



Project Title: Upper Trinity River Watershed Planning Project

Applicant:

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Grant Application for the
BOR WaterSMART
Cooperative Watershed Management Program Phase I
Grant Opportunity #BOR-DO-20-F003

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Technical Proposal

Executive Summary

Date: January 17, 2021

Applicant: The Watershed Research and Training Center

City: Hayfork

County: Trinity County

State: California

The Watershed Research and Training Center (WRTC) will conduct landscape-scale watershed restoration planning in the upper Trinity River watershed, upstream of the Trinity and Lewiston Dams, in northwestern California. The project's focus is on prioritizing and designing watershed restoration projects that will improve forest health and protect the quality and reliability of water supplies across private and federal forest lands. In partnership with the Trinity River Watershed Council (Council), an existing watershed council, we will promote and facilitate local community involvement and foster collaboration among diverse stakeholders to help identify critical watershed needs, potential solutions and prioritize watershed restoration projects relating to water resources. This holistic watershed restoration planning process will build and expand on past planning and restoration efforts by members of the Council. This project will contribute significantly toward meeting established watershed goals expressed in multiple local, regional, and statewide plans. This project will utilize current science and technology, such as LiDAR datasets and cutting-edge analyses, to identify and prioritize watershed restoration needs, and develop site-specific watershed restoration projects to meet water supply and natural resource objectives. Priority projects will be developed through planning phases such as design, cost estimate development, environmental compliance and permitting, to be as close to on-the-ground implementation as possible by the end of the project. This planning project will result in a watershed restoration plan that will guide future project development and land management activities. Project activities outlined in this proposal will be completed over a two-year period, from December 2021 to November 2023.

Project Location/ Project Area Map

The upper Trinity River watershed (HUC 18010211) is located in the northeast section of Trinity County, California, approximately ten miles north of the community of Weaverville, the county seat of Trinity County. This 459,347-acre watershed drains from the Trinity Alps Wilderness on the west and a patchwork of land ownership, and management, on the east into Trinity Lake, also known as Claire Engle Reservoir. This 15,570 -acre reservoir provides water not only to the lower Trinity River but also out of its natural watershed to the Central Valley of California, the bread basket that feeds much of the nation. The Trinity River Diversion of the Bureau of Reclamation's Central Valley Project stores water in Trinity Lake and releases it via the Clear Creek Tunnel, through five hydroelectric plants, into the Sacramento River and eventually diverted to out-of-basin multiple uses (NCRWQCB 2018).

A Vicinity and Area of Concern Map of the upper Trinity River watershed project area is presented in Sub-Criterion No. A2.

Technical Project Description

Applicant Category

The Trinity River Watershed Council (Council) was founded in 2007, but it began over 20 years ago as an informal group of concerned citizens. Initially, the Council's focus corresponded to the geographic scope and work of the BOR Trinity River Restoration Program (TRRP), addressing watershed restoration projects benefitting the Trinity River fishery in support of the 2000 Trinity River Restoration Record of Decision (ROD). Watershed restoration, as described in the ROD, is for the express purpose of reducing the impact of land management activities on the Trinity River fishery, primarily by controlling fine sediment delivery to the Trinity River and portions of its tributaries used by anadromous fishes, and by maintaining fish passage into those tributary areas. The TRRP's program addressed the 40 mile stretch of the Trinity River below the Lewiston Dam to the North Fork Trinity River.

Since its inception, and as funding allowed, the Trinity County Resource Conservation District (TCRCD) has coordinated the Council, primarily with funding assistance from the BOR-TRRP Program until around 2015, when this funding source was discontinued. The TCRCD applied for and received a BOR WaterSMART grant in 2017 with the goal of strengthening and developing the existing watershed group, including funding a Watershed Coordinator to assist the Council in:

- 1) Expanding the Trinity River Watershed Council's geographic focus to include all major tributaries of the main stem Trinity River down to the confluence with the Klamath River; as well as the upper Trinity River watershed above the Trinity Dam and Lewiston Dam, which includes the headwaters of the Trinity River (and not just the 40 river miles covered by previous coordination funding),
- 2) Expanding outreach activities throughout the entire watershed to gather input from stakeholders in tributary and headwater watersheds,
- 3) Developing the Council's mission and by-laws,
- 4) Development of new, review of completed, and re-examination of past watershed project concepts through a gap analysis using GIS, and
- 5) Developing a watershed restoration plan.

Below is a summary of the accomplishments of the Council under the 2017 WaterSMART grant:

- Engaged representatives from many groups to attend council meetings,
- Expanded the Council focus to include tributaries of the mainstem Trinity River,
- Developed and ratified by-laws for the Council, and
- Created a Gap Analysis that identified watershed restoration projects implemented in the entire Trinity River watershed, described known ecological concerns, and provided recommendations to guide future projects, titled *Landscape Level Restoration Gap and Trend Analysis for the Tributaries of the Trinity River, CA* (Rupp 2019).

Currently, the Council has active participation by organizations, individuals, agencies, tribes and stakeholders (see Sub-Criterion No. A1).

Eligibility of Applicant

The Watershed Research and Training Center (WRTC) has been an active member of an Existing Watershed Group, the Trinity River Watershed Council (Council) since the Council was established.

The WRTC's mission is to promote healthy forests and healthy communities. Our work is centered on the belief that rural resource-dependent communities can rebuild their economies based on an ethic of land stewardship. We work to develop and encourage sustainable forest-based activities and vibrant economic systems.

The Watershed Research and Training Center is a 501(c)3 non-profit organization and has managed complex natural resource programs and large grants since 1994. We work with landowners and land managers on a wide variety of projects including community wildfire protection planning, fuels reduction, prescribed fire, community planning, and much more (www.thewatershedcenter.com).

The WRTC's Watershed and Fisheries program staff develop and implement stream restoration projects, perform monitoring and outreach, develop site assessments, and grow support and funding for watershed treatments. The WRTC has been conducting water work in the greater Trinity River watershed for over 15 years including public water conservation education, streamflow monitoring and community partnership building. We have been a major force in local community collaboration projects like county-wide community wildfire protection planning and developing the Big Creek Integrated Watershed Management Plan. We strive to integrate input from regional stakeholders by attending Salmonid Restoration Federation's pertinent courses, being an active partner of the Klamath Basin Monitoring Program, and starting the North Coast Watershed Coordinator Team. We initiated this process of water transactions during a major effort to analyze and write the "Supplemental Watershed Assessment of the South Fork Trinity River" document that laid the foundation for our current watershed-related work.

Goals

Three major project goals are outlined here, with objectives cross-referenced to tasks found in Sub-criterion No. C1 section:

Goal 1: The Trinity River Watershed Council will expand the Council member representation to include stakeholders from the upper Trinity River watershed. Objectives to be achieved include:

- Engage upper Trinity River watershed stakeholders in watershed analysis and prioritization process by hosting six meetings in the upper Trinity River watershed communities (Tasks B and D).
- Gain two upper Trinity River watershed stakeholders as voting members of the Council (Task E).
- Further promote the Council by hosting eight meetings, including advertisement, agenda development, facilitation and recording meeting minutes (Task E).

Goal 2: The Council will develop a Watershed Restoration Plan for the upper Trinity River watershed based on current data and science that considers climate change and water quantity and quality. Objectives to achieve these goals include:

- Acquire the Hirz-Carr Post-Fire LiDAR data from the USGS and process the data to describe current watershed conditions (Tasks A and B).
- Apply appropriate modeling tactics to identify wet meadows, forest compositions, roads and restoration needs that enhance water resiliency to climate change (Task B).
- Develop a restoration goal prioritization table using results of the analysis of watershed needs, stakeholder and Council collaboration, and reasonable restoration tactics (Tasks B and D).
- Initiate baseline monitoring at three stream discharge locations and potentially three wet meadow locations (Task C).

Goal 3. The Council will initiate the design process on priority projects. Objectives to achieve these goals include:

- Identify three priority project locations, specifically for potential wet meadow restoration (Task D).
- Initiate the design process on three priority projects (Task D) for future implementation.

Approach / Project Description

The Council desires to build off of the previous accomplishments and continue to view the watershed from a landscape level, rather than be restricted by political boundaries. Since the completion of the previous WaterSMART grant, the TCRCDC has had limited capacity to support a Council coordinator that engages stakeholders from the greater Trinity River watershed. As a member of the existing Trinity River Watershed Council and a collaborative partner within the greater Trinity River watershed, The Watershed Research and Training Center (WRTC, applicant) proposes to partner with TCRCDC in coordinating the Council duties for two years. The Council has provided a resolution in support of this proposal and the TCRCDC and TRRP have provided Letters of Support (see appendices).

The WRTC is applying to the BOR WaterSMART grant for funding to expand previous efforts through the following activities:

1. Assisting the TCRCDC in coordinating the existing Council,
2. Outreach to stakeholders in the upper Trinity River watershed to strengthen and diversify community engagement around water management issues,
3. Collecting current baseline conditions data within priority sub-watersheds identified from this analysis.
4. Utilizing the Gap Analysis and new LiDAR data to identify and prioritize watershed health and restoration projects,
5. Identifying site-specific project locations for meadow restoration, and moving project design, permitting and environmental compliance forward.

As part of this project, the Council will encourage diverse community stakeholder participation from upper Trinity River watershed (see Sub-Criterion No. A1). The Council will outreach to

these stakeholders and focus on the common ground we have such as the quality and quantity of water within the reservoir.

Because of the TRRP focus, the existing Council is anadromous fish/aquatic habitat-centric, and not inclusive of watershed issues above Lewiston Dam, nor does it consistently address all beneficial uses including other forms of wildlife, smaller tributary benefits, and drought relief. While these topics have been discussed, due to a lack of funding to develop project concepts outside of the mainstem Trinity River, ideas and implementation does not move forward. The upper Trinity River watershed is a significant geographic area of the watershed that has not been addressed for restoration needs and other water quality and quantity issues to resolve.

This project specifically builds off of the results of the Gap Analysis implemented by TCRC, with funding from the BOR WaterSMART grant (Rupp 2019). In the Gap Analysis, all available data on projects within the greater Trinity River watershed was compiled including planning and implementation projects. It was apparent that the majority of the implementation has occurred in the watershed below Trinity and Lewiston Dams where anadromous fish populations exist.

The Shasta-Trinity National Forest assessment of vulnerability of watersheds to climate change (USFS 2012) shows the forests and water resources in the upper-most headwaters of the Trinity River as having the greatest resilience to negative impacts from climate change based on snowmelt influence. However, the resiliency rating drops quickly to moderate resiliency as the elevations decrease. According to the assessment, “more severe droughts, more frequent and larger floods, lower seasonal stream flows, higher peak flows, increasing water temperatures, increasing erosion and sedimentation are just a few of the changes that are likely to occur as a result of climate change.” Recent hydrologic data has supported the predictions of this trend as five of the past ten years have been classified as below normal to very dry water years for the Trinity River, and Water Year 2021 is setting up to be another dry year. This trend underlines the need to identify, assess, conserve, and/or restore the functionality of headwater hydrologic systems such as wet meadows and riparian zones. Some of these headwater areas are bisected by roads and hiking trails that disrupt hydrologic systems while contributing sediment to the streams. Riparian areas have been decimated from past mining activities that will not self-repair.

The WRTC and TCRC will initiate monitoring of stream flows and wet meadows to establish current and baseline conditions. Up to three instream monitoring locations in the upper Trinity River watershed will be established to compliment the single USGS streamflow gauge on the Trinity River near Coffee Creek (ID 11523200). Wet meadows will be photo-documented and assessed based upon state and federal protocols (to be determined in Task A). Additionally, site verification of model and LiDAR analyses will occur at a minimum of 5% of identified areas. This may include meadow location, road condition, or forest composition verifications. The data collected will also be useful in the design stage of selected priority projects.

Below are WRTC staff that will work directly on this project:

- **Project Manager- Josh Smith**, Watershed and Fisheries Program Director, earned a B.S. degree in Environmental Studies with a minor in Geology from the University of CA, Santa Barbara. He brings more than a decade of hydrology and ecology experience to this project, yet his extensive local knowledge of the Trinity County Landscape is potentially his most valuable asset. Josh’s extensive experience in the selected watersheds

is essential to project success as he knows many of the neighboring landowners, key agency personnel, and has personal familiarity in all of the streams.

- **Cindy Buxton**- Watershed and Fisheries Program Associate and Monitoring Program Manager, earned an M.S. in Environmental Science from the University of Idaho and a B.A in Biology from the University of Montana. Cindy has immersed herself in monitoring streams for 15 years; she has developed protocols, designed monitoring plans, monitored and modeled stream temperatures and has focused her efforts in “all things” streamflow related in these selected watersheds for the last five years.
- **Tim Bailey**, Project Specialist/ LiDAR Analyst, is a Master’s Candidate in Environmental Systems Geology, and earned a BAs in Earth Sciences and Anthropology from University of CA Santa Cruz. Prior to joining the WRTC in 2020, Tim worked for seven years in watershed sciences at Humboldt County RCD, Institute for Sustainable Forestry and Humboldt State University, in a variety of capacities including as a Watershed Coordinator, Watershed Science Director, research analyst, and teacher.
- **Marie Peterson**, Watershed Program GIS/Botany, earned a B.S. degree in Rangeland Resource Management and Wildland Soil Science from Humboldt State University. Marie has worked as a field scientist and GIS specialist for the WRTC for over five years, as well as Director of Environmental Services of Down River Consulting for four years.
- **Nick Goulette**, Executive Director, earned a B.S. degree in Forestry from the University of Vermont. Nick has been with the WRTC for sixteen years, and for the past ten years as the Executive Director. He oversees programs focused on forestry, fire and fuels, watershed and fisheries, youth development, and natural resources policy. He operates at the local, statewide and national scales to advance policies and practices that sustain rural communities and working landscapes.
- **Dillon Sheedy**, Forestry and Fuels Program Manager, earned a B.S. in Forestry, with a focus on Wildland Fire Management and GIS, from Humboldt State University, has over six years of forestry experience and is working towards obtaining his California Registered Professional Forester license.
- **Zack Pattek**, Education and Outreach Coordinator, earned a B.S in Marine Science from Eckerd College. Zack spent five years volunteering and working in environmental education roles across the northwest, including a year-long California Conservation Corps service program with the WRTC. Zack oversees the public outreach component of watershed and forestry projects as well as the youth and community volunteer programs.

A subcontractor will be hired to assist with GIS modeling for this project:

Terrainworks, Inc., Dr. Lee Benda, research has focused on spatial patterns of landscape disturbances. In the last decade, Lee has focused on building a community-based landscape analysis system (NetMap) which is designed to strengthen resource management and conservation planning in agencies, NGOs, universities across the Pacific Northwest Region and beyond.

Evaluation Criteria

Sub-criterion No. A1. Watershed Group Diversity

Currently, representatives from the following groups are invited to attend Council meetings:

- Watershed Research and Training Center (applicant)
- Trinity County Resource Conservation District (current Council coordinator)
- Trinity Public Utilities District (hydroelectric production)
- Sierra Pacific Industries (private timber company)
- US Forest Service, Shasta-Trinity National Forest
- US Fish and Wildlife Service
- Natural Resources Conservation Service
- Trinity River Restoration Project
- California Department of Fish and Wildlife
- Local Fish and Game advisory board
- Trinity County Board of Supervisors
- Hoopa Valley Tribe
- Yurok Tribe
- Weaverville Community Services District
- Five Counties Salmonid Conservation Program
- Homeowners Associations
- Hydrology/Fisheries Consultants
- North Coast Regional Water Quality Board
- Members of the public

This project will promote the expansion of the Council through coordinated outreach and community meetings to recruit more community members and stakeholders with interest in the upper Trinity River watershed. Additional stakeholders from diverse interests may include community service d local water districts, volunteer fire departments, private timber industry representatives, private landowners, homeowner's associations, economic development and visitor industry organizations.

Sub-criterion No. A2. Geographic Scope

The project area is the upper Trinity River watershed (HUC 18010211), located in the northeast portion of Trinity County, in the Klamath Bioregion of northwestern California. This 459,347-acre watershed represents approximately one-fourth of the Trinity River watershed, and is above the Lewiston and Trinity Dams. The Trinity River is a HUC 8 river that drains an approximately 3,000 square mile watershed.

Figure 1. Vicinity and Area of Concern Map



Sub-criterion No. B1. Critical Watershed Needs or Issues

The following critical needs are identified in the GAP Analysis (Rupp 2019) and the Upper Trinity Assessment (TCRCD 2006). Based upon a limited number of monitoring sites, the upper Trinity River watershed has many streams in good health (Rupp 2019). Stoney Creek, a west-side tributary that drains from the Trinity Alps Wilderness, is listed as a reference stream by the EPA for the 2000 TMDL report (EPA 2001).

“The number of wetlands destroyed (by mining) in this watershed is nearly impossible to estimate as very little historical documentation exists. Extensive research would be required to piece together a picture of the native landscape prior to mining” (Rupp 2019). Wetlands are biodiversity hotspots, store water that releases slowly over time, and are carbon sinks (Zelder 2000), all of which could help in mitigating climate change. Degraded wetlands that have down cut streams lose the ability to hold water, resulting in dried soils, loss of wet meadow vegetation, and loss of habitat for wildlife dependent on these systems. LiDAR analysis may help with clarifying the extent of historical wetlands and wet meadows in the upper watershed and identify locations more likely to respond positively to restoration activities.

The Trinity River TMDL (2001) estimated 31% of the sediment load in the upper Trinity River watershed comes from land management activities (timber harvest and roads), the remaining 69% of sediment comes from background (non-management) loads (landslides, bank erosion).

Sediment loads into Trinity Lake; estimate by USDA/NRCS states 460,160 cubic tons/year or reduction in storage capacity of 230 ac-ft/yr. Roads and landslides are main sources of sediment. Forest management including fuels and fire has led to imbalance and catastrophic fire conditions (proven true recently with the Carr and Delta-Hertz wildfires and others nearby).

Beneficial uses identified for Trinity Lake and the Trinity River above Trinity Lake include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Groundwater Recharge (GWR), Freshwater Replenishment (FRSH), Water Contact Recreation (REC-1), Non-contact Recreation (REC-2), Commercial and Sport Fishing (COMM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), Spawning, Reproduction and/or Early Development of Fish (SPWN), and Aquaculture (AQUA). Excessive sediment has been shown to directly impair the quality of instream habitat for fish and contribute to degraded water quality in lakes and reservoirs (EPA 1998). The upper Trinity River watershed area is a recreation destination for boating activities on the lake, hiking in the Trinity Alps Wilderness, and fishing in both streams and lakes. The economy of the upper Trinity River watershed is reliant on the many tourists who visit this area and patronize local businesses. The residents within the upper Trinity communities of Coffee Creek, Trinity Center, and others rely on quality surface water for their domestic needs.

The Trinity County Wildfire Protection Plan Update (CWPP 2015) states that the area has an “unnaturally high accumulation of fuels and increasingly high intensity

wildfires.” Since 2015, Trinity County has experienced multiple large, and some record breaking, wildfires including the Carr Fire and Delta-Hertz Fire in 2018, both of which burned in the lower southeast portion of the upper Trinity River watershed.

The Gap Analysis showed only a few projects occurring in the upper Trinity River watershed. These projects include roadside revegetation, invasive weed control, one road improvement, and two watershed assessments (TCRCD and USFS). The Gap Analysis recommends updating the watershed assessments, implementing road-stream crossing improvements identified in 2004, increasing aquatic monitoring datasets, and consider utilizing the over 180 springs previously identified in the 2004 road survey to develop climate resilience projects. Many of these springs may be associated with degraded wetlands and wet meadows impacted by poorly placed roads for timber harvesting activities. Wet meadow restoration offers opportunities for increasing carbon sequestration rates and improve climate resilience, dry season hydrologic performance and downstream water quality while supporting landscape scale conservation priorities.

The project in this proposal will address the critical needs by analyzing current conditions and prioritizing projects that will benefit the watershed including water quality and quantity needs. The Watershed Council agrees that the overall top restoration priority is water quantity/availability in all tributaries (Rupp 2019), including streams above the reservoir. Stakeholders in the upper Trinity River watershed area requested projects to address water quality, fire and fuels management, and biodiversity conservation (Rupp 2019).

Sub-criterion No. B2. Developing Strategies to Address Critical Watershed Needs or Issues

The 2019 Trinity River and Tributaries Gap Analysis identified the lack of aquatic data available in the upper Trinity River watershed with only 8 of the 19 sub-watersheds being monitored for aquatic invertebrates. The expense and regulatory difficulty of completing design and environmental planning for projects has resulted in a decrease of “shovel ready” projects exacerbated by a lack of funding. There is a lack of landscape level planning and restoration including source water protection, strategic habitat connectivity for both terrestrial and aquatic species in the face of climate change, and inclusion of stakeholders in recommendations that encompass the entire function of the watershed (i.e. recreation, timber harvest, fuels reduction, economy and aquatic systems).

A significant portion of the upper Trinity River watershed is in checkerboard ownership of US Forest Service and private timber industry. Sierra Pacific Industries is the largest private timber landowner in the upper Trinity shadowing over the combined ownership of other private timber companies and private residential lands. The US Forest Service lands are managed by the Shasta-Trinity National Forest. The west side of the upper Trinity watershed is designated wilderness mostly under US Forest Service ownership, except for a few small private inholdings. The east and north portions of the watershed is in checkerboard ownership and contains the majority of roads in the watershed. Roads, streams, and wildfire cross the checkerboard landscape with no cohesive watershed management plan between landowners. It is imperative the Council

engage and coordinate with the private and public landowners to assess, plan, and eventually implement holistic, landscape scale watershed projects to conserve water quality and quantity within Trinity Lake and beyond.

The US Forest Service, the largest landowner in the upper Trinity, is a regular participant at Trinity River Watershed Council meetings however, there is limited participation by other stakeholders in the upper Trinity River watershed. Sierra Pacific Industries (the second largest landowner in the watershed) and North Lake Alliance (economic development group in the watershed) are stakeholders whose engagement was initiated in 2018 by attending a Council meeting. We will continue to initiate and strengthen the engagement of upper Trinity River watershed stakeholders to attend Council meetings. We will host a few Council meetings in the upper Trinity River area to provide stakeholders a local platform to participate in development of project recommendations, a source of scientifically based information, and an opportunity to speak with land managers. Developing projects with community, stakeholder, and regulatory agency participation may lead to swift approval of some shovel ready projects.

This proposed planning project will utilize the historic data and information compiled for the Gap Analysis (2019) and recent LiDAR to assess current aquatic and terrestrial resources for restoration needs. Inventories of all county and Forest Service roads occurred over many years and were completed in the early 2000's. Since then, wildfire, drought, heavy precipitation, and a lack of maintenance have threatened the stability of the roads. The use of LiDAR imagery can expedite a re-assessment and identification of road infrastructure failures that can contribute large amounts of sediment to local streams. We are proposing producing a series of technical assessments that would include a watershed wide assessment of meadow restoration opportunities, remote sensing based Hydrogeomorphic type assessments adapted from R5-TP-034, site specific mapping of functional conditions, and initiation of hydrologic surveillance of targeted watersheds. The use of LiDAR imagery will reduce the amount of on the ground fieldwork typically required to implement a watershed assessment.

The results from the LiDAR analysis will be presented to the Council and upper Trinity River watershed stakeholders. The Council will facilitate discussions between stakeholders that will inform the restoration recommendations for a landscape, holistic approach to water quality and quantity resiliency to climate change. The technical reports and recommendations will provide guidance to implementation of restoration opportunities over the next decade.

Three projects will be selected from the list of recommended projects to initiate the Design process. The Council will begin discussions with regulatory agencies to set the foundation for an efficient execution of NEPA and other permitting needs to implement proposed projects.

Sub-criterion No. C1. Understanding of and Ability to Meet Program Requirements

Task A. Assessment Preparation: We will collect literature and data on watershed, and review current literature on applications of LiDAR on hydrology, forestry, and roads to determine the appropriate analysis and models. Deliverables: Final Assessment Report.

Milestones:

Month 1: Compilation of known data and tools to begin analysis.

Month 6: Selection of analysis

Month 18: Compilation of technical reports (Task B), field data (Task C), and stakeholder input (Task E) to identify restoration needs. Prioritize list of recommended projects (Task D).

Month 24: Completion of Upper Trinity River watershed restoration assessment.

Budget: \$12,497.99

Start: Beginning of project

Duration: 2 years

Task B Whole Watershed GIS Analysis: We will identify sediment sources, wet meadow locations, and fuel composition from analyzing the Hirz-Carr LiDAR data coverage of the upper Trinity River watershed. Terrainworks, Inc. (Dr. Lee Benda) has developed software to assist with LiDAR imagery analysis. Additional models that may be used to further the analysis include NetMap (roads and streams), WEPP (erosion potential), USFS PODS (forestry) or others. From these analyses we will gain an understanding of the present conditions of the headwater water resources and threats to their quality, both current and future.

Deliverable: Technical reports on hydrology, forest composition, wet meadows, etc.

Milestones:

Month 2: Acquire LiDAR dataset and begin analysis by Terrainworks.

Month 6: Use data from LiDAR analysis in models to determine erosion potentials, hydrologic impairment, fuel loads, and other analysis.

Month 12-18: Draft technical reports.

Budget: \$25,185.18

Start: 2 months after beginning of project

Duration: 1.5 year

Task C Field Verification: We will ground truth 5% of the model results including road condition, wet meadow locations and sizes, and forest composition. Roads will be surveyed using a modified Direct Inventory of Roads and Treatments (DIRT) protocol developed by the 5Counties Salmonid Conservation Program (1999) based on Pacific Watershed Associates Handbook for Forest, Ranch, and Rural Roads (PWA 2015). Wet Meadows and wetlands will be scored in a manner similar to the Meadow Hydrogeomorphic types for the Sierra Nevada and Southern Cascade Ranges in California (USDA 2011), Vegetation Assessment and Ranking of Fen and Wet-Meadow Sites of the Shasta-Trinity National Forest (USFS 2012), or the Sierra

Meadows Prioritization Tool (Point Blue Conservation Science 2019). Forest composition will be surveyed according to USFS silvicultural practices and fuels management.

Currently, the USGS operates one discharge gauge near the community of Coffee Creek on the mainstem Trinity River. Three streamflow monitoring sites will be installed in tributaries to the Trinity River to initiate hydrologic surveillance of targeted watersheds to be chosen based upon the technical assessments (Task B).

Deliverable: Baseline monitoring data from 3 stream discharge locations and potentially 3 wet meadow locations, technical reports and hydrograph.

Milestones:

Month 3-6: Install gauges at 3 sites.

Month 6-17: Ground truth 5% of modeling results.

Month 12-17: Wet meadow classifications

Month 18-22: Analyze hydrologic data from gauges.

Budget: \$29,180.67

Start: 3 months in

Duration: 1.5 year

Task D Develop Restoration Projects: The Council will select 3 of the recommended watershed restoration sites to begin the design process. Implementation of the projects will result in improvement to wet meadow quality and a reduction in impacts to waters from sediment sources, such as roads. The LiDAR data can be further analyzed to determine the geologic grade line of a meadow for restoration design and delineate fuels reduction treatments to reduce conifer encroachment on wet meadows. Roads and trails that cross wet meadows can be re-designed to restore hydrologic processes. Part of the design process will include setting the foundation for NEPA considerations.

Deliverable: List of restoration projects. Selection of three priority projects to begin designs.

Milestones:

Month 20: List of Restoration Projects

Month 22: Selection of 3 Priority Projects

Budget: \$16,119.91

Start: 1.5-year mark

Duration: 6 months

Task E Trinity River Watershed Council Meetings: Continue facilitation of the quarterly Council meetings, including announcements, agendas, meeting minutes, platform/venue. Provide reports about the Upper Trinity River Watershed Planning Project to the Council at the meetings.

Expand Council engagement to North Trinity Lake communities, with targeted outreach to community service districts, volunteer fire departments and community organizations such as the Lion's Club, as well as landowners and private timber companies. Engage already established organizations such as the Trinity County Collaborative Group/, Recreation Committee, Safe

Alternatives for the Environment non-profit, that have interest in the North Lake area, Trinity County.

Deliverables: Coordinate eight Council meeting with sign-in sheets, agendas and minutes and 6 community and stakeholder meetings.

Milestones

Quarterly: Host Trinity River Watershed Council meetings

Month 6: Host first community meeting in the upper Trinity River watershed.

Month 22: enlist two stakeholders from the upper Trinity River watershed into the Council

Budget: \$16,901.17

Start: first quarter

Duration: 2 years

Sub-criterion No. C2. Building on Relevant Federal, State, or Regional Planning Efforts

State Wildlife Action Plan: Priority conservation planning targets identified in the State Wildlife Action Plan for the Klamath Province (which includes the upper Trinity River watershed) include Wet Mountain Meadow; Fen (Wet Meadow); and Mountain Riparian Scrub and Wet Meadow. Species of Greatest Conservation Need are identified for these conservation targets include a variety of amphibians, fishes, birds, and mammals.

Conservation Strategies include providing outreach and education for the conservation of natural resources and Engaging Partners for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities.

California Water Action Plan: The California Water Action Plan has been developed to meet three broad objectives: more reliable water supplies, the restoration of important species and habitat, and a more resilient, sustainably managed water resources system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades.

California faces a range of water challenges, from severely depleted groundwater basins to vulnerable infrastructure to unsafe drinking water in many communities to uncertain water supplies for our cities and agriculture. Climate change magnifies the risk. There is widespread agreement that a coordinated portfolio of complementary actions is needed to build water resilience, ensure healthy waterways and meet long-term water needs.

The Water Action Plan does not replace local efforts, rather, it complements and leverages them. Successful implementation of the plan requires increased collaboration between state, federal and local governments, regional agencies, tribal governments, and the public and the private sectors.

In 2020, Governor Gavin Newsom released a final version of the Water Resilience Portfolio, the Administration's blueprint for equipping California to cope with more extreme droughts and floods, rising temperatures, declining fish populations, over-reliance on groundwater and other challenges. The Portfolio contains actions to be taken

by state agencies intended to support California’s diverse regions as they work to improve their ability to withstand drought and flood and safeguard reliable water supplies for communities and natural systems. Recommended actions include:

- protect and enhance natural systems by supporting the expansion of wetlands, including mountain meadows, to create habitat, filter runoff, buffer floods, and recharge groundwater
- encourage investment in upper watersheds to protect water quality and supply.

Sub-criterion No. D. Nexus to Department of the Interior Initiatives

This project proposal supports the Department of the Interior’s Priorities, including creating a legacy of conservation stewardship, and restoring trust with local communities by improving relationships and communication with agencies, communities, landowners and water users. The Council and its members, including the Trinity River Restoration Program, have been collaborating in watershed stewardship for over 2 decades. The Council has been a neutral organization that brings together community members and agencies for productive dialogues on water resource issues.

This WaterSMART proposed project also supports Reclamation’s priorities to Increase Water Supplies, leverage science and technology to improve water supply reliability, Storage and Reliability, address ongoing drought, and improve water supplies for tribal and rural communities. Land management activities in the upper Trinity River watershed directly impact the quality and quantity of water that is stored in Trinity Lake. Climate change has exasperated drought and wildfire in the region. The stored water supports the local recreation-based economy, downstream Endangered Species Act listed anadromous fisheries, rural domestic water-users, and agricultural industries that feed our nation. The Hoopa Valley Tribe relies on late summer storage in the reservoir to be released down the Trinity River for a cultural ceremony. The proposed Upper Trinity River Watershed Planning Project will be the starting point from which water security and wildfire resilient projects will be developed. The use of LiDAR based technology will reduce the amount of field work to assess the watershed for resource management needs, including restoration project prioritization.

Project Budget

Table 1. Total Project Cost

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$99,684.92
Costs to be paid by the applicant	\$
Value of third-party contributions	\$
TOTAL PROJECT COST	\$ 99,684.92

Budget Narrative

- 1) Salaries and Wages: Watershed Research and Training Center staff include:
Project Manager-Watershed and Fisheries Program Manager, 400 hours, to complete Tasks A through E.
Watershed and Fisheries Program Associate, 450 hours, to assist with Tasks A through E.
Seasonal Field Technicians, 220 hours each, to assist with Tasks C and E. Outreach and Education Coordinator, 40 hours, to assist with Task E. Project Specialist/ LiDAR Analyst, 185 hours, to assist with Tasks A, B, D. Forestry Program Manager, 40 hours, to assist with Tasks A and C.
GIS Technician/Botanist, 100 hours, to assist with Tasks A and B. Executive Director, 40 hours, to assist with Task E.
- 2) Fringe Benefits: rates are estimated here for each WRTC employee at XX% on average, and will include social security (6.2%), Medicare (1.45%), unemployment insurance (State 6.2%, FICA 6.2%), retirement, health plan, worker's compensation insurance, holiday and paid leave. Rates will vary based on whether or not the employee is full or part-time, age, length of employment, worker's comp rate, etc.
- 3) Travel: The WRTC office is located in Hayfork, CA. The project site is located in the vicinity of Coffee Creek, CA, approximately 70 miles from Hayfork. Staff will be traveling to the project site and stakeholder meetings, with 2 to 6 people per vehicle, 24 visits each for 2 vehicles.
- 4) Materials and Supplies: Printing GIS project area maps (color, poster- sized) for community stakeholder meetings will cost approximately \$15 per poster sized map, 4 maps per meeting for each of 6 planning meetings. Postage for mailing letters to community stakeholders and landowners about the project and planning meetings, 200 mailings, \$3 ea. Purchase of Staff plate for stream flow monitoring, 3 each \$40 each. Mounting hardware (rebar, zip ties, screws, posts, PVC tubes, etc.) for stream flow monitoring, 3 sites \$20 each
- 5) Contractual: Costs are for Professional Consultant, 80 hours, to assist with GIS watershed modeling, Tasks A and B.
- 6) Third-Party In-Kind Contributions: N/A
- 7) Environmental and Regulatory Compliance Costs: This planning project will not incur environmental and regulatory compliance costs, but they will be considered as part of a future project.
- 8) Indirect Costs: The Watershed Research and Training Center has a federally negotiated indirect cost rate, 19.76% rate (approval letter is attached).
- 9) Letters of Commitment: N/A

Environmental and Cultural Resources Compliance: This is a planning project that will consider environmental and cultural resources compliance in the watershed analysis and project prioritization tasks. Addressing compliance issues during the planning process will facilitate environmental and cultural permitting during the implementation process.

Required Permits or Approvals: This is a planning project that does not require permits or approvals. Implementation projects that are developed from this planning project will require permits and approvals before ground is broken, however, the implementation project types have not been chosen yet, therefore the permits or approvals that would be required can only be assumed at this time.

Letters of Commitment: N/A

Official Resolutions: An official resolution from the Watershed Research and Training Center Board of Directors is attached, as well as an official resolution from the Trinity River Watershed Council in support of the project is attached (Appendix C).

Unique Entity Identifier and System for Award Management: The Watershed Research and Training Center is registered in the System for Award Management (SAM) with the unique Cage Code 3HN37 and DUNS #171854052.

References

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North Coast Regional Water Quality Control Board (NCRWQCB) 2018. North Coast Basin Plan. Santa Rosa, Ca.

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U.S. Forest Service, Shasta-Trinity National Forest, authored by Mai, C., et al. 2012. Assessment of Watershed Vulnerability to Climate Change.

Zedler, Joy. 2000. Progress in wetland restoration ecology. *Trends Ecol. Evolution*, 15, October. pp 402-407.

Appendix A: Mandatory Financial Forms (attachments)

SF-424, SF-424-A, SF-424-B, SF-LLL*

*Form SF-LLL is not required; Watershed Research and Training Center does not participate in any lobbying activities under our 501(c)(3) designation.

Appendix B: Letter of Project Support (attachment)



Trinity River Restoration Program

P.O. Box 1300, 1313 South Main Street, Weaverville, California 96093
Telephone: 530-623-1800, Fax: 530-623-5944

December 23, 2020

NC-152

U.S. Bureau of Reclamation
WaterSMART Cooperative Watershed Management Program

Dear Sir or Madam,

I am writing to express our support for the Watershed Research and Training Center (Watershed Center)'s proposal for WaterSMART Cooperative Watershed Management Program Phase I grant funding for the Upper Trinity River Watershed Restoration Planning Project.

The Trinity River Restoration Program (TRRP) has worked with the Watershed Center on many tributary restoration projects as well as on the Trinity River Watershed Council (TRWC). The proposed grant funding will facilitate the Watershed Center partnering with the Trinity County Resource Conservation District to coordinate the TRWC and expand its geographic focus. It will build on a report funded by the WaterSMART CWMP in 2019 titled "Landscape Level Restoration Gap and Trend Analysis for the Tributaries of the Trinity River, California" which recommended increasing the number of projects that protect and enhance stream flow, as well as restoration projects for forest health. Like the TRRP, much of the TRWC's emphasis to date has been on restoration needs below Trinity and Lewiston Dams. However, several recent studies in California and the intermountain west have demonstrated the importance of headwaters restoration, forest health, and fire management on improving quality and quantity of water. In a time of increasing drought and wildfire severity, it is more important than ever to the success of the TRRP and Reclamation that we take a hard look at restoration and management needs in the upper watershed. By prioritizing restoration needs in the Trinity River headwaters, this project should improve water availability for both fish and people.

The Watershed Center has been a key partner in Reclamation's efforts to restore a healthy Trinity River watershed since before the establishment of the TRRP in 2000. They have the capacity to do the work and the trust of stakeholders who will be necessary to implement the projects identified through this work. Please feel free to contact me at (530) 623-1811 or mdixon@usbr.gov if you have any questions about our support for this proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Mike Dixon', is placed above the printed name.

Mike Dixon, Ph.D.
TRRP Executive Director
U.S. Bureau of Reclamation

Appendix C: Watershed Research and Training Center Board of Directors Official Resolution (attachment)



RESOLUTION 20-21-03

Resolution approving application for grant funds from the
Bureau of Reclamation WaterSMART Cooperative Watershed Management Program

WHEREAS the U.S. Department of Interior, Bureau of Reclamation, WaterSMART Cooperative Watershed Management Program is providing funding to watershed groups to encourage diverse stakeholders to form local solutions to address their water management needs. WaterSMART also supports Reclamation's priorities, including increasing water supplies, leveraging science and technology to improve water supply reliability, addressing ongoing drought, and improving water supplies for tribal and rural communities. By providing this funding Reclamation promotes water reliability and cooperation between stakeholders to reduce conflict, facilitate solutions to complex water issues, and stretch limited water supplies; and

WHEREAS the Watershed Research and Training Center intends to conduct watershed restoration planning and watershed management design activities in the Trinity River Watershed, as well as to participate in the Trinity River Watershed Council activities, to help meet water supply and natural resource needs in the watershed.

NOW THEREFORE BE IT RESOLVED by the Board of Directors of the Watershed Research and Training Center that said Board does hereby:

1. Approve the filing of an application for grant funding from the Bureau of Reclamation WaterSMART Cooperative Watershed Management Program; and
2. Certify that said Applicant will comply with all federal, state and local environmental, public health, and other appropriate laws and regulations applicable to the project and will obtain or will ensure that the other project partners obtain all appropriate permits applicable to the project; and
3. Further commit to the terms and conditions specified in the grant agreement; and
4. Appoint Nick Goulette, Executive Director and/or Cindy Blackburn, Director of Operations, as a representative of The Watershed Research and Training Center to conduct negotiations, execute, submit and sign all documents including but not limited to applications, agreements, amendments, payment requests, and other documents which may be necessary for the completion of the proposed project.


Passed and adopted by the Watershed Research and Training Center Board of Directors via email vote sent on December 17, 2020.


Ayes: Arnold Whitridge, Summer Bashore, Sarah Aldinger, Yvonne Everett, Cecilia Danks, Donna Harmon, Russell Henly

Noes:

Absent: Sherry Chilcott

Signed:


Arnold Whitridge
Chairman


Summer Bashore
Secretary

Appendix D: Trinity River Watershed Council Official Resolution (attachment)

Resolution

RESOLUTION NO. 21-01

January 6, 2021

Members of the Trinity River Watershed Council

A RESOLUTION AUTHORIZING SUBMITTAL OF A GRANT PROPOSAL TO THE BUREAU OF RECLAMATION AND DESIGNATING A REPRESENTATIVE TO SIGN THE AGREEMENT, AND ANY AMENDMENTS THERETO, FOR THE WaterSMART Cooperative Watershed Management Program.

Whereas, the attending members of the Trinity River Watershed Council, an ad hoc group consisting of federal, state, local and non-profit entities, authorize the Watershed Research and Training Center to submit a grant proposal to the Bureau of Reclamation WaterSMART Cooperative Watershed Management Program for the purpose of supporting and expanding the existing Trinity River Watershed Council; and

Whereas, the attending members of the Trinity River Watershed Council authorizes the Watershed Research and Training Center's Executive Director, or designee, to sign the Agreement, and any amendments thereto; and

Whereas, the attending members of the Trinity River Watershed Council accepts that the Watershed Research and Training Center will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

Now, therefore, be it resolved, that the attending members of the Trinity River Watershed Council hereby adopts Resolution 21-01 on January 6, 2021.

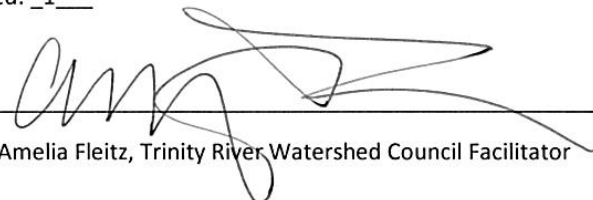
CERTIFICATION I hereby certify that the foregoing Resolution 21-01 was duly and regularly adopted by the attending members of the Trinity River Watershed Council at the meeting thereof held on the 6 day of January, 2021,

Ayes: 3

Noes:

Abstained: 1

Attest:



Amelia Fleitz, Trinity River Watershed Council Facilitator