200
4.0	Placement on Adjacent Property	TON	4,116,000	\$5	\$20,580,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	30	\$130,400	\$3,912,000
7.0	Demobilization	LS	1	\$1,462,935	\$1,462,900
Construction Subtotal					\$53,793,500
8.0	Construction Management			6%	\$3,227,600
9.0	Project Management			5%	\$2,689,700
10.0	Engineering Design			6%	\$3,227,600
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$10,758,700
13.0	Contingency 30%			30%	\$16,138,100
Total Cost					\$89,835,200
Rounded Total					\$89,800,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

This is a feasibility-level cost projection only; no technical design has yet been performed. Specifics of design and site and sediment conditions, and market conditions at the time of contractor bidding and construction (including market competition, inflation, and variations in pricing for labor, fuel, and materials), will all affect actual project costs, such that actual implementation costs may differ significantly from this projection.

Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 2: Placement on BLM Property					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$1,381,945	\$1,381,900
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	15	\$4,700	\$70,500
2.2	Site Grading	ACRE	15	\$4,600	\$69,000
2.3	Staging Area Construction	LS	1	\$1,088,000	\$1,088,000
2.4	Roadway Construction	LF	1500	\$38	\$57,000
2.5	Site Facilities	MO	18	\$10,000	\$180,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	1,470,000	\$5	\$7,350,000
3.2	Material Processing/Dewatering	CY	1,470,000	\$3	\$4,410,000
3.3	Surveying	EA	18	\$11,800	\$212,400
4.0	Placement on Adjacent Property	TON	2,058,000	\$5	\$10,290,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	30	\$130,400	\$3,912,000
7.0	Demobilization	LS	1	\$867,445	\$867,400
Construction Subtotal					\$29,888,200
8.0	Construction Management			6%	\$1,793,300
9.0	Project Management			5%	\$1,494,400
10.0	Engineering Design			6%	\$1,793,300
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$5,977,600
13.0	Contingency 30%			30%	\$8,966,500
Total Cost					\$49,913,300
Rounded Total					\$49,900,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 3: Placement on BLM Property					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$795,460	\$795,500
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	8	\$4,700	\$37,600
2.2	Site Grading	ACRE	8	\$4,600	\$36,800
2.3	Staging Area Construction	LS	1	\$1,511,010	\$1,511,000
2.4	Roadway Construction	LF	1000	\$38	\$38,000
2.5	Site Facilities	MO	12	\$10,000	\$120,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	735,000	\$5	\$3,675,000
3.2	Material Processing/Dewatering	CY	735,000	\$3	\$2,205,000
3.3	Surveying	EA	12	\$11,800	\$141,600
4.0	Placement on Adjacent Property	TON	1,029,000	\$5	\$5,145,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	23	\$130,400	\$2,999,200
7.0	Demobilization	LS	1	\$538,210	\$538,200
Construction Subtotal					\$17,242,900
8.0	Construction Management			6%	\$1,034,600
9.0	Project Management			5%	\$862,100
10.0	Engineering Design			6%	\$1,034,600
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$3,448,600
13.0	Contingency 30%			30%	\$5,172,900
Total Cost					\$28,795,700
Rounded Total					\$28,800,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 1: Off-site Transportation and Placement					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$1,731,515	\$1,731,500
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	23	\$4,700	\$108,100
2.2	Site Grading	ACRE	23	\$4,600	\$105,800
2.3	Staging Area Construction	LS	1	\$5,341,984	\$5,342,000
2.4	Roadway Construction	LF	2000	\$38	\$76,000
2.5	Site Facilities	MO	24	\$10,000	\$240,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	2,940,000	\$5	\$14,700,000
3.2	Material Processing/Dewatering	CY	2,940,000	\$3	\$8,820,000
3.3	Surveying	EA	24	\$11,800	\$283,200
4.0	Off-site Transportation and Placement	TON	4,116,000	\$23	\$94,668,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	38	\$130,400	\$4,955,200
7.0	Demobilization	LS	1	\$1,731,515	\$1,731,500
Construction Subtotal					\$132,761,300
8.0	Construction Management			6%	\$7,965,700
9.0	Project Management			5%	\$6,638,100
10.0	Engineering Design			6%	\$7,965,700
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$26,552,300
13.0	Contingency 30%			30%	\$39,828,400
Total Cost					\$221,711,500
Rounded Total					\$221,700,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 2: Off-site Transportation and Placement					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$953,585	\$953,600
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	15	\$4,700	\$70,500
2.2	Site Grading	ACRE	15	\$4,600	\$69,000
2.3	Staging Area Construction	LS	1	\$2,810,802	\$2,810,800
2.4	Roadway Construction	LF	1500	\$38	\$57,000
2.5	Site Facilities	MO	18	\$10,000	\$180,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	1,470,000	\$5	\$7,350,000
3.2	Material Processing/Dewatering	CY	1,470,000	\$3	\$4,410,000
3.3	Surveying	EA	18	\$11,800	\$212,400
4.0	Off-site Transportation and Placement	TON	2,058,000	\$23	\$47,334,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	30	\$130,400	\$3,912,000
7.0	Demobilization	LS	1	\$953,585	\$953,600
Construction Subtotal					\$68,312,900
8.0	Construction Management			6%	\$4,098,800
9.0	Project Management			5%	\$3,415,600
10.0	Engineering Design			6%	\$4,098,800
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$13,662,600
13.0	Contingency 30%			30%	\$20,493,900
Total Cost					\$114,082,600
Rounded Total					\$114,100,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 3: Off-site Transportation and Placement					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$538,210	\$538,200
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	8	\$4,700	\$37,600
2.2	Site Grading	ACRE	8	\$4,600	\$36,800
2.3	Staging Area Construction	LS	1	\$1,511,010	\$1,511,000
2.4	Roadway Construction	LF	1000	\$38	\$38,000
2.5	Site Facilities	MO	12	\$10,000	\$120,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	735,000	\$5	\$3,675,000
3.2	Material Processing/Dewatering	CY	735,000	\$3	\$2,205,000
3.3	Surveying	EA	12	\$11,800	\$141,600
4.0	Off-site Transportation and Placement	TON	1,029,000	\$23	\$23,667,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	23	\$130,400	\$2,999,200
7.0	Demobilization	LS	1	\$538,210	\$538,200
Construction Subtotal					\$35,507,600
8.0	Construction Management			6%	\$2,130,500
9.0	Project Management			5%	\$1,775,400
10.0	Engineering Design			6%	\$2,130,500
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$7,101,500
13.0	Contingency 30%			30%	\$10,652,300
Total Cost					\$59,297,800
Rounded Total					\$59,300,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 1: Landfill Transportation and Disposal					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$1,731,515	\$1,731,500
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	23	\$4,700	\$108,100
2.2	Site Grading	ACRE	23	\$4,600	\$105,800
2.3	Staging Area Construction	LS	1	\$5,341,984	\$5,342,000
2.4	Roadway Construction	LF	2000	\$38	\$76,000
2.5	Site Facilities	MO	24	\$10,000	\$240,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	2,940,000	\$5	\$14,700,000
3.2	Material Processing/Dewatering	CY	2,940,000	\$3	\$8,820,000
3.3	Surveying	EA	24	\$11,800	\$283,200
4.0	Landfill Transportation and Disposal	TON	4,116,000	\$33	\$135,828,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	38	\$130,400	\$4,955,200
7.0	Demobilization	LS	1	\$1,731,515	\$1,731,500
Construction Subtotal					\$173,921,300
8.0	Construction Management			6%	\$10,435,300
9.0	Project Management			5%	\$8,696,100
10.0	Engineering Design			6%	\$10,435,300
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$34,784,300
13.0	Contingency 30%			30%	\$52,176,400
Total Cost					\$290,448,700
Rounded Total					\$290,400,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 2: Landfill Transportation and Disposal					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$953,585	\$953,600
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	15	\$4,700	\$70,500
2.2	Site Grading	ACRE	15	\$4,600	\$69,000
2.3	Staging Area Construction	LS	1	\$2,810,802	\$2,810,800
2.4	Roadway Construction	LF	1500	\$38	\$57,000
2.5	Site Facilities	MO	18	\$10,000	\$180,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	1,470,000	\$5	\$7,350,000
3.2	Material Processing/Dewatering	CY	1,470,000	\$3	\$4,410,000
3.3	Surveying	EA	18	\$11,800	\$212,400
4.0	Landfill Transportation and Disposal	TON	2,058,000	\$33	\$67,914,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	30	\$130,400	\$3,912,000
7.0	Demobilization	LS	1	\$953,585	\$953,600
Construction Subtotal					\$88,892,900
8.0	Construction Management			6%	\$5,333,600
9.0	Project Management			5%	\$4,444,600
10.0	Engineering Design			6%	\$5,333,600
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$17,778,600
13.0	Contingency 30%			30%	\$26,667,900
Total Cost					\$148,451,200
Rounded Total					\$148,500,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

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Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Sediment Removal Scenario 3: Landfill Transportation and Disposal					
Task No.	Task Description	Units	Quantity	Unit Cost	Total Rounded Cost
1.0	Mobilization	LS	1	\$538,210	\$538,200
2.0	Site Preparation				
2.1	Clearing and Grubbing	ACRE	8	\$4,700	\$37,600
2.2	Site Grading	ACRE	8	\$4,600	\$36,800
2.3	Staging Area Construction	LS	1	\$1,511,010	\$1,511,000
2.4	Roadway Construction	LF	1000	\$38	\$38,000
2.5	Site Facilities	MO	12	\$10,000	\$120,000
3.0	Mechanical Excavation/Dredging				
3.1	Mechanical Excavation	CY	735,000	\$5	\$3,675,000
3.2	Material Processing/Dewatering	CY	735,000	\$3	\$2,205,000
3.3	Surveying	EA	12	\$11,800	\$141,600
4.0	Landfill Transportation and Disposal	TON	1,029,000	\$33	\$33,957,000
5.0	Dam Removal	LS	1	TBD/Not Included	
6.0	Site Restoration	ACRE	23	\$130,400	\$2,999,200
7.0	Demobilization	LS	1	\$538,210	\$538,200
Construction Subtotal					\$45,797,600
8.0	Construction Management			6%	\$2,747,900
9.0	Project Management			5%	\$2,289,900
10.0	Engineering Design			6%	\$2,747,900
11.0	Permitting and Approvals			TBD/Not Included	
12.0	Profit and Overhead 20%			20%	\$9,159,500
13.0	Contingency 30%			30%	\$13,739,300
Total Cost					\$76,482,100
Rounded Total					\$76,500,000

Notes:

CY: cubic yard

EA: each

LF: linear foot

LS: lump sum

Sediment Removal and Management Options

Enloe Dam Removal Project

Feasibility Level Cost Projections for Sediment Management (Dam removal not included)

Cost Exclusions:

- Costs do not include permitting, property costs (where applicable), access costs, legal fees, Agency oversight, or public relations efforts.

General Notes:

- Operations conducted under this estimate include hydraulic dredging of the Enloe Dam impoundment. Total removal volume in this scenario is 2,940,000 CY. Dewatering will be conducted using stacked geotubes. The staging and dewatering area is located between the Loomis-Oroville Road and the Similkameen Dam Road.
- Costs and volumes are rounded off as appropriate.
- All cost estimates include material, labor, and taxes unless otherwise noted. Unit Costs are estimated using standard estimating guides (e.g., RS Means Heavy Construction Site Work, Equipment Watch, and Landscape Cost Data), equipment and material vendors, professional judgment, and experience from similar projects.
- The estimates presented are developed using current and generally accepted engineering cost estimation methods, including federal cost estimating guidance (*A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* [EPA 2000]; *Civil Works Cost Engineering ER 1110-2-1302* [USACE 2016]).
- This is a feasibility-level cost projection only; no technical design has yet been performed. Specifics of design and site and sediment conditions, and market conditions at the time of contractor bidding and construction (including market competition, inflation, and variations in pricing for labor, fuel, and materials), will all affect actual project costs, such that actual implementation costs may differ significantly from this projection.

Assumptions:

- 1 Mobilization assumes 10% of total construction costs.
- 2 Site preparation includes clearing and grubbing and then grading of the required site area. Site area includes the staging area (including dewatering area) and access area to the dam impoundment, and roadway. Pipeline installation includes the costs associated with obtaining and fusing all pipeline necessary for the work. Site preparation will also include all site facilities required through the duration of the work.
- 3 Hydraulic dredging and mechanical dewatering using geotubes. Hydraulic dredging includes dredging within the dam impoundment and pumping that material to the geotube dewatering area. The geotubes are stacked 3 high. This also includes a pre- and post-construction survey of the entire site plus monthly bathymetric surveying throughout the dredging operations.
- 4 Site restoration includes the restoration of all site areas, including placement of 3 inches of topsoil and hydroseeding in the staging and dewatering area as well as the material placement location.
- 5 Off-site transportation and placement assumes placement occurs at the Havillah Road Quarry, located 28 miles one-way from the site.
- 6 Landfill transportation and disposal assumes disposal at the Okanogan Central Landfill, located 54 miles from the site. Tipping fees are assumed to be in-line with typical fees for landfill daily cover acceptance at \$10/ton.
- 7 Demobilization assumes 5% of total construction costs (excluding mobilization).
- 8 Construction management is 6% of the total direct construction and material management costs.
- 9 Project management is 5% of the total direct construction costs and material management costs.
- 10 Remedial Design is 6% of the total direct construction costs and material management costs.
- 11 Profit and Overhead is 20% of the total direct construction costs and material management costs.
- 12 Contingency is 30% of the total direct construction costs and material management costs.