

Bureau of Reclamation's WaterSMART Aquatic Ecosystem Restoration
Projects for Fiscal Year 2024

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Photo of the lower Chiwawa River looking upstream from the Big Meadow Creek confluence.

Chiwawa Instream Complexity and Floodplain Reconnection Design
Project

Chelan County Natural Resources Department

Scott Bailey

411 Washington Street, Suite 201

Wenatchee, WA 98801

Scott.Bailey@co.chelan.wa.us

(509) 679-2131

Table of Contents

Executive Summary	2
Project Location	3
Project Description.....	3
EVALUATION CRITERIA A: Project Benefits	6
Sub-Criterion A.1. General Project Benefits, Task A Design Projects.....	6
Sub Criterion A.2. Quantification of Specific Project Benefits	13
EVALUATION CRITERION B: Prior Restoration Planning and Stakeholder Involvement and Support	23
Sub-Criterion B1: Task A: Study and Design Stakeholder Support and Restoration Planning	23
EVALUATION CRITERION C: Project Implementation and Readiness to Proceed	29
Sub-Criterion C1: Task A: Study and Design Project Implementation.....	29
EVALUATION CRITERION D: Presidential and Department of the Interior Priorities	32
Project Budget Table.....	35

Appendices A – D (Maps, Temperature and Flow data, Letters of Support, Project Schedule and References), other optional application material (Official resolution; cultural resource; conflict of interest, duplication of effort, and Uniform audit statements), and Budget narrative attached seperately.

Executive Summary

Task A: Study and Design

Application Date: January 23, 2024; Anticipated start/end dates: Oct 2014 – Sep 2027.

The Chelan County Natural Resources Department (Category A applicant), in partnership with Yakama Nation Fisheries, will advance designs and complete environmental compliance tasks for a large scale instream and floodplain restoration project in the lower 13 river-miles (RMs) of the Chiwawa River, and the lower 0.2 RMs of Big Meadow Creek, a major Chiwawa Tributary. The Chiwawa is one of twelve major sub-watersheds in the Wenatchee Basin in Chelan County, Washington, and supports a major irrigation district and several community water systems. The upper Chiwawa river is a critical stronghold for ESA-listed species recovery of spring Chinook, steelhead, and bull trout, and supports the majority of ESA-listed spring Chinook and bull trout spawning in the entire Wenatchee Basin. However, conditions in the lower Chiwawa project area – such as chronically low baseflows, homogeneous, plane-bed habitat with limited large wood, and high stream temperatures - threaten this stronghold. These limiting factors were identified in the Upper Columbia Salmon Recovery Plan, which also identifies the lower Chiwawa as a Tier 1 restoration priority for ESA-listed species recovery. The proposed project is the next step in a multi-phase, collaborative, and data driven effort to identify specific projects that address these limiting factors, restore habitat and support ESA-listed persistence in this critical Wenatchee Basin stronghold. Furthermore, by substantially increasing floodplain connection and sub-surface/groundwater storage, the implementation of the proposed designs will target root causes of limited baseflows, thus supporting agricultural and municipal uses, as well as community and

habitat climate change resilience, in this major agricultural basin. Conceptual/Preliminary designs within the eight (8) project areas include process-based restoration techniques such as wood loading and side-channel creation, specifically designed to re-form complex pool-riffle habitat, trigger lateral channel movement, and result in substantial increases in habitat diversity and sub-surface water storage to support baseflows, wetlands, and riparian habitat. The project is on both private and Federal USFS lands, and is part of the USFS work plan for the Okanogan-Wenatchee National Forest.

Project Location

The Chiwawa Instream Complexity and Floodplain Reconnection Design Project is located in the Chiwawa sub-watershed (HUC-10) which is one of the twelve major sub-watersheds that comprise the Wenatchee Watershed (HUC-8). The project is divided into seven project areas (A – G) that cover the entirety of the lower Chiwawa River Assessment Unit (HUC-12, RM 1-13.5) and one project area on a major Chiwawa tributary (Big Meadow Creek confluence, RM 0-0.2). The project is located in Chelan County, Washington, approximately 2.5 miles north of the unincorporated town of Plain, and 15 miles north of Leavenworth. The downstream most project point is located at latitude 47°47'32.08" N and longitude 120°38'16.76" W, and the upstream most project point is located at latitude 47°53'33.82" N and longitude 120°41'53.74" W. (Appendix A, Figure 1).

Project Description

Task A: Study and Design

The Chiwawa Instream Complexity and Floodplain Reconnection Design Project is the next step in a collaborative, data-driven, multi-faceted restoration planning effort to restore the entire Lower Chiwawa Assessment Unit (AU, RM 1-13.5) with process-based restoration techniques to support ESA-listed habitat in one of the most important sub-watersheds in the Wenatchee basin. This grant request will advance 10% designs to 60% preliminary designs for five discrete project areas, including four on the mainstem Chiwawa River (Areas B, C, E and F) and one on a major tributary (Big Meadow Creek RM 0 - 0.2). In addition, we are currently working in conjunction with BOR and USFS on a project for Area D that we expect to conclude in early 2025. That effort is preparing Preliminary Designs and completing other work needed in support of restoration at the site (e.g., wetland delineation, cultural resources survey/reporting, etc). This proposal includes funds to advance engineering designs for Area D to construction-ready. This proposal will also help advance ongoing efforts in Area A through landowner outreach. Lastly, this proposal will fund collaboration with Yakama Nation Fisheries (YNF) regarding Area G (restoration led by YNF) and collaborative CCNRD/YNF restoration at Areas B and C, supporting the unique partnership our two agencies have regarding the restoration of the entire Lower Chiwawa River Assessment Unit.

We propose to: (1) manage and administer the comprehensive restoration effort, including grant funding and compliance; (2) conduct studies in support of regulatory compliance and permit applications, prepare draft permit applications and complete other tasks needed for regulatory compliance; (3) assess and evaluate project areas and develop Conceptual Designs at Areas B, C, the Big Meadow Confluence site, E, F; (4) develop full 60% Preliminary Designs for restoration at the Big Meadow Creek Confluence site and mainstem Chiwawa Project Areas B, C, E, F; (5) develop construction-ready designs and bid documents for Area D, and (6) complete tasks needed to communicate and coordinate with landowners and other stakeholders on all eight (8) Project

areas, which includes seven (7) on the mainstem Chiwawa (Areas A through G) and one (1) on Big Meadow Creek. Subsequent sections provide further details regarding tasks planned under this proposed project, and support the project schedule provided in Appendix D.

Task 1. Project Management and Administration: CCNRD will manage and administer funding, work agreements and contracts and will organize and lead site-specific Project Design Teams (PDT). Specific project management and administration tasks include the following: hire technical consultants; collaborate with project partners; develop agreements with partners to facilitate project tasks; schedule and lead PDT meetings; manage budgets and invoices, prepare progress reports and payment requests, and perform other tasks needed to comply with funding agreements and maintain communications among project partners and consultants.

Task 2. Environmental Compliance: Under this task, CCNRD will work with project partners and consultants to complete work needed to inform project designs, comply with applicable regulations, and facilitate subsequent project implementation. It includes a number of sub-tasks including: Wetlands and Waters Delineation, In-stream Recreational Use Survey, Cultural Resources Survey and Coordination, Floodplain Permitting, NEPA Compliance, Agency Coordination, and Permit Application Preparation.

Wetlands and Waters Delineation: This sub-task includes all work needed to delineate and assess wetland sites (and define ordinary high-water mark) within and adjacent to project areas B, C (including the Big Meadow Creek confluence site, which is directly adjacent mainstem area C), E and F in compliance with state and federal regulations. It also includes tasks needed to identify and evaluate potential impacts and improvements to wetland habitats associated with proposed restoration treatments, preparation of draft and final reports, and agency coordination.

In-stream Recreational Use Survey: People float the Chiwawa River in a variety of non-motorized watercraft, but there are a lot of unknowns associated with this recreational use of the river. We will work with partners to hire a contractor to complete a detailed study of boating and boater safety in the Lower Chiwawa AU, evaluate existing large woody material with respect to river navigability and user safety, and develop recommendations on how best to balance the safety of recreational users with in-stream habitat improvement.

Cultural Resources Survey and Coordination: This sub-task includes all work needed to survey Areas of Potential Effect at areas B, C (including Big Meadow confluence), E and F for cultural resources; prepare reports and other necessary documentation; and work with US Forest Service, the Washington Department of Archaeology and Historical Preservation, and tribes to protect cultural resources and assure compliance with state and federal regulations.

National Environmental Policy Act (NEPA) Compliance: We will identify if any NEPA compliance-related tasks will be required of us as the project sponsor before project implementation can occur at restoration sites included in this proposal. If additional work is required for NEPA compliance, we will identify those tasks (to be completed during a subsequent planning phase), and develop a scope of work and budget for inclusion in a later funding request.

Environmental Compliance: Coordination and Preparation: This sub-task includes all work necessary for CCNRD staff to communicate and coordinate with project partners and contractors and local, state, and federal regulatory agency staff while navigating regulatory processes relevant to in-stream restoration work in the Lower Chiwawa AU. We also will prepare draft permit

applications for each of the four project sites being evaluated under this proposal (which will be finalized and submitted during a subsequent project phase).

Task 3. Conceptual Designs: Under this task, we will complete all work necessary to develop engineering designs (and associated products) to the Conceptual Design stage (a.k.a. 30% Designs). We will work with a consulting engineering firm, other sub-contractors and project partners and stakeholders in completing the following sub-tasks.

Background Review and Field Reconnaissance: Previous work in support of restoration at areas B, C, E, F, and Big Meadow Creek confluence included compilation and review of existing information, acquisition and analysis of new data, and field reconnaissance. However, this work was completed for a large-scale effort that identified potential restoration actions along nearly the entire lower Chiwawa River. Additional information is likely needed to develop the detailed, site-specific engineering designs proposed in this application.

This sub-task includes PDT kick-off meetings to review and discuss existing information, identify additional information needs, and develop visions for restoration at areas B, C, E, F, and Big Meadow Creek confluence. It includes more detailed reviews of existing information by the design engineer and PDT, and review and consideration of information gathered under Task 2, above. In addition, this task includes field reconnaissance and collection and analysis of new data for each of the four restoration sites.

Assessment and Modeling: This sub-task includes all work needed to assess and model existing and proposed conditions at areas B, C, E, F, and Big Meadow Creek Confluence. We anticipate both hydraulic and Habitat Suitability Index modeling will be completed. The process will be iterative – existing models will be reviewed, and new site-specific models developed and revised as needed to evaluate existing conditions and assess and revise proposed conditions. All modeling and design will utilize 2021 topobathymetric LiDAR funded by BOR and collected as part of an earlier effort.

Alternatives Development and Analysis: Alternatives for restoration actions at each of the sites included in this proposal were developed as part of the earlier Lower Chiwawa AU project described elsewhere. Under this sub-task, engineering consultants and PDTs will review the existing alternatives and design concepts and determine whether additional alternatives should be prepared and assessed before site-specific engineering design work begins in earnest. New alternatives may be needed due to changed site conditions, changes in landowner willingness, findings of Task 2 studies or other new data, or other factors that render the previously prepared alternatives and concepts inappropriate or outdated.

Geotechnical Studies and Pile Testing: This sub-task includes geotechnical studies, pile testing and/or other similar work that may be needed to facilitate design and construction of engineered log jams (ELJs) and other restoration elements at each of the project sites included in this proposal. Design engineers will determine whether studies are needed based on the site-specific conditions and, for this proposal, we assume the design engineer will hire a subcontractor to complete this work.

Development of Conceptual Designs (30% Designs): This sub-task will follow selection of preferred restoration alternatives and geotechnical studies and includes all work needed to prepare 30% engineering design packages for areas B, C, E, F, and Big Meadow Creek Confluence.

Upon completion, we will send these design packages to outside technical specialists, project site landowners, permitting agency staff, and other stakeholders for review and comment. The PDT will review and address all comments received, after which we will compile comments and responses into a matrix for each project site, which will become part of its project record. The matrices will inform subsequent design iterations.

Campground Planning Coordination and Assistance: The Area C project site is on USFS land and includes a developed campground on the river right floodplain (with three camp sites, a central pit toilet and an access road). Because it abuts the river channel and occupies a portion of the river right floodplain, this campground limits restoration options at Area C, and affects riparian habitats and water quality. We propose to explore options to relocate this campground to eliminate this constraint to aquatic and floodplain restoration from the Area C project site (while maintaining developed camping opportunities within the ranger district).

Task 4. Preliminary Designs: Under this task, we will complete all work necessary to advance engineering designs (and associated products) to the Preliminary Design stage (aka 60% Designs) for Areas B, C, E, F, and the Big Meadow Creek confluence site. This task will follow completion of many of the sub-tasks identified under Tasks 2 and 3; however, some work under prior tasks (e.g., Wetlands Impacts and Functional Lift Assessment, Hydraulic Modeling, Campground Planning, Environmental Compliance Coordination and Preparation, etc.) are expected to continue through this phase and beyond.

We will send Preliminary Design Packages for outside review and comment, and compile a comments and responses matrix for each project site to inform later design iterations.

Task 5. Final Designs – Area D: Under this task, we will complete all work necessary to advance engineering designs (and associated products) to the Final Design stage (aka Construction-ready Designs). An ongoing project is completing Preliminary Designs and other supporting work (e.g., cultural resources survey/reporting, wetland delineation, permit application prep, etc.) for this site.

Task 6. Watershed Coordination: Watershed Coordination includes work necessary to maintain lines of communication among project partners, contractors, agency staff, landowners and other stakeholders; relay project information to other interested parties; and document communication and coordination during the three-year project period. Although previously described tasks include coordination and communication, this task prioritizes this work across the entire AU, which is essential for project completion, and provides a mechanism for CCNRD staff to focus time communicating with identified stakeholders (including participation in community meetings). This will include work at sites not included in other tasks, namely landowner outreach at Area A, and coordinating with Yakama Nation Fisheries on their restoration efforts at Area G. Yakama Nation Fisheries and the U.S. Forest Service are key partners in the Lower Chiwawa Restoration effort, and this task will provide the resources to work closely with these agencies on all aspects of design.

EVALUATION CRITERIA A: Project Benefits

Sub-Criterion A.1. General Project Benefits, Task A Design Projects

•What are the critical issues of concern in the watershed?

The Chiwawa sub-watershed is a stronghold and Major Spawning Area (MASA) for Endangered Species Act (ESA) listed Upper Columbia spring Chinook, Upper Columbia steelhead, and bull trout. In fact, the majority of Wenatchee Basin spring Chinook and bull trout spawning occurs in the upper Chiwawa River above RM 13.5 (Interfluve 2022). However, relatively pristine conditions in the upper Chiwawa are contrasted by the low summer base flows, homogeneous habitat, and elevated stream temperatures of the lower Chiwawa Assessment Unit (AU, RM 0-13.5). Because of degraded habitat conditions coupled with the overall importance of the AU to species recovery, the lower Chiwawa is not only a Tier 1 restoration priority, but also among the top three highest priority AUs for spring Chinook restoration in the entire Wenatchee Basin ([Upper Columbia Salmon Recovery Prioritization](#), UCRTT 2020). The Lower Chiwawa AU is also a Tier 2 Priority for steelhead and bull trout.

Issues of concern in the lower Chiwawa AU occur throughout the lower river (reaches 01 – 07, [Prioritization web-map 2020](#)), including in reaches where projects proposed in this application are located. Habitat conditions in the upper Chiwawa - characterized by wide meanders, large log jams, ample spawning gravel, cool water temperatures and adequate base-flows – are starkly contrasted by the simplified habitats in the lower Chiwawa, which lacks pools, complexity, and velocity refuge throughout (InterFluve 2022, Andonagui 2001, Roumasset 2020). Historical impacts to the lower Chiwawa include logging and housing development. Logs were pooled behind splash dams, then driven down the Chiwawa and Wenatchee Rivers to the mill in Leavenworth until 1926 (InterFluve 2022). Log drives systematically removed obstructions, such as boulder and large woody debris from the channel resulting in a homogeneous, plane-bed condition. Timber harvest in the riparian zones has also reduced potential for natural recruitment of large trees and channel shading. Some conversion of floodplain habitat to residential or agricultural land uses has also occurred, which has reduced already limited availability of floodplain and off-channel habitat areas for salmonids. Big Meadow Creek, which is a major tributary of Chiwawa River at RM 10, has been deeply incised due to road building, logging, and high intensity fire in the watershed. Although the Big Meadow Confluence project area (RM 0 - 0.2) reach runs through a wide, undeveloped floodplain, the floodplain is largely disconnected due to this deep channel incision (Appendix A Figure 4). This in turn leads to quick export of floodwaters out of the system, thereby limiting wetland hydrology and groundwater recharge which support baseflows in both Big Meadow Creek and Chiwawa River.

The most recent Habitat Prioritization effort conducted by the Upper Columbia Regional Technical Team (UCRTT) ranked low wood cover and low summer base flows as “unacceptable” Rank 1 limiting factors throughout the lower Chiwawa AU and project area. Other factor rankings vary by reach (there are 7 reaches in the lower AU), but the following factors are unacceptable in at least one reach and “at risk” (rank 2) in others: high rearing temperature, poor floodplain connectivity, limited off-channel/side-channel habitat, pool quantity and quality and riparian quality (more detail in A2). The lower Chiwawa also has several 303(d) listings for impaired temperature ([Washington Dept of Ecology Water Quality Map Atlas 2023](#)). These conditions have led to a lack of rearing opportunities for juvenile life stages (i.e. woody cover, cool refuge, off-channel habitat), which in turn can lead to poor juvenile salmonid survival and lower overall productivity of the sub-watershed. Priority life-stages for all three ESA-listed species (spring Chinook, bull trout, steelhead trout) in the AU are winter-rearing, summer-rearing, and fry.

The Upper Wenatchee Thermal Refuge Assessment found that out of all the reaches surveyed (Upper Wenatchee River and lower reaches of the Chiwawa, Nason, and Little Wenatchee) the lower Chiwawa had the least thermal heterogeneity, and lowest amount of thermal refuge opportunities. The thermal profile reflects the homogeneous nature of the habitat in general, and is characterized by a steady warming trend with almost no dips in temperature, and temperatures that reach above 20 deg C during the hottest part of summer (Appendix B, Figures 1-3). This lack of thermal refuge is a concern especially with predicted increases in stream temperature due to climate change.

The surface water diversion for the Wenatchee-Chiwawa Irrigation District (WCID) is located at Chiwawa RM 3.6 and currently diverts 18 cfs from the Chiwawa river during the irrigation season. During late summer baseflow conditions, this represents an approximately 26 percent drop in flow downstream of the diversion. Poor floodplain connectivity and lack of complexity causes flood waters to be quickly exported downstream, which limits ground water and hyporheic water storage and further exacerbates unacceptable base flows. This is a concern for both the sustainable water supply and habitat availability for rearing ESA-listed salmonids. Climate change predictions include lower base-flows in the future, especially in sub-basins in the Cascades that depend on adequate snowpacks for late season flows (Mauger 2017).

Because the Chiwawa river sub-basin is such an important stronghold for ESA-listed salmonids, viability of Upper Columbia spring Chinook, steelhead, and bull trout within the Wenatchee Basin is very dependent on Chiwawa River productivity. Therefore, critical habitat concerns that threaten juvenile ESA-listed salmonid survival in the lower Chiwawa project area - including simplified, plane-bed conditions; lack of large wood and off-channel habitats; high summer stream temperatures; and low base flows - threaten the viability of ESA-listed Wenatchee populations as a whole. In addition, unacceptable base-flows in this Rank 1 Assessment Unit limit water supply reliability for the WCID and Community water systems. Climate change models predict increasingly lower baseflows and higher stream temperatures, meaning if these issues are not addressed, they will likely worsen over time.

• Explain how your project will benefit aquatic ecosystems, including benefits to plant and animal species, fish and wildlife habitat, riparian areas, and ecosystems.

The proposed project is the next step in a multi-phase, collaborative and data-driven process to identify, design, and implement habitat restoration in the lower Chiwawa AU (RM 1-13.5) and Big Meadow Creek (RM 0 – 0.25) that addresses specific limiting factors identified by Recovery, Watershed, and Streamflow Restoration plans (see Criterion B). Once constructed, the Chiwawa Instream Complexity and Floodplain Reconnection Project will implement a large-scale restoration strategy that will result in instream and floodplain riparian habitat creation, improvements to water quality and quantity, and increases to both habitat complexity and habitat availability for a variety of fish and wildlife species, including ESA-listed salmonids. Broad goals of the project are to: (1) Add structure (wood and/or boulders) within the mainstem channel to create more complex habitat and rearing opportunities, (2) add structure to Big Meadow Creek to treat incision and improve floodplain connectivity and water storage, (3) Create/improve off-channel floodplains and side-channel habitats and increase floodplain activation and natural water storage, and (4) Treat impacts associated with developed campgrounds and roads in floodplain areas. Previously completed concepts (~10% designs) for five (5) proposed project locations (areas

B, C, E, F, and Big Meadow confluence site) will be advanced to preliminary designs (60%). Area D Preliminary Designs, currently in development, will be advanced to construction-ready designs as part of this effort. While specific features (i.e. number and location of large wood structure, length of side-channel created) differ between each site, general restoration techniques for each area share these following techniques and benefits:

Apex wood structures: These large wood structures will be placed in midchannel and split flow locations and are intended to initiate lateral channel processes, trap wood, and sort sediment. Bars formed in the lee of the structures should provide spawning locations, and apex structures may scour pools. Structures will also provide cover and velocity refuge.

Boulder placement with racking logs: These structures will function much like apex wood structures and are based on observations of natural wood structures anchored on large boulders that are present in some locations within the lower Chiwawa AU. Boulders will trap mobile wood and accumulations will grow over time, creating cover and pool habitats, and facilitating sediment deposition and sorting.

Bank buried structures and tipped whole trees: These structures will be positioned near the channel margin and will enhance existing pools and/or be placed where pools will likely develop. These structures provide covered pool and refuge habitat, especially at low flow. Both tipped trees and bank buried structures will add complexity and cover, and increase the availability of low velocity edge habitat that juvenile steelhead prefer (Interfluve 2022).

Side channel creation: Several side channels will be designed (to engage flow perennially where feasible). The channels will be designed to include ample wood and complex profiles to provide refuge habitats (preferred by juvenile Chinook). These features will be designed to increase both the duration and extent of floodplain inundation. Increased floodplain inundation will enhance wetland and riparian habitats and lead to greater ground water storage to supplement base flows.

Alluvial Water Storage (AWS) Treatments: Channel spanning wood structures have been shown to lead to substantial gains in sub-surface water storage in deeply-incised channels like Big Meadow Creek (CCNRD and NSD 2022). Wood treatments are designed to trigger channel bed aggradation, cause split flows that increase channel length, and subsequently reduce hydraulic gradient to increase water storage. These techniques will restore biological processes and increase sub-surface water storage in lower Big Meadow Creek at Area C (Appendix A, Figure 3 and 4). Concepts include machine built engineered log jams and grade control structures, selective grading along relic floodplain channels to increase water storage potential in the floodplain, and treatments to control invasive reed canary grass and enhance native plant species.

Campground decommissioning: A small, developed campground is located on the floodplain at Area C. To expand opportunities for restoration at this proposed project area, we will explore opportunities to relocate this facility to an area away from the river.

Wood features will increase hydraulic diversity, create pools and spawning habitat, and provide fish cover and low velocity refuge areas. They will also encourage floodplain engagement to enhance riparian habitats. Side channels will have a dual benefit of providing off channel habitat, and enhancing floodplain and riparian ecosystems. Specifically, the side-channels will increase water storage and availability on the floodplain, which will increase the extent of riparian habitats

and recharge floodplain aquifers. Increased water storage in the floodplain will provide a supplemental cool ground water source to the mainstem, helping to cool water temperatures. Enhanced riparian habitat will increase forage and habitats for a variety of wildlife including small mammals, amphibians, and birds. Through these mechanisms, the project will directly address habitat limiting factors and recovery priorities for ESA-listed species in the lower Chiwawa, as well as provide habitat improvements for other wildlife.

• Does the project affect water resources management in 2 or more river basins (defined as a minimum HUC-10 level)? Explain how and identify the area benefitted (provide a map).

The proposed project is located at RM 1.0 – 13.1 of the Chiwawa River, which is a tributary to the Wenatchee River that flows into the mainstem Wenatchee at RM 48 (Appendix A, Figure 1). The Chiwawa River contributes approximately 15% of the mean annual flow of the Wenatchee River at its mouth (Andonaegui 2001).

The WCID Chiwawa diversion is located on Chiwawa River at RM 3.6, which is within the project reach. The WCID diverts up to 18 cfs from the Chiwawa River, providing water for approximately 1,300 acres in the lower Chiwawa and Upper Wenatchee River valleys. Therefore, water resource management in Chiwawa River sub-watershed (HUC-10), also effects the HUC-10 Upper Wenatchee sub-watershed, which is defined as the Wenatchee River watershed RM 35.8 – 54.

The WCID 18 cfs withdrawal rate causes an approximate drop in summer baseflow from 70 to 52 cfs, which represents a 26 percent drop in baseflow at the diversion point at Chiwawa RM 3.6. However, although the WCID diversion is located at RM 3.6, summer base flows are an unacceptable limiting factor throughout the lower Chiwawa AU, from the mouth to RM 13.1 (UCRTT 2020). This suggests that environmental factors, in addition to the irrigation withdrawal, are causing these low flows. These other factors are likely associated with the simplified plane-bed hydraulics and limited floodplain activation that causes floodwaters to be quickly exported downstream and out of the system. This project will address these environmental factors by encouraging sub-surface and ground water recharge through increased floodplain activation and increased hydraulic diversity including slow water areas. This will result in an increase in natural water storage, which has been shown to help supplement baseflows (CCNRD and NSD 2022). In turn, this will help the WCID meet the needs of its users in both the Chiwawa and Upper Wenatchee River valleys.

• Does the project provide regional benefits, in addition to fish or habitat restoration, including:

o Supporting water needs for multiple water uses

Natural water storage provided by hydraulically connected floodplains, watercourses, and wetlands are an important source of baseflow in functional river systems and can help mitigate against chronic low flows caused by water management (Lange et al 2017). Efforts to re-connect a greater area of the lower Chiwawa floodplain to seasonal inundation, through methods such as side channel excavation and in-stream habitat structures in smaller tributary streams, are an important part of the Chelan County Climate Change Resiliency Strategy. The Strategy emphasizes implementing restoration projects throughout the Wenatchee watershed that lead to increased natural water storage, in order to help mitigate against water scarcity issues in this

agricultural watershed (Chelan County 2020). In particular, the proposed project supports multiple water uses in the following ways:

Agriculture: The majority of the land within the WCID service area is zoned as “Rural Residential” which depending on the specific type of rural residential zoning, represents private lots that are 2.5 to 20 acres. Small scale agriculture and ranching activities are commonly associated with these rural lots, and depend on the availability of surface water. By increasing natural water storage in the watercourses, riparian areas, and floodplains within the project reach, this project will help support and protect in-stream flow for rural agriculture.

Municipal: In addition to surface water withdrawals through WCID, there are three well-based, community water systems in the lower Chiwawa, which include the Thousand Trails and Chiwawa Communities Group A and Group B systems. Improved instream flow and increased ground water recharge in the lower Chiwawa will help protect both surface and ground water sources for existing and future rural domestic water needs.

Tribal: This project will benefit Tribal water uses by supporting in-stream flow for aquatic species of cultural significance, including ESA-listed salmonids and culturally important species like Coho salmon.

Environmental: This project will provide numerous environmental benefits by restoring ecosystem services provided by a functional stream corridor that is connected to its surrounding floodplain. Please see Criterion A.2, Species and Habitats, for details.

Recreational: This proposal includes recreation planning support from contracted recreational planner and/or designer who will help in developing a strategy to relocate a small, existing campground located with the Area C project site. It also includes work to quantify non-motorized boating in the river, and assess and improve boater safety. This will help preserve and enhance recreational use in the lower Chiwawa River.

o Reducing water conflicts?

Scientists predict agricultural watersheds like those in Chelan County may lose the capacity to deliver water at current levels due to the impacts of climate change (Gaines et al 2013). This could lead to irrigation curtailments and associated water conflicts. The proposed project represents a stream and floodplain restoration project designed to increase natural water storage within watercourses, wetlands, and floodplains. These types of projects can dampen climate change impacts on the baseflow hydrograph (Lange et al 2017). Restoration projects that increase natural water storage are part of the Chelan County Climate Resiliency strategy to protect water supply and reduce associated conflicts (CC 2020).

o Providing other regional benefits, such as job creation or public safety benefits?

Chelan County is committed to providing good-paying jobs from revenue from all awarded grants. The proposed project includes job creation for contracted work (Geotech studies, Wetland Delineation, Design development, Cultural Resources, etc.), as well as job security for existing Chelan County employees. Eventual construction of the proposed design project will create a myriad of jobs through construction-related and scientific monitoring tasks.

Helping to ensure ESA-listed salmon viability provides a regional benefit, as salmonids provide recreational as well as commercial fishing opportunities throughout Washington state, and have inherent value to tribal members and many other Washington residents. Public safety benefits of the project will be realized through mitigation of drought and flood (see Criterion D).

• Is this project a component of a broader strategy or plan to replace aging facilities with alternate facilities providing similar benefits?

The project fits within a broader strategy to improve summer baseflows within the lower Chiwawa through stream restoration, water rights acquisitions, and upgrades to WCID infrastructure. As noted previously, low instream flow is a Rank 1 unacceptable limiting factor to recovery of ESA-listed fishes in the lower Chiwawa (UCRTT 2020). CCNRD has been working with WCID for over a decade on assessments of the WCID canal, possible upgrades, and even a water rights purchase to improve irrigation efficiency and save water for instream flow. CCNRD and WCID are working to significantly reduce the WCID surface water diversions through canal delivery system upgrades by piping and lining the open, earthen ditch and decommissioning a secondary diversion on Clear Creek, a tributary to the Chiwawa River. CCNRD and WCID will likely submit a joint WaterSMART Environmental Water Resources Program application for these flow improvement projects. In the meantime, CCNRD is committed to implementing habitat restoration projects in the lower Chiwawa as they represent an important aspect to achieve more natural water storage that can lead to more reliable baseflows. Restoration projects like the one proposed will continue to provide benefit through restored natural process, enhanced seasonal floodplain activation, and raised ground water levels.

o Does the project contribute to the restoration of species listed under the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.)?

Yes. This project contributes to the restoration of the following ESA-listed species: spring Chinook (*Oncorhynchus tshawytscha* - Endangered), steelhead trout (*Oncorhynchus mykiss* - Threatened) and bull trout (*Salvelinus confluentus* - Threatened).

o Does the project contribute to the restoration of listed anadromous fish?

Yes. The species listed above are all anadromous salmonids. The project will also benefit anadromous coho salmon (*Oncorhynchus kisutch*) which are unlisted.

o Are the species subject to a recovery plan or conservation plan under the ESA?

The *Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan* (Recovery Plan) is the document that guides recovery efforts for these ESA-listed species in the Upper Columbia region (UCSRB 2007). The *Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region* (Biological Strategy) is a frequently updated Appendix to the Recovery Plan that prioritizes Assessment Units (AUs) and habitat restoration actions (RTT 2017). Both the Recovery Plan and the Biological Strategy are available at <https://www.ucsrb.org/science-resources/reports-plans/recovery-plan/>. Recently, the Regional Technical Team (RTT) gathered and synthesized habitat and fish data to formulate a new Prioritization online web-map (Prioritization). Completed in 2020, the Prioritization contains reach-based restoration recommendations in the region and is available at <https://prioritization.ucsrb.org/>.

o Has there been a designation of critical habitat? If so, how does the proposed action benefit such critical habitat?

Critical habitat has been designated for the ESA-listed species mentioned above (NOAA 2005). According to the U.S. Fish and Wildlife Service’s (USFWS) Information for Planning and Consultation (IPaC) page, the project overlaps with bull trout critical habitat and northern spotted owl (*Strix occidentalis caurina*) critical habitat. Construction of the proposed designs will improve temperature conditions, fish cover, and pool habitat for foraging, over-wintering, and migrating bull trout that occur in the reach. Spotted owls prefer old growth stands, so while the stream and floodplain restoration work of the proposed design will not strongly benefit spotted owl habitat, it may benefit small game habitat (snowshoe hares, woodrats) that spotted owl feed on. This project will also coordinate with the Upper Wenatchee Pilot Project, which applies to the lower Chiwawa watershed, and is an effort by the Okanogan-Wenatchee National Forest (OWNF) to restore forest health. These forest health efforts, such as thinning overcrowded forests, will benefit spotted owl by enhancing growth of larger trees through thinning and reducing the risk of wildfire (USFS 2022).

o If the species are not listed under the ESA, please describe their status. For example, are they native species, game species, at-risk species, species of greatest conservation need, species of Tribal significance, or state listed?

Improvements to riparian habitat through increased water availability achieved through channel and floodplain reconnection will improve conditions for multiple native amphibians, birds and mammals. Coho salmon are species of Tribal significance, and Yakama Nation Fisheries has implemented the Coho reintroduction program to restore natural production within the Upper Columbia Basin (including the Wenatchee Watershed).

Sub Criterion A.2. Quantification of Specific Project Benefits

• Species and Habitat Health -

o Provide information regarding the current status of species and habitat health in the planning area.

NOAA Fisheries 2022 5-year review: *Summary and Evaluation of Upper Columbia River (UCR) Spring-run Chinook Salmon and UCR Steelhead*, reaffirms the endangered status of UCR spring-run Chinook and the threatened status for UCR steelhead. The UCR steelhead “evolutionarily significant unit” (ESU) is composed of four extant major population groups (MPGs), which includes the Methow, Okanogan, Entiat and Wenatchee populations. The UCR spring-run spring Chinook ESU is composed of three MPGs, which includes Methow, Entiat and Wenatchee populations. The 2022 NOAA review concluded that all MPGs of both spring Chinook and steelhead ESUs remain at high overall risk of extinction, and that abundance data showed a downward trend of 48 percent between 2016 and 2021 (NOAA 2022).

The 2022 review called out the primary habitat conditions in the Wenatchee river subbasin that currently limit abundance, productivity, spatial structure and diversity of spring Chinook salmon and steelhead. These included several factors that the proposed project will address, including lack of habitat diversity and quantity, low flows, and high summer water temperatures. The review stated the key factors effecting habitat diversity are channel confinement, loss of floodplain

connectivity and off-channel habitat, reduced quantities of large wood, lack of riparian vegetation, and lack of high-quality pools and spawning areas associated with pool-tail outs.

Reach-based life stage and habitat priorities identified by the Upper Columbia 2020 Prioritization are identified in the “Step 2 Habitat Analysis Spreadsheet” (available [here](#)), and reveal important information regarding the health of species and habitat within the lower Chiwawa AU. This AU is ranked as a Tier 1 Restoration Priority for spring Chinook due to the current degraded condition and the high potential benefit of restoration. Proposed preliminary designs will focus on five discrete project areas that correspond to the following reaches defined in the Prioritization: Areas B and C (RM 9-10) fall within lower Chiwawa reaches 5 and 6, Area E (RM 3) falls within lower Chiwawa reach 3, Area F (RM 1-2) is within lower Chiwawa reaches 1 and 2, and the Big Meadow Confluence site falls within Big Meadow Creek reach 1. Priority Species are spring Chinook, steelhead, and bull trout and Priority life stages are winter rearing, summer rearing, and fry. Limiting factors vary slightly in severity within the Chiwawa AU reaches, however wood cover and low summer base flow are rated Rank 1 “unacceptable” limiting factors in all reaches. Off-channel and side-channel habitat are unacceptable in reaches 1, 2 and 6, and “at risk” in reach 2. Floodplain Connectivity is unacceptable in reaches 1,3 and 5, and at risk in 2 and 6. Rearing temperatures are unacceptable in reaches 1 and 2, and at risk in 3. Pool quantity and quality are unacceptable in reach 5 and at risk in reach 6. Riparian cover is unacceptable in reach 5, and at risk in reaches 2, 3, and 6. In the Big Meadow reach, Wood cover and riparian are unacceptable, and baseflow and floodplain connectivity are at risk.

Specific habitat conditions for the proposed project areas detailed below were garnered from previous assessments which were completed specifically to identify potential restoration projects within the Lower Chiwawa AU and Big Meadow Creek. Products for the Lower Chiwawa AU include an Alternatives Analysis (InterFluve 2022) and a Conceptual Design Report (~10% designs, InterFluve 2023). Habitat conditions for the Big Meadow Creek confluence site are detailed in the *Upper Wenatchee Pilot Project Alluvial Water Storage Prioritization and Project Opportunities* (CCNRD and NSD 2023), which also includes 10% Conceptual Designs.

Channel geomorphology and ecology are relatively consistent within the project reach and between RM 1 and 13.5 of the Chiwawa River - the river flows through a wide, single thread channel, which is relatively straight with a sinuosity index value of 1.29. The channel is largely a homogeneous, plane-bed type and the bed is primarily composed of cobble-boulder sized sediments. Some conversion of floodplain habitat is present, including residential or agriculture land uses within private parcels along the lower reach, and substantial recreational use in the Okanogan-Wenatchee National Forest boundaries (e.g., designated and dispersed campsites, and other unofficial recreational sites in upper portions of the assessment unit). These development features have impacted riparian function and floodplain function. In addition, large log jams were historically present in far greater number than at present. However, both riparian logging, and systematic removal of large wood, occurred in the lower Chiwawa until 1926. In addition to reducing cover, decreased wood density has impaired lateral channel migration (making the channel less sinuous), reduced channel-floodplain connectivity, and impaired sediment sorting that would create a more diverse riffle-pool bed form that supports both spawning and rearing. Results of hydraulic modeling demonstrate that there are very few floodplain surfaces that are frequently inundated, resulting in relatively homogenous, high-energy hydraulics. Additional conditions

within discrete project areas are listed below (Area G refers to a distributed treatment approach intended to include those areas of the AU that are not included in the discrete project areas):

Area A (RM 13) – Extensive floodplain area with historical channel scars is mostly disconnected.

Areas B and C (RM 9 and 10) – Lacks pools and instream structure. Large, low-lying floodplains are present on river right. A major tributary to the Chiwawa River, Big Meadow Creek flows through the floodplain at Area C. These two sites and the Big Meadow confluence (below) are on USFS land. Big Meadow Campground is located in the floodplain on river right in Area C.

Big Meadow Creek confluence (Big Meadow Creek RM 0-0.2) – Big Meadow Creek is one of the largest tributaries to Chiwawa. The wide floodplain is largely disconnected from the channel due to incision, which substantially limits sub-surface water storage, wetland hydrology, and baseflows. Invasive plants such as reed canary grass currently dominate the floodplain.

Area D (RM 5.75 - 7) – Substantial floodplain areas with dispersed recreational use. Large wood is lacking. Cold river plumes of Alder and Goose Creek confluences on river left have limited extent and lack fish cover. Area D is also on USFS land

Area E (RM 3.0) – Reach has very limited spawning habitat, and few pools and large wood. Bedrock is present in the channel bed and banks. A low lying floodplain on river-right has some existing wetlands and riparian vegetation, but lacks significant connection to the mainstem. Landownership is privately-owned.

Area F (RM 1.0-2.0) – Very little large wood or pools provide hydraulic complexity in the reach. The project area encompasses an expansive river-left floodplain/wetland/beaver-dam complex, with limited connection to the mainstem. Ownership is primarily privately-owned.

The wetland floodplain areas mentioned above have a diversity of plant species including western red cedar, red-osier dogwood, big leaf maple, willows, mountain alder, smallfruit bulrush, horsetail, and cattail, among others. Other wildlife and game species also occur in the Chiwawa sub-watershed, including mule deer, black bear, cougars, bobcats, wolverines, martens, red-tail hawks, bald eagles, elk, beaver and great horned owls, among others. The long-term persistence of these species depends on intact riparian areas characterized by connected floodplains; therefore, the loss of channel sinuosity and off channel habitat is a form of habitat loss (Catterall et al 2012).

o Describe how your conceptual project will address these issues and how your study and design efforts will inform your approach.

The proposed Chiwawa Instream Complexity and Floodplain Reconnection design project represents the next step in a multiphase, collaborative effort to restore instream habitat and floodplain connectivity in the entire lower Chiwawa AU (RM 1-13.5). The project will advance designs for Areas B, C, E, F, and the Big Meadow confluence site to Preliminary (60%). Although the vast majority of the proposed project funds will be directed at that Preliminary design effort, this request will also support ongoing work in the other identified project areas (A, D, G), thereby providing benefits to the entire lower Chiwawa AU.

The Chiwawa Instream Complexity and Floodplain Reconnection project is a multi-phase habitat restoration project that addresses specific high priority factors limiting ESA-species recovery throughout the lower Chiwawa River AU. The project addresses specific recommended Action Categories detailed in the Upper Columbia Prioritization for the lower Chiwawa, including Channel Complexity Restoration, Side Channel and Off-Channel Habitat Restoration, and Floodplain Reconnection. Specific action concepts (10%) were identified following detailed hydraulic modeling, field surveys, and development of restoration goals and objectives (using the Functional Analysis Systems Technique (FAST) which links higher order functions [e.g., improving off-channel floodplain habitat] and specific actions [e.g. adding roughness]). Analyses considered factors on both the reach and watershed scale to arrive at the proposed concepts, which are designed to increase habitat diversity and reinstate natural process that support high quality habitat. Area A has similar concepts as those below, which will be explored through proposed landowner outreach (landowners are not yet on board so designs at this site are not proposed). Specific conceptual actions in the other project area include:

Areas B and C: Preliminary concepts for areas B and C include a minimum of 15 engineered log jams (ELJs, with excavated pools) and up to four perennial side channels with a total length of nearly 2,000 feet on both rivers right and left. One conceptual alternative also includes construction of three channel-spanning mainstem riffles at Area B. Preliminary concepts for Area C include relocating Big Meadow Campground out of the floodplain to facilitate and expand restoration opportunities. Collectively, these elements will increase pools per mile to >18, wood pieces per mile to >70, increase the amount of habitat area that is side channel from less than 2% to greater than 5% (Appendix A, Figure 5)

Big Meadow confluence site: Preliminary concepts include ~5 ELJs in the lower 0.25 RMs of Big Meadow Creek, selective wood throughout the creek and floodplain, riparian restoration include invasive weed eradication, and floodplain decompaction. This will enhance in-stream and riparian conditions, floodplain connectivity, and lead to an estimated additional 22.83 acre-feet in alluvial water storage along lower Big Meadow Creek (CCNRD and NSD 2023, Appendix A, Figure 3).

Area D: 60% Preliminary Designs for this site, currently in development, include a minimum of four ELJs, wood loading, and creation of up to 0.25 miles of side channel habitat (Appendix A, Figure 6). Wood structures at the mouths of Goose and Alder Creek will expand cold water plumes.

Area E: Preliminary concepts for Area E include wood loading in the mainstem, and construction of a 500-foot side channel, also with wood. It also includes decommissioning of a USFS road that currently goes to the river, to discourage road related impacts and restore the riparian area. Upon implementation, wood loading will be increased from less than 17 pieces per mile to greater than 70, percent of habitat area that exists as side channel will increase from 2% to greater than 5%, and entrenchment ratio will increase from less than 1.4 to greater than 2.2 (to increase depth, Appendix A, Figure 7).

Area F: Preliminary concepts for F include large wood loading (3 mainstem structures and 4 channel margin structures) and creation of three short perennial flow-through side channels with a total length of ~2,900 feet) through existing floodplain surfaces. Upon implementation, wood loading will be increased from less than 17 pieces per mile to greater than 70, percent of habitat area that exists as side channel will increase from 2% to greater than 5%, entrenchment ratio will

increase from less than 1.4 to greater than 2.2 (to increase depth), and several high quality pools will be added to the reach, 5 of which will be greater than 3 feet in depth (Appendix A, Figure 8).

Taken together, these actions will increase habitat diversity, reinstate natural processes that lead to increased spatial variance in flow, depth and velocity (i.e. deep pools), and increase floodplain connectivity and inundation which will enhance riparian and wetland habitats. Enhanced complexity will be in the form of increased sinuosity, large wood, and re-instating habitat forming processes to add pool-riffle channel type in the place of the more homogeneous plane-bed. These results will benefit priority life stages (summer rearing, winter rearing, fry) of spring Chinook, steelhead and bull trout by creating preferred habitat such as well covered velocity refugia, cool and deep pools, and off-channel rearing areas.

Specific mechanisms for how the project will address priority habitat factors currently limiting ESA-listed species, as detailed in the 2020 Prioritization (RTT 2020), are detailed below:

Unacceptable wood cover: Wood loading in the form of large wood apex structures, bank buried structures, tipped trees or AWS techniques are elements of each project area concept. Wood structures encourage lateral channel processes. Wood will be placed near low-lying floodplains in all four mainstem areas for enhanced natural wood recruitment.

Unacceptable/at risk pool quantity and quality: Pools will be excavated adjacent to many log structures. Addition of large wood will also reinstate sediment sorting and natural scour, which encourages pool and bar formation. These pools will be high quality, as scour will continue to deepen them, and wood will provide fish cover.

Unacceptable/at risk off-channel and side-channel habitat: Implementation of the proposed preliminary designs will add an estimated 4,800 ft of side-channel habitat. These off channel habitats will be designed with wood to add complexity.

Unacceptable/at risk floodplain connectivity: Hydraulic modeling of existing and proposed conditions indicate floodplain connectivity increases in all project areas, due both to wood structures encouraging lateral channel processes, and side-channel excavation. In areas B and C, floodplain inundation increases at all modeled flows in the river right floodplain and around the Big Meadow Creek Confluence as a result of wood loading, campground relocation and side channel excavation. Riffle construction also increases mainstem Water Surface Elevation (WSE) and subsequent floodplain connectivity. Preliminary modeling in area E indicates that restoration will result in increased off-channel habitat inundation, which will allow for more interaction with floodplain riparian vegetation and provide edge and margin habitat for juvenile salmonids. Even greater modeled increases in wetted floodplain and off-channel areas are present at high flows. Area F also shows increases in both extent and depth of floodplain inundation in the low-lying river-left floodplain at low and high flow conditions.

Unacceptable/at risk riparian: Proposed side channel features support more interaction with riparian areas, to increase water availability and wood recruitment. Relocation of Big Meadow Campground (Area C) and decommissioning a USFS road (Area E) will also facilitate riparian restoration.

Unacceptable summer base flows: As described, project elements will increase hydraulic diversity, such as slow velocity areas, and increase floodplain inundation. This will result in an increase in natural water storage, which will help supplement low base flows. Estimated restored water storage at the Big Meadow site is 22.85 acre-ft. This is discussed in detail in the Water Supply Benefits section below.

Unacceptable/at risk stream temperature: An increase in groundwater sourced baseflows will be a cool water source in summer months.

• Watershed Benefits

o Provide information regarding the current status of water quality, ecological function, and ecological resiliency in the planning area.

The project area falls within and aligns with the Upper Wenatchee Pilot Restoration Project (UWPP), which is an effort lead by the Wenatchee River Ranger District of the Okanogan-Wenatchee National Forest to restore forest and aquatic health in the Upper Wenatchee Basin, including the Chiwawa River, Upper Wenatchee River, and the White River-Little Wenatchee (see Criterion B). Environmental concerns for this planning area, which is primarily located on public land, strongly differ from those of the lower Wenatchee watershed where most of the development, including the town centers of Leavenworth, Cashmere, and Wenatchee, is located. The focus of the UWPP is protecting and maintaining access to the most pristine habitat in the watershed (e.g. Upper Chiwawa), restoring watershed health, reducing fire effects in the wildland-urban interface, and designing and implementing both instream and watershed treatments in areas where degradation is most apparent (e.g. Lower Chiwawa) to support the recovery of threatened, endangered, and sensitive species (USFS 2022).

The UWPP project area has a long history of land use that has altered ecologic function of upland and aquatic habitat, especially in the Upper Wenatchee and lower Chiwawa rivers where urban/rural private development with associated road development and riparian vegetation removal is concentrated. Annual log drives that occurred until 1926 included systematic removal of large wood and boulders, which dramatically reduced instream woody debris and physically changed the aquatic habitat into the simplified plane-bed form we see today. Heavy timber harvest from 1950 – late 1980s resulted in road building and tree harvest within riparian zones. In upland habitats, logging combined with fire suppression has resulted in a lack of old trees, dense stands with poor forest health, and high risk of catastrophic wildfire, insect and disease infestation (USFS 2022).

Instream, riparian, and watershed impacts described above are a likely mechanism of impacted water quality, particularly temperature. Several 303(d) category 4a (highest concern) temperature listings occur in the lower Chiwawa ([Water Quality Atlas Tool](#), Washington Department of Ecology). Additionally, the Upper Wenatchee Thermal Refuge Assessment found stream temperatures reached over 21°C at Chiwawa RM 0.5 during the study period (2018 and 2019), which is well over the regulatory temperature criteria for the reach (16 deg C). Thermal Infrared (TIR) data from August 2001 show the lower reach (below RM 13) exhibits a strong downstream warming trend with almost no thermal heterogeneity, whereas the upper reaches (RM 13- 30) exhibit a high degree of thermal heterogeneity closely mirroring the high degree of habitat complexity and variability found in the upper Chiwawa reaches (Watershed Sciences 2003).

CCNRD repeated the thermal profile during August 2019, and found a similar downstream warming pattern in the lower Chiwawa (Appendix B). Furthermore, the lower Chiwawa had only 0.3 cold water patches per mile, compared to an average 0.9 in the Nason Creek, Upper Wenatchee and Little Wenatchee (Roumasset 2020). Research has found that structurally homogenous river reaches, like the lower Chiwawa, exhibit less thermal heterogeneity, and as a consequence are less resilient to increased stream temperatures (Kuhn et al 2021). [Climate modeling by the University of Washington](#) predict the average August stream temperatures for the lower Chiwawa will be above 19°C by 2030-2059, compared to predicted upper Chiwawa averages of just 13°C.

Climate change observations and predictions within Chelan County watersheds highlight the need for ecological resilience. Warming air temperatures are expected to result in increased 100-year stream flows, decreased summer flows, and increased stream temperature (Hamlet et al., 2013). In 2015, the Wenatchee watershed saw extreme conditions that scientists warn may be a glimpse into the future and could become routine by 2070 (Mauger et al 2017). 2015 was a year with record low snowpack, high air temperatures, and low base flows that led to WA Ecology to curtail irrigation diversions, as well as three presidential disaster declarations in Chelan County; two due to wildfires, and one due to flooding and landslides following a late fall rain on snow event. ESA-listed salmon mortality was historically high as a result of the 2015 drought, due to high stream temperatures and associated pre-spawn die-offs and redd scour from late-fall flooding. The lack of ecosystem diversity and loss of habitat function exacerbate these climate change effects by decreasing the ability for the ecosystem to respond and be resilient to enhanced disturbance and extreme conditions (Cote and Darling 2010).

In summary, ecological function in the UWPP has been impacted by historical logging activities, fire suppression, and rural residential development in the floodplain that have led to poor forest health and low aquatic habitat diversity. These simplified conditions limit the mechanisms that create thermal heterogeneity and cold-water patches, and also impair overall ecosystem resilience to flooding and drought (e.g. due to limited floodplain connectivity). Therefore, addressing the watershed factors that create habitat diversity in the lower Chiwawa is an essential aspect of creating ecological resilience in a changing climate.

o Describe how your conceptual project will address these issues and how your study and design efforts will inform your approach.

The lower Chiwawa is one of only three AUs, out of the total 43 that comprise the Wenatchee Basin, that is Tier 1 for spring Chinook restoration. Therefore, restoration actions that improve ecological function in the lower Chiwawa such as the proposed project will have a relatively larger effect on recovery than similar actions in the vast majority of other basins.

Implementation of the proposed project will restore the mechanisms that create floodplain connection, riparian health and habitat diversity. Therefore, the project will target the root causes of elevated stream temperatures and degraded ecological resilience. These mechanisms are explained in detail below, and are informed by a data-driven design effort that links reach specific conditions to watershed limiting factors provided in planning documents (i.e. Upper Columbia Salmon Recovery Plan and UWPP BA), to arrive at solutions that will not only improve instream habitats but restore ecological function.

Broad project goals and objectives directly link to limiting factors in the Upper Columbia Salmon Recovery Plan and UWPP Biological Assessment and include: (1) Improve off-channel floodplain habitat and connection, (2) Improve pool habitat and (3) improve off-channel side channel habitat. Using the project goals as a guide, ten percent (10%) Conceptual designs were developed during a previous effort using a combination of field observations, geospatial and terrain analyses, simulations with a 2D hydraulic model, and coordination with the design team and stakeholders.

Results of the 10% design effort indicate one of the primary watershed benefits includes greater floodplain connectivity. Proposed conditions indicate log structures will encourage significant lateral channel movement and push flow into adjacent low floodplain surfaces. Side-channel excavation show gains in floodplain inundation at both low and high flows, which will also result in greater extents of existing wetland and riparian habitats. Restoring connection to this complex habitat in combination with the addition of large wood to the system will improve ecological function related to natural floodplain water storage, sediment sorting processes enhanced cover and wood recruitment, lower stream gradients and decreased flow velocity, and riparian nutrient inputs that support the aquatic food web (Interfluve 2022). Proposed actions in Big Meadow Creek will result in an estimated 22.83 acre-ft of additional water storage (CCNRD and NSD 2023).

Water quality is also expected to improve as a result of the project. As described in a bullet above, habitat diversity has been linked to a lack of cold water patches. Therefore, by increasing habitat diversity the project could increase the input of cold ground water that creates cold water patches. This would likely occur due to the increase in subsurface water storage, as a result of slow water areas engaging with hyporheic flow paths and increased storage and release of groundwater from floodplain areas.

The increase in complexity and habitat diversity proposed in the currently homogeneous lower Chiwawa reach and deeply incised Big Meadow Creek reach 1 will provide a greater capacity for both habitat creation and resilience to disturbances like flooding, drought and landslides that are expected under climate change (Gaines et al 2012). Overall, these effects will help mitigate against the historical forest management practices that are the cause of reduced diversity. Greater inundation of floodplain areas will also help protect against forest fire by enhancing fire resistant riparian species. These actions are important elements of the UWPP and included in the USFS work plan for the planning area (USFS 2022, Appendix C).

• Water Supply Benefits

o Provide information regarding the current status of water availability for aquatic ecosystems.

Low summer base flow is a Rank 1, “unacceptable” limiting factor throughout the project area, which corresponds to the entire lower Chiwawa AU (RM 0 – 13, UCSRB Prioritization 2021). The Chiwawa is a snow-dominant basin, so low summer base flow is related to low snow pack in the winter. However, summer base flow is not included as a limiting factor in the middle or upper Chiwawa AU, suggesting that unacceptable low summer base flows in the lower river can be attributed to other factors. One mechanism that impacts base flows is the surface water diversion for the WCID, which withdrawals approximately 18 cfs from the Chiwawa river at RM 3.6; however, this does not explain Rank 1 low flows between RM 3.6 and RM 13. Therefore, a primary mechanism of low summer base flows in the lower Chiwawa is likely loss of ecosystem function.

High flows in the Chiwawa River occur with the late spring freshet, with snow melt supported flow often lasting into early summer. Base flows in later summer and early fall are produced by groundwater inflows, and are usually around 60 cfs at the UGSG gauge near Chiwawa RM 6 (Appendix B Figure 4). Hydraulic modeling completed as part of 10% designs indicate very few floodplain surfaces are frequently inundated in the proposed project area (Interfluve 2022). Floodplain disconnection in the lower Chiwawa causes a larger volume of floodwaters to be quickly exported downstream, rather than stored in the sub-basin and subsequently released during low flow periods. In the upper Chiwawa, where low flows are considered adequate, the river meanders through floodplains, side-channels are abundant, and large wood encourages lateral movement, all of which encourage sub-surface water storage. In the lower Chiwawa, the river is straighter and homogeneous, which leads to limited interaction between the channel and sub-surface. In turn, this leads to less groundwater supplementation and is likely a major factor that has led to limited baseflows and low water availability for aquatic ecosystems in the summer.

Scientists predict municipal and agricultural watersheds, such as those found in Chelan County (agriculture/forestry constitutes 23 percent of the local economy) may lose the capacity to deliver water at current levels due to the impacts of climate change (Gaines 2013, Chelan County 2019)

With climate change projections for a smaller and earlier freshet into the future, retaining and restoring the natural storage functions of watersheds become even more critical for ecosystem resilience (Chelan County and NSD 2022).

o Describe how your conceptual project will address these issues and how your study and design efforts will inform your approach.

With changing climate conditions and intensified human use, the natural infrastructure provided by healthy, functioning watersheds—wetlands, watercourses, aquifers, and floodplains—has been significantly diminished. One of the greatest opportunities for streamflow restoration lies in restoring the watershed’s ability to naturally store and release water (Wilson and Browning 2012).

Implementation of the proposed design will result in increased floodplain inundation and target the root cause, described above, of unacceptable low baseflows in the Lower Chiwawa AU. Hydraulic modeling completed as part of the 10% designs indicated floodplain inundation increases at all modeled flows (low flow and 2, 5, 10, 25, 50 and 100-year floods), and in all project areas, as a result of the proposed habitat restoration efforts. Specific areas of increased inundation include: (1) river right floodplain area at Areas B and C, (2) the Big Meadow Creek confluence at Area C, (3) low-lying floodplain, wetlands, and well-vegetated riparian area at Area E, and (4) low-lying river right floodplain at Area F and river left at Area D. In all cases, both the extent (i.e. wetted habitat area) and duration of inundated surfaces increases, with gains at all flows and the greatest gains during the May average flood event (Interfluve 2022). Additional gains in floodplain inundation will be realized with the relocation of the Big Meadow Campground, which is located in the floodplain at Area C. Options for this relocation will be explored with USFS and a consultant hired as part of the proposed project.

Enhanced floodplain activation is key to restoring habitat and watershed functionality in the lower Chiwawa, especially with regards to water supply. Upon implementation of the proposed designs, a significantly larger volume of floodwaters will interact with floodplain, leading to enhanced groundwater storage to supplement baseflows. Wood structures will also lead to increases in slow

velocity hydraulics which will enhance in situ water storage. These increases in sub-surface water storage will in turn lead to increases in groundwater supplementation and therefore benefit the baseflow hydrograph. Estimated increase in water storage is 22.83 acre-ft at the Big Meadow Creek site alone (CCNRD and NSD 2023). Increases in acre-ft of water storage at the mainstem Chiwawa sites, and resulting baseflow contribution in cfs will be modeled as part of proposed preliminary designs, with preferred alternatives achieving the maximum increases.

Stream restoration such as the proposed project is a viable alternative to increase water storage and dampen climate change impacts on the baseflow hydrograph, while simultaneously providing numerous ecosystem benefits such as tree health, fish and wildlife habitat, and fire resilience (Lange et al 2017).

• Other Quantifiable Benefits

o Provide information regarding the other critical issues of concern in your project planning area

Flooding is one of the most common natural hazards in Chelan County with large, damaging floods typically occurring every 2 to 5 years (Chelan County 2019). Flood risk in the Wenatchee Basin has been exacerbated due to riparian clearing for development, agriculture, and historic livestock grazing, as well as extensive timber harvest, instream wood removal and beaver trapping. These impacts have resulted in widespread incision of stream channels, loss of floodplain connectivity, and resulting loss of the floodplain's ability to store floodwaters (Collins et al., 2002; Phelps, 2011). The floodwaters are instead rapidly exported downstream, resulting in increased peak flow events (Lulloff 2013). The project reach exemplifies this condition, with limited floodplain connectivity resulting in homogeneous, high energy hydraulics (Interfluve 2022).

Climate models predicted the Wenatchee basin will change from snow-dominant (peak flows in April/May) to rain-snow transition dominant by the 2020s and all rain by 2080, with a subsequent increase in the risk of flash and stage flooding (Tohver et al 2014). Six out of the seven notable major stage flooding events since 1990 were late fall/early winter heavy rain-on-snow events (Chelan County 2019), showing these events tend to be bigger and more destructive than the historic spring freshet. Scientists project what is currently considered a 1-percent-annual-chance flood may strike more often, leaving many communities at greater risk (Chelan County 2019). Additionally, and along with the loss of riparian cover and associated habitat, these events impede recovery of salmon species listed under the Endangered Species Act (ESA-listed spring Chinook, summer steelhead and bull trout), because they scour salmon redds full of salmon eggs incubating through the late fall/ and winter floods.

Wildfire modeling and risk analysis consistently show the Wenatchee basin at "very high" wildfire risk ([CWPP 2019](#), USFS 2022). Unburned, second-growth forested zones like those in the UWPP planning area are the highest risk areas for wildfire.

o Describe how your conceptual project will address these issues and how your study and design efforts will inform your approach.

As stated above in the water supply section, the proposed project will result in increased water storage of flood waters by reconnecting the Chiwawa river watercourse several low-lying floodplain, wetland, and riparian areas. watercourse, wetland, and riparian zones adjacent to Area

B, C, E and F. This will result in increased floodplain activation during flood events and can dampen flood magnitudes downstream (Tague 2008).

Restored wetland and floodplain hydrology will result in wetter soils and an increase in fire-resistant riparian vegetation. This will allow the reconnected floodplain to function as a fire buffer between the dryer ecosystems upstream, downstream, and laterally, and reduce the risk of fire spreading downstream to residential areas.

EVALUATION CRITERION B: Prior Restoration Planning and Stakeholder Involvement and Support

Sub-Criterion B1: Task A: Study and Design Stakeholder Support and Restoration Planning

• Prior Planning and Design:

- o Describe any prior planning efforts related to your proposed project
- o What was the scope of the planning effort that supports your project?

This project is supported by several regional planning documents and prioritization efforts, which are detailed below.

Wenatchee Watershed Planning: The Watershed Plan covers all twelve Wenatchee Watershed (WRIA 45) component sub-watersheds at the HUC-10 level, which includes the Chiwawa sub-watershed. Watershed Planning began in the Wenatchee Watershed in 1999, with Chelan County designated as the Lead Agency, in response to the 1998 Watershed Management Act (RCW 90.82). This was a collaborative planning process formulated under the Wenatchee Watershed Planning Unit (WWPU). The outcome of this planning forum was the development of the *Wenatchee Watershed Management Plan*, finalized in 2006, and *The Wenatchee Watershed Plan – Detailed Implementation Plan* which contains specific implementation recommendations and was completed in 2008 (WWPU 2008). The Watershed Plan covers water quantity, water quality, and issues related to habitat function and connectivity of threatened, endangered, and culturally important salmonid species. The Plan contains strategies to meet in-stream and out-of-stream water demands, meet water quality standards, and improve ESA-listed habitat.

Upper Columbia Salmon Recovery Planning: The Recovery Plan, Biological Strategy, and Prioritization (described below) covers the biological considerations for the protection and restoration of salmonid habitat in the Upper Columbia Region (UCR). The UCR comprises the mainstem Columbia River and its tributaries upstream of Rock Island Dam to the tailrace of Chief Joseph Dam, and includes four major watersheds: the Wenatchee, Entiat, Methow, and Okanogan. The Upper Columbia Salmon Recovery Board (UCSRB) developed the *Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan* for the recovery of UC spring Chinook (listed as endangered in 1999), UC steelhead (listed as endangered in 1997 and reclassified as threatened in 2006), and bull trout (listed as threatened in 1999). The Recovery Plan aligns with the Watershed Plan and was completed in 2007 to guide federal agencies charged with species recovery (UCSRB 2006). The *Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region* (“Biological Strategy”) is Appendix H of the Recovery Plan, was first drafted in 2000, and has been frequently updated with the most recent version published in 2017 (UCRTT 2017). The

Biological Strategy identifies the key biological considerations in protecting and restoring ESA-listed habitat, and is intended for use and is frequently referenced by project sponsors in order to identify locations and types of projects with a high likelihood of providing biological benefit for the recovery of ESA-listed salmonids (UCRTT 2017). The Biological Strategy includes a recently developed *Prioritization Web Map and Master Prioritization Table* that includes updated Prioritization results based on quantitative habitat and salmonid distribution data. The Prioritization includes including reach rankings within each Assessment Unit (AUs, HUC-12). Prioritization elements include water quantity, water quality, as well as several habitat limiting factors such as wood cover, floodplain connectivity, and riparian condition. The Prioritization also lists priority life stages and actions. The proposed project is located in the Lower Chiwawa Assessment Unit, in Lower Chiwawa reaches 1 through 7 (RM 1-13.5), and in the Big Meadow Creek AU, reach 1.

USFS Upper Wenatchee Pilot Restoration Project (UWPP) Planning: The UWPP planning area includes three Hydrologic Unit Code (HUC) 10 watersheds (Chiwawa River, Wenatchee River, and the White River-Little Wenatchee). The Wenatchee River Ranger District of the Okanogan-Wenatchee National Forest recently completed the *Fisheries Biological Assessment (BA) for the UWPP* (USFS 2022). The BA evaluates the UWPP preferred alternative, which proposes vegetation treatments, road treatments, and in-stream and riparian habitat treatments. The focus of the UWPP is restoring watershed effects of forest management, mitigating fire in the wildland-urban interface, and designing and implementing both instream and watershed restoration treatments to support the recovery of threatened, endangered, and sensitive species (USFS 2022).

Lower Chiwawa AU Restoration Planning: CCNRD initiated a collaborative planning effort for the Lower Chiwawa AU in 2020. Results of that effort include the *Lower Chiwawa Assessment Unit (RM 1.0-13.5) Project Development: Project Goals and Objectives* (Kolk et al 2021), the *Lower Chiwawa River Assessment: Alternative Analysis* (Interfluve 2022) and the *Lower Chiwawa River Assessment: Conceptual Design Report* (Interfluve 2023), with each document building on the one before. Through detailed field and desktop analysis, the Project Design Team (see bullet below), identified seven discrete project areas along the lower river where restoration work could be implemented to benefit listed salmonids and watershed health (Areas A-G). Concepts for each area specifically target reach-scale limiting factors for listed steelhead, bull trout, and spring Chinook in the Lower Chiwawa River AU.

For each of the seven project areas, we developed restoration goals and objectives, identified and analyzed site-specific restoration alternatives, and developed early design concepts for preferred alternative restoration strategies for six of the seven sites (Areas B-G). This effort included compilation and evaluation of existing information, some baseline data collection (including acquisition of new topobathymetric LiDAR for the entire assessment unit), and development of hydraulic and Habitat Suitability Index models for preferred alternative treatments at the identified restoration sites. The Project Goals and Objectives document laid out overall goals and objectives for the restoration effort. The Alternative Analysis identifies the seven project areas, describes existing habitat in detail and provides restoration alternatives geared at improving limiting factors including – lack of large wood, limited off-channel habitat, limited floodplain connectivity, high stream temperatures and low base flow. Finally, the Conceptual Design Report provides 10%

design concepts for the preferred alternatives in each discrete project area, along with existing and proposed hydraulic modelling.

Wenatchee Basin Alluvial Water Storage (AWS) Prioritization and Planning: *The Wenatchee Basin Alluvial Water Storage Model* (“AWS model”) is an effort to quantify streamflow restoration opportunities throughout the Wenatchee watershed (CCNRD and NSD 2020). Planning includes a GIS-based screening framework that utilizes LiDAR data and GIS tools to compute the restorable sub-surface water storage and associated streamflow contribution per restored river mile derived from reach-scale valley widths, extents of incision, and stream gradients. Model results were utilized to identify and prioritize areas of high channel incision where wood loading techniques could result in the highest gains for alluvial floodplain water storage (measured in acre-ft) and baseflow contributions (in cfs). Rigorous pre- and post-project monitoring of several pilot projects have demonstrated the geomorphic effect, localized increase in groundwater levels, and health and vigor of wetland and riparian specific vegetation (CCNRD and NSD 2022).

UWPP Alluvial Water Storage Planning: *The Upper Wenatchee Pilot Project Alluvial Water Storage Prioritization and Project Opportunities* builds on the AWS model by refining conditions and opportunities at high priority AWS sites in the UWPP area. The report includes 10% conceptual designs of several sites, including the proposed Big Meadow Confluence site (CCNRD and NSD 2023).

o Was the plan developed collaboratively?

The Wenatchee Basin Watershed Plan and the *Wenatchee Basin Detailed Implementation Plan* were developed in a collaborative process by the Wenatchee Watershed Planning Unit. The Watershed Plan integrated stakeholder issues and recommendations for the watershed and is a product of community and government participation in WRIA 45. The WWPU included a wide range of stakeholders from 28 organizations including federal, state, local agencies, tribes, and non-governmental entities, agricultural and environmental representatives. For example, stakeholders in the WWPU include the Yakama Nation, Wenatchee-Chiwawa Irrigation District, City of Wenatchee, US Bureau of Reclamation, CCNRD, Chelan County Conservation District, US Fish and Wildlife, Citizens and Landowners, Blue Star Growers, and Citizens.

The Upper Columbia Salmon Recovery Board (UCSRB) developed the Recovery Plan and the Upper Columbia Regional Technical Team (UCRTT) developed the Biological Strategy and the 2020 Prioritization. UCSRB includes representatives from the Yakama Nation and Colville Confederated Tribes, and county commissioners from Okanogan, Douglas, and Chelan County. UCSRB worked closely with NOAA Fisheries and USFWS in the development of the recovery Plan. The UCRTT is a group of professional biologists working in various fields of natural resource science and management including USFWS, WDFW, U.S. Forest Service, Yakama Nation, County Public Utility Districts, National Marine Fisheries Service, and several private consulting firms.

Planning for the UWPP was completed by USFS staff working in the Okanogan-Wenatchee National Forest, who prepared a final environmental assessment (EA), and Biological Assessment (BA) and finding of no significant impact (FONSI) for the UWPP. Upon completion of these documents, the USFS opened a comment period for individuals and organizations, to assure the

UWPP had a collaborative component. The USFS is also actively engaging with organizations like CCNRD, Yakama Nation Fisheries, and others to assure implementation of the UWPP.

Lower Chiwawa AU planning project described above was a collaborative effort by led CCNRD and BOR. The Project Development Team (PDT) for that effort was comprised of individuals from Reclamation, CCNRD, Inter-Fluve, United States Forest Service (USFS), Tracy Hillman (BioAnalysts, Inc), and Jeremy Cram from the Washington Department of Fish and Wildlife (WDFW). During the initial phase, we worked with a variety of partners including U.S. Bureau of Reclamation (BOR), Rock Island Habitat Conservation Plan Tributary Committee (Trib Comm), U.S. Forest Service (USFS), and numerous private landowners to evaluate nearly the entire Lower Chiwawa River Assessment Unit (Lower Chiwawa AU; approximately river miles 1.0 to 13.5). BOR funded design work during this effort through its on-call contract with InterFluve, Inc., and CCNRD involvement was supported by a grant from Trib Comm. The effort began with a two-day site visit and float of the entire lower Chiwawa AU with BOR and CCNRD staff and contractors in November 2020.

The AWS model, planning, Wenatchee-basin prioritization, and UWPP Prioritization and Conceptual designs were a collaborative effort between Natural Systems Design (NSD) and CCNRD. Products of the effort, including the GIS-based model, quantitative results and reports, have been shared Wenatchee basin wide in forums such as the Wenatchee Habitat Sub-committee meetings (salmon recovery project sponsors and the public) and public meetings coordinated by CCNRD.

o Explain how any prior planning effort relates to your current proposal and how your current proposal adds value and builds on any prior planning efforts.

The *Wenatchee Watershed Plan* called out the Chiwawa River as a particular area of concern regarding water supply, stating that “instream flow regulations or closures may result in the inability to obtain water for new domestic use in areas serviced by exempt wells, group domestic and municipal water systems (WWPU 2006). For flow limited sub-basins, the WWPU identified projects that will evaluate alternatives that could increase available water for instream and out-of-stream uses as Tier 1 actions (Wenatchee Watershed Planning Unit_ Detailed Implementation Plan, 2006 – Table 3-2). As discussed in Criterion A.2 “Water supply” this project will be designed to increase in situ water storage that can supplement baseflow in the summer months.

The proposed project follows recommendations and prioritizations, detailed in the 2020 Prioritization (RTT 2020), and thus adds value to the Upper Columbia Salmon Recovery Planning effort. This project will occur in the Lower Chiwawa Assessment Unit (AU), which is a Tier 1 AU for spring Chinook Restoration and Tier 2 AU for steelhead and bull trout restoration. This project will address all the Rank 1 (unacceptable) factors currently limiting the priority life stages, which are summer and winter rearing juveniles of all three species including wood cover, summer base flow, off- and side- channel habitat, floodplain connectivity, rearing temperatures, pool quantity and quality, and riparian cover. This will be accomplished by designing projects that address several of the listed Priority Action Categories, including channel complexity restoration, channel modification, floodplain reconnection, instream flow enhancement, riparian restoration and management, and side channel and off-channel habitat restoration.

In addition to forest treatments such as thinning and prescribed burning, the UWPP includes recommendations to improve aquatic habitat, namely in the Upper Wenatchee and Lower Chiwawa rivers where riparian vegetation removal associated with private land development and annual log drives have degraded habitat. The proposed project follows specific recommendations in the UWPP BA to increase woody material, reduce presence of roads and campsites, improve floodplain, wetland, and riparian conditions, and improve instream and riparian habitat to support native fish and wildlife species and protect water quality (USFS 2022).

The Lower Chiwawa Planning documents were developed in direct response to Prioritization results, namely the designation of the Lower Chiwawa as a Rank 1 spring Chinook restoration AU and identification of specific limiting factors and priority life stages. As such, the planning effort has completed 10% Conceptual Designs for project areas B – G, with each project concept having specific goals targeting priority life-stages (e.g., improve access to off-channel floodplain for summer rearing and fry) with specific objectives and linked actions to achieve that goal. This project will build on this effort, and complete 60% designs for mainstem Chiwawa river Project Areas B, C, E, and F, and the Big Meadow Creek confluence project adjacent Area C (RM 0-0.2). The project will also advance Project Area A through private landowner outreach, and support preparation of final engineering designs for Area D. It also includes collaboration with Yakama Nation Fisheries at areas B, C and G. Therefore, the proposed project constitutes the next logical step in the collaborative effort to implement habitat restoration on the entire lower Chiwawa AU that targets specific limiting factors and therefore significantly contributes to the recovery of ESA-listed steelhead, spring Chinook, and Bull trout.

The AWS model indicates the Big Meadow Creek (RM 0- 0.2) restoration site is a high priority site for AWS treatments due to the combination of high channel incision and wide valley width, which indicates a relatively large volume of restorable sub-surface water storage (estimated 22.83 acre ft). The proposed project will continue the efforts of the UWPP AWS Planning by advancing 10% conceptual designs to 60% preliminary designs at this important site.

• Stakeholder Involvement and Support for Task A: Study and Design Projects

o Identify stakeholders in the project area who have *committed to be involved* in the study and design process.

US Forest Service (Area B and C Landowner and Project Partner)
US Bureau of Reclamation (Project Partner, Technical Assistance)
Yakama Nation Fisheries (Project Partner)
Randy and Cici Asplund (Area E Landowner)
Peter Valaas (Area E Landowner)
James Krieger and Kim Wicklund (Area E Landowner)
Thousand Trails Resort (Area F Landowner)

o Describe what sector(s) the participating stakeholders represent and how they will engage

Participating stakeholders are listed below. Those in **bold** have provided letters of support, landowner acknowledgement forms, or proof of funding support, attached in Appendix C.

US Forest Service is the landowner at areas B and C. Additionally, they are a project partner and, as a member of the PDT, will participate in the project design process (including technical review). USFS staff also will participate in a variety of environmental compliance tasks. Restoration work at Areas B and C are listed on the Wenatchee River Ranger District's 10-year work plan as a joint project with Yakama Nation Fisheries and CCNRD (Appendix C).

Yakama Nation Fisheries is a Project Partner for work at areas B and C. They will participate on the PDT, and will likely bring funding in support of engineering design work at these sites.

US Bureau of Reclamation contributed funding and technical assistance to the effort that assessed the Lower Chiwawa AU and identified potential restoration opportunities at areas A-G. BOR staff were on the PDT assembled for this effort. In addition, BOR contracted with InterFluve, Inc. for engineering and scientific support and has provided funding in support of CCNRD staff time. We anticipate that local BOR staff will provide technical assistance during the proposed project.

Randy and Cici Asplund, Peter Valaas, James Krieger and Kim Wicklund, and Thousand Trails Leavenworth Campground are landowners at areas E and F. CCNRD will work with these landowners throughout the design process to ensure their input is included in designs.

Rocky Reach HCP Tributary Committee oversees implementation of the Tributary Conservation Plan of the Rocky Reach Habitat Conservation Plan. The group is tasked with selecting projects and approving project budgets under the Plan Species Account for purposes of implementing the Tributary Conservation Plan. It helped fund the previous project, and we will seek matching funds and technical review from them for this proposal.

Washington Recreation and Conservation Office is a state agency that is home to the Governor's Salmon Recovery Office and the Salmon Recovery Funding Board (SRFB). SRFB is currently funding Preliminary Designs (60%) at CCNRD Lower Chiwawa Area D Project, and we will request additional SRFB funding as match for work described in this proposal.

Upper Columbia Regional Technical Team is a consortium of natural resource professionals that coordinate, review, and advise on technical issues, habitat projects, and monitoring concerning aquatic resources within the Upper Columbia. UCRTT provides technical reviews for the SRFB grant process, and we will request that the RTT provide technical review of design packages.

o Are any stakeholders contributing to the cost-share?

Yes. We expect to request funding in support of this project from Washington Recreation and Conservation Office and the Rocky Reach HCP Tributary Committee.

o Describe stakeholders in the project area who have *expressed their support for the study and design process, whether or not they have committed to participate.*

During previous work in the Lower Chiwawa AU, CCNRD has engaged with a number of stakeholders who have expressed support for aquatic restoration in the basin. These include the private landowners, regulatory agencies, funding entities, and tribes listed above. We have also presented information regarding this project to other regional project sponsors (e.g. Cascadia Conservation District, Cascade Columbia Fisheries Enhancement Group, Trout Unlimited) as part of the monthly meetings of the Wenatchee Habitat Sub-Committee, who have expressed their general support.

o What will the applicant do to ensure participation by a diverse array of stakeholders?

CCNRD has a history of working with stakeholders in conjunction with aquatic restoration efforts throughout Chelan County. In addition to the specific stakeholder engagement identified above, we will hold annual community meetings and other local meetings with stakeholders in the project area. These meetings are typically attended by an array of landowners, agency personnel, non-profit organizations, elected officials and tribes.

If some sectors are not yet represented, explain how this will be accomplished.

One sector that we will specifically reach out to during the proposed project is the small whitewater kayak community who paddle the Chiwawa River. CCNRD has reached out to this community in the past for design input on other projects and this proposal includes work to assess recreational boating on the Chiwawa River, and develop recommendations to maintain boater safety.

o Is there opposition to the proposed project effort?

CCNRD is not aware of any opposition to this proposed project.

EVALUATION CRITERION C: Project Implementation and Readiness to Proceed

Sub-Criterion C1: Task A: Study and Design Project Implementation

The applicant will work with project partners, a consulting engineering firm, other sub-contractors, and stakeholders to complete the following tasks within the three-year time frame. The following sections provide narratives for activities identified in the Appendix D, Project Schedule and the itemized budget and budget narrative attached in Grants.gov.

Task 1. Project Management and Administration (October 2024 – September 2027)

This task runs the life of the proposed project, and covers all work by CCNRD needed to oversee the project. It includes development and management of contracts and agreements, budget administration, progress and financial reporting, and other tasks necessary to comply with funding and other agreements and keep the proposed project on schedule and within budget.

Task 2. Environmental Compliance (October 2024 – September 2027)

This task includes all work needed to design restoration projects that comply with applicable environmental regulations. It includes a number of subtasks, which will collectively run the full term of the proposed project.

Wetlands and Waters Delineation (January 2025 – September 2027): Field and office work needed to survey project sites to identify and characterize wetlands, as well as analyses, draft reporting and agency coordination will occur Jan 2025-March 2026. As the Preliminary Design process progresses and this proposed project nears completion (April-September, 2027), we will coordinate this work with design engineering so that final impact and functional lift assessments can be made and reports updated.

In-stream Recreational Use Survey: We expect to hire a consultant to complete this work early in the proposed project (1st quarter of 2025). Field studies, outreach and interviews are expected March-October 2025, and analysis and reporting will be wrapped up by early 2026.

Cultural Resources Survey and Coordination: We expect that work associated with this sub-task will run from Jan 2025 through the end of the contract in September 2027. Consultant selection and contracting, survey work, and reporting will occur spring-winter 2025 (summer field work),

but agency and tribal coordination and consultation and other compliance tasks are expected to continue episodically through the end of the contract period in 2027. It's likely that work associated with this sub-task will continue during subsequent planning phases.

National Environmental Policy Act (NEPA) Compliance: Should further work be needed for NEPA compliance, CCNRD will develop a scope of work and budget for inclusion in a later funding request. We expect work related to this task will be completed during the first half of 2025.

Environmental Compliance: Coordination and Preparation: CCNRD will coordinate with regulatory agency staff and prepare draft Joint Aquatic Restoration Permit Applications (JARPA; a streamlined permit application that project proponents in Washington State can use to apply for a variety of local, state and federal permits, including federal fill/removal permits administered by the Army Corps of Engineers). and Washington State Hydraulic Project Approval (HPA) applications. This sub-task will run the length of this proposed project - October 2024 through September 2027.

Task 3. Conceptual Designs (October 2024-September 2027)

Under this task, CCNRD will complete all work necessary to develop engineering designs (and associated products) to the Conceptual Design stage (a.k.a. 30% Designs). It includes a number of subtasks, which will collectively run the full term of the proposed project. Unless otherwise noted, these subtasks refer to Areas B, C, E, F and the Big Meadow Creek confluence site.

Background Review and Field Reconnaissance: This sub-task will include the formation of a design team and a kickoff meeting, and all work needed to identify and acquire existing and new information to be used in preparing engineering designs for restoration at the sites listed in this proposal. Work under this sub-task is expected to run from approximately October 2024 through December 2025.

Assessment and Modeling: This sub-task is an iterative process for developing and updating hydraulic and Habitat Suitability Index models for areas. We anticipate that work on this sub-task will occur episodically, over the length of this proposed project period (October 2024-September 2027, extending through the end of the Preliminary Design Task and beyond). Existing conditions models will be developed early, and proposed conditions models will be developed and updated in conjunction with progressive engineering designs.

Alternatives Development and Analysis: This sub-task includes evaluation of existing alternatives and development of new alternatives, as needed. If new alternatives are warranted, we will prepare up to three new alternatives for each site where it is deemed necessary. These will be analyzed (including development of proposed conditions hydraulic models for each new alternative) and reviewed by the PDT, and new preferred alternatives will be selected. This sub-task will begin October 2024, and conclude no later than March, 2026.

Geotechnical Studies and Pile Testing: This sub-task includes any geotechnical studies and/or pile testing needed to support the engineering design process for large wood structures, side channels and other restoration elements. Our consulting engineering team will determine whether these studies are needed to inform the design process, and will sub-contract for this work. For this proposal, we have anticipated that these studies will be completed spring-fall, 2026 (however, our consulting engineer will determine the exact timing).

Development of Conceptual Designs (30% Designs): This sub-task includes development and preparation of conceptual design sheets, and associated products (including cut and fill estimates, cost estimates, Basis of Design reports, risk assessments (following BOR Risk-based Design Guidelines), etc.). We anticipate work on this sub-task will begin in October 2024, deliverables will be sent out for review and comment early in the 3rd quarter of 2026, and comments and responses will be compiled into a matrix by September 2026.

Campground Planning Coordination and Assistance: This sub-task is specific to design work for Area C. We will hire a contractor who will work closely with the design team and USFS to develop a plan for removal of the existing campground facilities (including recommending restoration actions and working with the design engineer to incorporate these ideas into restoration designs), identify and evaluate up to three alternative locations where a new campground can be established, identify a preferred location, and develop conceptual designs for the replacement campground. We anticipate that this sub-task will begin January 2025 and run through September 2027.

Task 4. Preliminary Designs (April 2026-September 2027)

This task includes preparation of 60% draft engineering plan sets, cut and fill estimates, cost estimates, Basis of Design reports, risk assessments (following BOR Risk-based Design Guidelines), etc. for each of the project areas B, C, E, F, and the Big Meadow Creek confluence site. A number of subtasks, which began under preceding tasks, will extend into and run concurrent with this task (see above).

We anticipate that the Preliminary Design Package will be substantially complete by July 2027 and will be sent out for review and comment at that time. During August and September 2027, we anticipate compiling and responding to comments received. Upon completion of this task, project designs will be ready for work under subsequent funding agreements needed to advance designs to the construction-ready stage and develop final specifications and bid packages.

Task 5. Final Designs – Area D (July 2025-September 2027)

This task includes preparation of Final engineering designs (and related work products) and bid documents for Project Area D. An ongoing project will complete Preliminary Designs and in early 2025, and this task will pick up where that project leaves off.

Task 5. Watershed Coordination (September 2024-September 2027)

This task runs the life of the proposed project, and provides for all work necessary to maintain lines of communication among project partners, contractors, agency staff, landowners and other stakeholders; relay project information to other interested parties; and document communication and coordination during the proposed three-year project period. It includes preparation of technical memos that summarize coordination and interactions with partners, regulatory agencies, and other stakeholders during this proposed project. We anticipate completing a memo describing our coordination efforts each year during the life of this agreement (i.e., September 2025, September 2026 and September 2027).

o Describe the plan to conduct project specific outreach during your award period.

Outreach will include individual meetings with landowners to outline the project schedule, goals and objectives and to go over and get input on Conceptual and Preliminary Design Packages.

The larger community will be engaged in one or more watershed meetings to present information, gauge interest and understand possible concerns. We anticipate at least one community meeting

annually from 2025-2027 (and beyond), which will include presentations on this proposed effort and opportunity for comments and questions.

Regional stakeholders will be targeted through presentations to the Upper Columbia Regional Technical Team, HCP Tributary Committee, and others.

We will meet with agencies responsible for environmental compliance to clarify questions and concerns at project kickoff and the conceptual and preliminary design phases. Agency staff may also be invited to site visits during this proposed effort.

As noted previously, comments, questions and concerns from outreach will be captured in comment matrices prepared during the Conceptual and Preliminary design phases.

o Describe the plan to carry out any relevant studies

Plans for relevant studies, analyses, research, etc. are described under identified project tasks, above.

o Describe the current design status of the project and describe the design activities will need to be completed to advance the project to 60% design?

Previous efforts have completed background work and identified concepts for restoration work at project sites identified in this proposal. We consider the level of design completed under that work to be pre-conceptual in nature - background work has been completed and potential restoration actions identified and assessed, but analyses, research, and documentation typically associated with 30% and 60% design packages (e.g., Basis of Design Reports, cost estimates, etc.) were not prepared. Activities needed to advance designs to the 60% iteration are described under identified project tasks, above.

• Proposals with a budget and budget narrative that provide a reasonable explanation of study and design project costs will be prioritized.

A detailed budget and budget narrative are attached in Grants.gov. CCNRD staff have extensive experience developing, managing, and implementing aquatic restoration projects like the one proposed here, and our budget estimates for personnel, travel and supplies are based on this experience. In addition, we regularly work with consultants that perform the type of contracted work identified in this proposal. As such, we are familiar with the type of work needed to complete this project, and have recent cost estimates and contracts for this type of work.

EVALUATION CRITERION D: Presidential and Department of the Interior Priorities

• Climate Change:

o Describe how the project addresses climate change and increases resiliency.

Stream degradation due to historic log driving, widespread logging, and riparian development in the lower Chiwawa AU have resulted in increased risk of flooding, wildfire, and summer drought as well as water quality issues and loss of wildlife habitat. Effects of climate change have exacerbated these effects as evidenced by increased rain-on-snow events and resulting peak flood events, loss of snowpack and associated water storage, and higher wildfire risk, effects that are modeled to increase dramatically by the end of this decade (Mantua 2010, Tohver et al 2014, Mote

et al 2014). Overall patterns of change specific to the lower Chiwawa relate to the combination of reduced snowpack and higher temperatures, which are expected to result in less pronounced spring peak flow, lower flows in summer, increased risk of flash flooding in winter, and higher stream temperatures (Mantua 2010). These effects impose additional stress to ESA-listed fish species survival, as well as residential communities and developed riparian areas in the lower reaches.

The Chiwawa Instream Complexity and Floodplain Reconnection Design Project will help increase climate resiliency by restoring ecosystem services – namely groundwater storage and release, flood attenuation, and habitat forming processes – by increasing channel complexity and habitat diversity (i.e. slower flow velocities, sediment storage) and reconnecting the channel to wide, low-lying floodplains and wetland areas. As a result, a greater volume of floodwaters will store in the reconnected floodplain, channel subsurface, and wetlands. This will help attenuate floods, reducing risk to downstream residential areas. This increased natural water storage will then supplement low flows with cool groundwater, both cooling high temperatures and increasing low baseflows (Chelan County and NSD 2022). Therefore, this project will help communities by decreasing the magnitude of downstream flooding events, as well as mitigate against the effects of drought.

o How will the project build long-term resilience to drought?

Chelan County and the Wenatchee Basin have experienced two nationally recognized droughts since 1954, one in 1977 (FEMA declared emergency) and one declared by the U.S. Secretary of Agriculture (USDA) in 2015. State declared droughts are much more common, and have occurred in 2001, 2005, 2009, 2015, 2021 and 2022. The extreme drought year of 2015 may be a glimpse into the future, as climate models predict 2015 conditions will become routine by 2070 (Mauger et al 2017). 2015 was a year with record low snowpack, high air temperatures, and extremely low base flows that led to WA Ecology ordering an irrigation curtailment.

As described in the water supply section, unacceptable low baseflows in the lower Chiwawa are likely largely due to homogeneous habitat and widespread floodplain disconnection. These effects translate into the stream's inability to recharge sub-surface aquifers and groundwater flow paths that can supplement base flows and protect against drought in the summer (Chelan County and NSD 2022).

One of the greatest opportunities to mitigate drought risk due to changing hydrology under climate change is to restore the watershed's ability to naturally store and release water. By reconnecting the lower Chiwawa channel and bottom reach of Big Meadow Creek to the wide, low-lying floodplains and wetlands that exist in all project areas, the proposed project will help the basin fill up with water during flood events, slow down flow velocity, and help to realize its full water storage capacity (estimated restored water storage as a result of the Big Meadow Creek AWS project is 22.83 acre-ft.) This groundwater storage will recharge the aquifer, and help supplement baseflows later in the season, helping to mitigate against drought (Chelan County and NSD 2022). These effects will be realized into perpetuity and even enhanced over time as habitat forming processes continue to correct incision and lead to more floodplain connection. The proposed design effort will include hydrologic models of the increased inundated area during different flood events (e.g. Q2, Q10, Q100), as well as an associated estimate of restored subsurface water storage. This will then be translated into an estimated increase in baseflow flux. These estimates have not been calculated at the time of the application, but will become clear as part of the design effort.

o Does the proposed project contribute to climate change resiliency in other ways?

The project will lead to greater extent and duration of floodplain and wetland inundation, which will expand riparian and wetland hydrology. Because wet soil is highly efficient at accumulating organic matter, wetlands can function as important carbon sinks. One of the more direct ways to improve carbon storage in a wetland is to restore the original hydrology that allows it to re-flood, as this project proposes to do (Krauss et al 2021). This increase in riparian and wetland functionality will also form a better fire buffer to dryer upland habitats in the National Forest, and help slow the spread of wildfire.

The project will also lead to increased habitat heterogeneity, which is associated with an increase in cold water pockets (Kuhn 2021). This will increase ESA-listed species resilience by providing thermal refuge areas, which increase survival as stream temperatures warm under climate change.

• Disadvantaged or Underserved Communities:

The Climate & Economic Screening Tool available at geoplatform.gov does not designate any Wenatchee Basin communities as disadvantaged. However, The EPA's Environmental Justice Screening and Mapping Tool, which is also a federally based tool available at ejscreen.epa.gov, identifies two disadvantaged communities in the Wenatchee basin, both located in the lower Wenatchee Basin in rural communities between the town of Leavenworth (Wenatchee RM 22) and the community of Monitor (Wenatchee RM 5). 53007960502 ("south tract") is located on the south side of the lower Wenatchee River and Tract 5300790501 is located on the north side ("north tract"). Relevant factors and national percentiles that are near/exceed the 50% are listed below:

- Low income: 62% (north tract), 49% (south tract)
- Unemployment: 72% (both tracts)
- Limited English: 73% (north tract), 78% (south tract)
- Climate change effects, flood risk: 92% (north tract), 90% (south tract)
- Climate change effects, wild fire: 88% (north tract), 89% (south tract)

Chelan county is 29% Hispanic, and 67% white (U.S Census data, 2023). The high risk ratings listed above are likely attributable to the underserved Hispanic community. U.S. Hispanics are also more likely to live in poverty, make only 35 percent of the income on average than the average U.S. citizen, are less likely to have a college education (Bartman 2015). The low average income and educational attainment of Hispanics are obstacles to receiving timely and appropriate health care (Escarce and Kapur 2006).

o If applicable, describe how the project benefits those disadvantaged or underserved communities identified using the tool.

Historically, Hispanic people in the U.S. have faced racial, ethnic, and anti-immigrant prejudice, including discrimination in employment, housing and education (Feagin and Cobas 2014). Creating stability in the agricultural community of Chelan County by mitigating drought through the proposed project can help create more stable employment for the agricultural farm working community, which is 60 percent Hispanic in WA state (Berk Consulting 2022). This stable employment can help current and future generations receive the education, healthcare, and housing.

Implementation of the proposed design will also create economic opportunity by providing local construction jobs and help restore salmon and steelhead runs that would bring tourism and recreation dollars into the local community.

• Tribal Benefits:

o If applicable, describe how the project directly serves and/or benefits a Tribe.

The project area includes the ancestral lands of members of both the Confederated Tribes and Bands of the Yakama Nation and the Confederated Tribes of the Colville Reservation. The Yakama Nation is one of four Columbia River basin Treaty Tribes, and the Colville Tribes were established by Executive Order. The mission of the Yakama Nation Fisheries Program is to “honor, protect, and restore culturally important fish populations and the ecosystems that produce them throughout the Treaty Territories of the Yakama Nation, and to protect the rights of Yakama Nation members to use these resources as reserved in the Treaty of 1855” (YN 2021). The overall goal of the Colville’s Fish and Wildlife Department is to maintain and protect viable populations of native fish and wildlife species. This project aligns with the missions of both tribes, by addressing the highest ranking limiting factors in a high stake watershed that is key to the productivity of ESA-listed spring Chinook, steelhead, and bull trout as well as culturally important species like coho salmon. This will support recovery of those species and in turn sustenance fishing opportunities. These tribes maintain non-exclusive spring Chinook fishing rights at the confluence of Icicle Creek and the Wenatchee River.

In addition to these broader benefits, Yakama Nation Fisheries is a project partner on the lower Chiwawa AU habitat restoration effort, including the proposed 60% design phase. More broadly, CCNRD and YNF are finalizing a project coordination and development MOU given the portfolio of partnership projects between our agencies. For the Chiwawa, YNF is taking the lead on restoration of Project Area G, which is a distributed treatment approach, while CCNRD is the lead on Projects A-F with YNF co-leading with CCNRD the development of Project B/C. YNF brings extensive restoration experience and resources to the PDT.

o Does the proposed project support Reclamation’s Tribal trust responsibilities or a Reclamation activity with a Tribe?

As described above, this project supports Reclamation’s Tribal trust responsibilities by directly collaborating with Tribes, and supporting tribal priorities. Reclamation is also supporting YNF’s restoration efforts at Area G. As mentioned above, CCNRD will collaborate with YNF on that effort.

Project Budget Table

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
1. WA Recreation and Conservation Office	\$284,275
2. Rocky Reach HCP Tributary Committee	\$150,000
Non-Federal Subtotal	\$434,275
REQUESTED RECLAMATION FUNDING	\$806,510.68

Please see attached budget narrative for itemized budget and rationale.

WaterSMART AERP – Chiwawa Instream Complexity and Floodplain Reconnection Design Project, CCNRD 1/23/2024

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Bureau of Reclamation’s WaterSMART Aquatic Ecosystem Restoration
Projects for Fiscal Year 2024

No. R23AS00106

Chelan Natural Resources Department, 1/23/2024

Chiwawa Instream Complexity and Floodplain Reconnection Design
Project – Recommended Application Materials

Contents:

Environmental and Cultural Resources Compliance.....2
Overlap or Duplication of Effort Statement.....5
Conflict of Interest Disclosure Statement.....5
Uniform Audit Reporting Statement.....5
Official Resolution.....6

Please Note – Required Permits and Approvals are addressed in page 4 of the Technical Proposal in the Project Description, Task 2. Environmental Compliance section.

Environmental and Cultural Resource Compliance

WaterSMART AERP, FY24

Chiwawa Instream Complexity and Floodplain Reconnection Design Project

- **Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.**

The proposed project includes on-site data collection and desk top work needed to develop Preliminary Engineering Designs (60 percent designs) and assure compliance with environmental regulations. It does not include any construction activities, but groundwater monitoring, wetland delineations, and cultural resources surveys are expected. Geotechnical studies also may be needed. These tasks all typically involve some ground disturbing work, and are needed to gather information in support of engineering designs and for regulatory compliance. Wetland delineations and cultural resources surveys typically require excavation of shallow test pits (generally no more than one meter below ground surface) with a shovel. These are backfilled after data from the test pit is recorded. Groundwater monitoring wells typically are less than three meters deep, and are excavated with small gas-powered augers and/or hand augers (we typically use 4-inch diameter augers). A 2-inch diameter PVC casing is installed in the hole, and the remainder of the hole is backfilled with native soil and bentonite clay. Water level loggers will be installed in the casing and downloaded on a regular basis. To allow for pre-and post-construction monitoring of groundwater levels, we expect that these wells will remain in place for a minimum of several years after restoration construction is completed at these sites. Geotechnical studies generally require the use of heavy equipment, but ground disturbance typically extends less than 15ft below the ground surface, and excavations are backfilled once data is collected. To prevent impacts to potential culturally significant items and assure compliance with state and federal regulations, Cultural Resources survey and reporting will occur before any other tasks that require ground disturbance. We will acquire any necessary permits prior to conducting any ground disturbing work. Given the scale and scope of the work described above, impacts to air, water quality and quantity and animal habitats are not expected.

- **Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?**

Three anadromous fish species listed under the Endangered Species Act (ESA) are present in the project area, including: spring Chinook (*Oncorhynchus tshawytscha*), listed as endangered, and steelhead (*Oncorhynchus mykiss*) and bull trout (*Salvelinus confluentus*), both listed as threatened. These species will not be affected by the proposed project, as it is a design phase. However, a main goal and purpose of the proposed project is to design a restoration project that increases both the quantity and quality of aquatic habitats in order to advance recovery of these species.

- **Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States”? If so, please describe and estimate any impacts the proposed project may have.**

There are wetlands adjacent to and within project areas included in this proposal, and the Chiwawa River and its tributaries are Waters of the United States and subject to state and federal environmental regulations. The proposed scope of work includes wetland delineation, and designs will strive to limit impacts to wetland habitats while improving wetland hydrology. Permit application will be prepared during the proposed project, but will be finalized and submitted during a subsequent phase (i.e before construction but not as part of this proposal).

- **When was the water delivery system constructed?**

An irrigation diversion (and associated canal system) was constructed at ~ RM 3.6 of the Chiwawa River in the early 1900s. The diversion does not occur within any of the project sites included in this proposal, and the project will not involve any changes to this delivery system.

- **Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.**

No, there are no irrigation features within any of the project areas included in this proposal.

- **Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.**

To our knowledge, there are no buildings, structures, or features in any of the proposed project areas that are listed or eligible for listing on the National Register of Historic Places. However, cultural resources survey and reporting will be completed for all restoration sites included in this proposal before any other work is performed that could result in ground disturbance.

- **Are there any known archeological sites in the proposed project area?**

We are not aware of any specific archaeological sites at any of the project areas included in this proposal. However, the basin has long been used by humans and there are archaeological sites known from within the Lower Chiwawa Basin. This proposal includes funds to hire a consultant to complete cultural resources survey and reporting for areas B, C, E and F.

- **Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?**

No, this project will not negatively affect low income or minority populations in any way.

- **Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on tribal lands?**

No, we do not expect Indian sacred sites or tribal lands to be impacted as part of this design effort. Cultural resources surveys and reporting completed during this proposed project will

verify whether any sacred sites are located within areas that may be impacted during subsequent implementation of restoration actions.

• **Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?**

No. The proposed design project will not spread or introduce invasive species. Design will include measures to improve riparian and wetland habitat, so that eventual construction (not part of this project) will include strategies to reduce spread of invasives, as well as treat invasive or noxious weeds and/or replace them with native species.



Chelan County Natural Resource Department

411 Washington Street, Suite 201
Wenatchee, Washington 98801

Ms. Avra Morgan, Grant Manager
U.S. Bureau of Reclamation
WaterSMART Program

Dear Ms. Morgan:

January 22, 2024

This letter relates to the Bureau of Reclamation's WaterSMART Aquatic Ecosystem Restoration Program Funding Opportunity for Fiscal Year 2024. Chelan County Natural Resource Department is applying to this funding opportunity with a proposal titled "Chiwawa Instream Complexity and Floodplain Reconnection Design Project". The intent of this letter is to satisfy the recommended application components of Overlap or Duplication of Effort Statement (D.2.2.7), Conflict of Interest Disclosure statement (D.2.2.8), and Uniform Audit Statement (D.2.2.9).

D.2.2.7 Overlap or Duplication of Effort Statement

The proposed project has no overlap between any other active or anticipated proposals with regard to activities, costs, and key personnel commitment. This is a unique proposal for funding an integral component of project implementation. Additionally, this proposal does not in any way duplicate any proposal that has been submitted for funding consideration from any source.

D.2.2.8 Conflict of Interest Disclosure Statement

No actual or potential conflict of interest exists for this proposal. Procurement of supplies, equipment, construction, and services will follow all relevant laws and regulations. No lobbying will occur as part of this project.

D.2.2.9 Uniform Audit Reporting Statement

Chelan County most recently was required to complete a Single Audit Report for January 01, 2019 - December 31, 2019. Chelan County EIN is 916001297, the report number is 18751220192 and it is available through the Audit Clearinghouse website.

Sincerely,

Mike Kaputa, Department Director
mike.kaputa@co.chelan.wa.us

Resolution No. 2024- 5

RE: Resolution supporting Chelan County application to the US Bureau of Reclamation WaterSMART Aquatic Ecosystem Restoration Program (No. R23AS00106) for the Chiwawa River Habitat Restoration Project.

WHEREAS, the Chiwawa River watershed in Chelan County, Washington, has a number of critical resource needs for water quality, water quantity and habitat improvement and protection; and

WHEREAS, Chelan County formed a design steering committee to develop an integrated water resource and ecosystem restoration strategy addressing water quality, water quantity and habitat improvement and protection through collaboration and the cooperation of federal, state and local agencies; tribes; interest groups; irrigation districts; and other interested parties; and

WHEREAS, the Chelan County Natural Resources Department has the capability to provide the funding and in-kind contributions specified in the funding plan;

NOW, THEREFORE, BE IT RESOLVED that:

1. The Chelan County Natural Resource Director is authorized to make formal application to the U.S. Bureau of Reclamation for grant assistance and enter into a funding agreement;
2. The Chelan County Natural Resources Director has reviewed the application on behalf of Chelan County and supports the submittal of the application submitted; and
3. Chelan County certifies that the matching funds and in-kind support indicated in the grant application shall be provided if the grant application is successful;
4. The Natural Resource Director and staff will work with the U.S. Bureau of Reclamation to meet established deadlines for entering into a financial assistance agreement; and
5. This resolution becomes part of the grant application.

Dated this 22nd day of January, 2024.



ATTEST:

ANABEL TORRES
CLERK OF THE BOARD

BOARD OF CHELAN COUNTY COMMISSIONERS

KEVIN OVERBAY, CHAIRMAN

SHON SMITH, COMMISSIONER

TIFFANY GERING, COMMISSIONER