

2018 GRANT APPLICATION FORM STREAM FLOW ENHANCEMENT PROGRAM

***NOTE: EVERY QUESTION MUST BE ANSWERED IN ORDER FOR THE APPLICATION TO BE CONSIDERED FOR FUNDING**

APPLICANT INFORMATION

Applicant Name (Organization): American Rivers

Address: 1101 14th St NW, Suite 1400, Washington, DC 20005

Project Manager Name: Luke Hunt/Julie Fair

Telephone: 530-478-0206

Email: lhunt@americanrivers.org/jfair@americanrivers.org

Authorized Signatory Representing Applicant Organization

Name: Kristin May

Title: Chief Financial Officer

Federal Tax ID#: 23-7305963

Organization Type:

Public Agency

Nonprofit Organization

If qualified under Section 501(c)(3) provide 501(c)(3) nonprofit organization number: 23-7305963

Public Utility*

Mutual Water Company*

Federally Recognized Indian Tribe

State Indian Tribe listed on the Native American Heritage Commission's California Tribal Consultation List

*Public Utilities and Mutual Water Companies must describe a clear and definite public purpose and benefit to the customers of the water system

LANDOWNER(S) INFORMATION

Landowner Name: Lassen National Forest

Private State Federal Local Tribal Other _____

Contact Name: Tyanna Blaschak

Telephone: (530) 252-5852 Email: tsblaschak@fs.fed.us

Signatory Representing Landowner

Name: Matt Boisseau

Title: Eagle Lake District Ranger

PROJECT INFORMATION

Project Name: Pine Creek Restoration Project

Funding Amount Requested From WCB: \$1,175,006

Total Project Cost: \$1,636,142.52

Month and Year WCB Funding Needed: (If proposal is funded, grants are likely to be fully executed in June 2019) June 2019

Proposed Start Date: 6/15/2019

Estimated Completion (Funds must be expended by April 30, 2022): 11/30/2021

Elected Representatives for Project

State Senate District(s): www.senate.ca.gov

District number	Name
1	Ted Gaines

Assembly District(s): www.assembly.ca.gov

District number	Name
1	Brian Dahle

Project Type

- Planning
 Scientific Studies
 Implementation
 Acquisition

Project Eligibility and Summary

Projects must measurably enhance stream flows at a time and location necessary to provide fisheries or ecosystem/habitat benefits or improvements that enhance existing flow conditions and are greater than required applicable environmental mitigation measures or compliance obligations.

Provide a brief (2 paragraph or less), clear description of the project and an explanation of how the project will meet the requirements of eligible project type(s).

This comprehensive project will enhance streamflow and habitat for Eagle Lake Rainbow Trout (ELRT), one of eight species of trout endemic to California. ELRT have recently been petitioned for listing under the Endangered Species Act, and stream flow is one of the primary factors limiting the recovery of the species (California Department of Fish and Wildlife, U.S. Forest Service, U.S. Fish and Wildlife Service, 2015). American Rivers and our partners (Trout Unlimited, Pine Creek Coordinated Resource Management Planning Group, U.S. Forest Service, CA Dept. of Fish and Wildlife, and Todd Sloat Biological Consulting) have come together under this project to implement three complementary actions specifically identified in the *Conservation Strategy for the Eagle Lake Rainbow Trout*. These actions—expected to improve instream flow conditions in Pine Creek and promote recovery of ELRT—are specified as high priority under Goal 2 and include: 1) removing impoundments, including dug out waterholes and railroad grades, in the Pine Creek watershed that reduce flow volumes and alter the timing of flows in Pine Creek; 2) capping the diversion from Bogard Spring and dedicating the existing water right to instream flow; and 3) removing conifers that are withdrawing water from meadows through evapotranspiration in the Pine Creek watershed. In addition to implementing these priority elements, the project team will install stream gauges above and below the project area to quantify changes in the timing and duration of flows that result from these and other planned future restoration activities.

Mitigation Project

Mitigation cannot be funded under this program. Is any portion of the project a required mitigation or to be used for mitigation under CEQA, NEPA, CESA, ESA, CWA, Porter-Cologne, other pertinent laws and regulations, or a permit issued by any local, State, or federal agency?

Yes No

If yes, provide explanation.

Coordination with the California Conservation Corps (CCC) and Certified Local Corps:

All applicants are required to consult with the CCC. Has consultation occurred?

Yes No

If yes, submit consultation form. If the Corps will be used, they must be included in the Budget. Consultation form and instructions can be found here: Refer to Appendix A

CHECKLIST

NOTE: The following information must be attached to the application.

- Project location map and photos showing project area
- Detailed project drawing for implementation projects (a sketch showing relevant features of the proposed restoration project, include engineering design drawings, if available)
- Budget using supplied Budget Template. **Please Note:** There are four separate Excel worksheets, please complete all four.
 - Applicant Budget
 - Budget Justification
 - Cost Share
 - Project Summary
- Land Tenure/Site Control/ Landowner Access agreements or templates for projects with on-the-ground work
- For projects that alter the amount or timing of water instream(s) include Water Rights Permits or Other Documentation
- For Implementation Category 2 and Acquisition Proposals, include both a Long-Term (20+ years) Maintenance / Management Plan and a Monitoring / Reporting Plan
- California Conservation Corps and Certified Community Conservation Corps Consultation Review Document. Refer to Appendix A
- Acquisition Projects Include
 - Signed purchase or option agreement, or willing seller letter;
 - Legal description of the property or water right;
 - For riparian rights or water rights transferred appurtenant to land include a preliminary title report or legal opinion (ideal);
 - Minimum of six color photographs illustrating the property, stream segment to benefit, diversion, method of diversion, etc.;
 - Legal description of diversion if relevant;
 - USGS 7.5-minute topographic map, or comparable depicting the location of the property;
 - Current Preliminary Title Report;
 - Copy of water right application, permit or license;
 - Copy of all statements of diversion of use for past five years.Include if available:
 - Title report for water rights;
 - Phase 1 Environmental Site Assessment
- Application is signed

PROJECT DETAILS

PROJECT LOCATION

Clearly delineate project location and boundaries

Project location

Nearest City: Susanville

County(ies): Lassen

Street: Highway 44

Cross streets: Forest Road 32N09

APN's: Lassen National Forest Property

In what sub-basin or watershed is the stream(s) located? Eagle Lake/ Pine Creek

What is the name of the stream(s) this project will directly enhance? Pine Creek,
Bogard Springs Creek

To what stream is the project stream a tributary to? Pine Creek

Answer the following using Global Positioning System (GPS) coordinates (in Decimal Degrees, e.g. 38.5729, -121.4984).

Note: *Latitude/Longitude can be determined using Google Earth, <http://itouchmap.com/latlong.html>, and other on-line resources*

PROJECT CENTER(S): Please provide the central latitude/longitude coordinate of the project focus area. If project covers multiple watersheds, please list all applicable center latitude/longitude coordinate(s).

Latitude (e.g. 38.572906): 40.6532 Longitude: (e.g. -121.498440): -120.9786

PRIMARY REACH (the section of the stream that will directly reflect the project's benefits):

Total River Miles (approximate length of reach): 25

Upper End River Mile GPS Coordinates

Latitude (e.g. 38.572906): 40.5685 Longitude: (e.g. -121.498440): -121.1090

Lower End River Mile GPS Coordinates

Latitude: 40.6878

Longitude: 120.7556

SECONDARY REACH (if applicable)

Total River Miles (approximate length of reach): This is not applicable.

Upper End River Mile GPS Coordinates

Latitude: n/a

Longitude: n/a

Lower End River Mile GPS Coordinates

Latitude: n/a

Longitude: n/a

[Provide additional reaches benefiting from project as necessary]

POINT(S) OF DIVERSION (identify points of diversion located within project area that may be affected by the project)

Latitude: 40.5781

Longitude: -121.0974

Add points as necessary

Latitude: 40.5738

Longitude: 121.0789

APPLICABILITY TO SOLICITATION PRIORITIES

1. *Stream flow enhancement is defined as “A change in the amount, timing and/or quality of the water flowing down a stream, or a portion of a stream, to benefit fish and wildlife.” How will the proposed project enhance stream flows? Clearly illustrate the current condition of the stream, identify the flow related limiting factors and/or problem(s) and describe the actions required to solve the identified problem(s).*

This project will enhance stream flows in three ways:

- 1) Removal of manmade impoundments that detain flows in Pine Creek and its tributaries. The impoundments that will be removed include water holes, a railroad grade, and the borrow ditches adjacent to the railroad grade that currently capture and divert flows (see attached map and project drawings for further detail).
- 2) Capping the diversion of Bogard Spring at the headwaters of Bogard Springs Creek and dedicating the existing water right to instream flow. This will allow flows to return to the small, perennial creek that provides limited aquatic habitat in the Pine Creek watershed during summer.
- 3) Removing conifers that currently withdraw water from the meadow fringes in the watershed. This will restore the meadow size, limit evapotranspiration losses, and enable these areas of meadow to hold snowmelt longer into the runoff season.

Restoration in Context: Eagle Lake Rainbow Trout. ELRT is one of eight species of trout endemic to California, with a natural range confined to the Eagle Lake watershed in Lassen County. Historically the fast-growing ELRT would spawn in tributaries, primarily Pine Creek, and mature in the highly alkaline waters of the lake. In the late 19th century ELRT were so abundant that a commercial fishery was established. About the same

time, logging and overgrazing caused the creek to become entrenched within meadows in the watershed. This and other impacts reduced the natural water storage capacity of the watershed to the point that Pine Creek only flowed intermittently in the lower reaches. By the 1940s insufficient flows and limited access to spawning habitat were thought to have extirpated ELRT from Pine Creek. But in the 1950s, CDFW discovered a small number of spawning adults in Pine Creek and began a hatchery program. In 1958, a weir and fish trap were constructed to capture spawning adults near the mouth of Pine Creek, and for the last 55 years, ELRT have depended entirely on hatchery reproduction.

Current Condition of Pine Creek. Below Highway 44 (Mile 25), Pine Creek is an intermittent stream. Under current conditions it only provides habitat connectivity for ELRT during very wet years. Below Highway 44, the creek flows through four broad alluvial valleys connected by short, steeper reaches. The flats were likely once floodplain habitat with associated meadow vegetation; however, deep incision in the flats below Pine Creek Valley (Mile 20) has disconnected the creek from the floodplain, and the vegetation has converted to upland species dominated by sagebrush (Platt and Jensen, 1991; Young 1989). Incised reaches continue to erode and as a result, fine sediment is common in flats and spawning habitat is limited. Riparian cover is absent in almost all of the reaches that were once meadow floodplains. One exception is an approximately 0.25-mile reach where aspen are common (approximately Mile 5) and provide riparian cover.

Steeper reaches are less impacted, but provide limited holding habitat for ELRT. The streambed in these reaches is predominately armored by boulders and cobble. Gravels and fine sediments are rare. Forested cover and a few riparian shrubs are present in these steeper reaches.

The Problem: Streamflow and Habitat Limitations. ELRT spawning and rearing in Pine Creek is limited by the duration of flow, and is impossible during many years due to a period that is too short to enable spawning, egg maturation and outmigration. Since 1961, the period with measurable flow into Eagle Lake has ranged from 9 days to 242 days, with an average of 92 days (CDFW et al., 2015). During years with appreciable flow, the recession limb of the Pine Creek hydrograph is important because this is when ELRT either out-migrate from the intermittent reach, or become stranded. When the recession period is abrupt, strandings increase. In other watersheds, incision, impoundment, and the disconnection of floodplains have been shown to constrict the hydrograph and result in an abrupt decrease in flow, following snowmelt (Shilling et al. 2004; Hammersmark et al. 2010; Jencso et al. 2010).

The proposed project addresses this flow limitation and unnatural hydrograph, with the intent to improve conditions for ELRT. The project is one in a series of restoration efforts supported by the Pine Creek Coordinated Resource Management Planning Group (CRMP). Since 1987, the CRMP has implemented similar projects to augment flow and enhance habitat. These projects have been adaptively managed and, where successful, repeated. This current project builds on past CRMP successes.

CONSISTENCY WITH AND IMPLEMENTATION OF STATE AND OTHER PLANS

2. *Describe how the project advances, is consistent with, or in conflict with any applicable local, regional, or statewide plans, such as the California Water Action Plan, the WCB Strategic Plan, the State Wildlife Action Plan, Recovery Plans, general plans, county plans, specific area plans, regional conservation plans, climate action plans, watershed management plans, etc. Identify the pertinent plan(s) and the date adopted by the applicable local/regional entity.*

Meadow restoration and headwaters management are identified in the California Water Action Plan, which aims to “Manage headwaters for multiple benefits” and “Restore forest health through ecologically sound forest management.” The plan states that, “Overgrown forests not only pose a risk of catastrophic fire but can significantly reduce water yield.” This project specifically advances Action 4 in the California Water Action Plan: Protect and Restore Important Ecosystems (2016). Action 4 calls for restoration of key mountain meadow habitat and the protection and restoration of degraded stream and meadow ecosystems to assist in natural water management and improved habitat. In addition Action 5 calls for the management of healthy soils, which will be addressed by moving the stock watering areas outside of the meadow soils and thereby reducing grazing impacts on meadow soils.

The proposed project is also specifically identified in the *Conservation Strategy for the Eagle Lake Rainbow Trout* (CDFW et al., 2015), including waterhole, diversion and conifer removal. Forest thinning for watershed protection is also a priority in the Sierra Nevada Conservancy Strategic Plan (2015) and Watershed Improvement Program (Draft 2016). Meadow restoration is further identified as a priority in the U.S. Forest Service (USFS) Regional Leadership Intent (2011). This project meets goals A, B and D of the WCB strategic plan. The project has been developed in cooperation with and meets the goals of the Pine Creek CRMP (Pustejovsky, 2007). In addition, at least two bird species that inhabit the project area are targets of the State Wildlife Action Plan: Greater Sandhill Crane and Swainson’s Hawk (2015).

DIVERSITY AND SIGNIFICANCE OF BENEFITS

3. *Considering anadromous fish, or special status, threatened, endangered or at risk species, what limiting factor(s) will be addressed by this project?*

The *Conservation Strategy for the Eagle Lake Rainbow Trout* (DWR et al., 2015) identifies low flow in Pine Creek as a primary limiting factor for ELRT. Low flows reduce or eliminate ELRT spawning opportunities in most years because the period of flow is not adequate for spawning, development, and outmigration of juveniles. In addition, connectivity between Eagle Lake and the upper perennial reach of Pine Creek is limited or non-existent in all but wet years. This, in combination with 60 years of hatchery propagation, has reduced the fluvial life history of ELRT. Finally, the rapid recession of spring flows increases adult and juvenile ELRT stranding in Pine Creek where ponds are created by road and railroad grades.

In addition to flow, sedimentation and bank erosion are habitat degradation factors identified in the *Conservation Strategy for the Eagle Lake Rainbow Trout* (CDFW et al.,

2015). This project will address the sedimentation and bank erosion factors by reducing erosion from railroad grades and instream water holes. In addition, accompanying meadow restoration projects planned by partners in the Pine Creek CRMP will address bank stability and limited habitat availability.

An additional factor limiting ELRT recovery is brook trout in the upper watershed. Brook trout removal is planned by CDFW with support of Pine Creek CRMP members. The current project does not address competition by brook trout.

a) Will these limiting factor(s) be eliminated or reduced?

This project will reduce the low-flow limiting factor for aquatic species in Pine Creek, including ELRT. Increasing flows would improve spawning success by increasing the frequency and duration of spawning and rearing periods. Increased flow would also increase the connectivity between Eagle Lake and the perennial upper watershed. Restoring a more natural hydrograph would reduce stranding and increase recruitment to Eagle Lake. The sedimentation and bank erosion factors will be reduced, as described above.

b) What future work will need to occur to eliminate the limiting factor(s) in this reach?

- i. Are there plans for future improvement within the project area?*
- ii. Is there funding lined up for future efforts?*

Legacy impacts are the biggest threats to watershed health in Pine Creek. The Pine Creek CRMP has identified and implemented a series of projects, including removing diversions and enabling fish passage at the weir/ fish trap near the mouth of Pine Creek (completed in 2012). As a recent step toward addressing this issue, a major diversion ditch was decommissioned this season. The current project will complete the next step in the series, which is to remove additional diversions and impoundments.

Future restoration planned by the project team will address flow and connectivity limitations by removing gullied channels that drain groundwater from a number of large meadows within the reach affected by this project. The project team has developed restoration designs and is in the process of permitting a project that will restore 140 acres of meadow along Pine Creek in Confluence Meadow. We recently applied to CDFW for implementation funds for this work. We also recently received funding to initiate restoration design on two additional meadow sites within the Pine Creek watershed from CDFW. All of these projects are being completed by partnerships of Pine Creek CRMP members.

4. Will this project provide additional ecosystem benefits beyond stream flow enhancement? If so, describe what other ecological problems, beyond stream flow, will the project address.

This project will restore meadows and improve headwaters management through conifer removal, water hole removal, and railroad grade removal.

Additional ecosystem benefits include: increased area of meadow habitat, raised groundwater levels, reduced erosion and sedimentation, lowered water temperatures, reduced grazing impacts on riparian areas and reduced wildfire risk.

The project will also increase climate change resilience (see section 9 below) and enhance habitat for a variety of species in addition to ELRT.

5. *Are the ecological benefits anticipated from the completed project part of or tied to other habitat protection or improvement efforts in the watershed?*

Yes No

a) If so, briefly list and describe the projects recently implemented, underway, or planned that will help to achieve the habitat goals associated with enhancing instream flows. Please describe the relationship between this proposal and the habitat restoration activities addressing other limiting factors.

Other limiting factors within the Pine Creek watershed are being addressed by allied efforts, which will help achieve the habitat goals associated with enhancing instream flows. In 2012, CDFW constructed a fish passageway at the weir and fish trap near the mouth of Pine Creek. This action reinstated natural migration of ELRT, which had not been possible since the 1950s. In addition, CDFW is planning Rotenone eradication of Brook Trout in upper Pine Creek. American Rivers and Trout Unlimited are also leading meadow restoration efforts to improve aquatic habitat in three meadows within and adjacent to the proposed project, at Confluence, Logan Springs and Bogard Meadow. These efforts are all supported and coordinated in partnership and with the Pine Creek CRMP.

b) If the proposal is similar to or related to other past or current projects in the region, what shortcomings of these projects will this proposal address?

This proposal is similar to other conifer and waterhole diversion projects in the watershed designed to increase flows and benefit ELRT. The current proposal greatly expands the extent of these earlier pilot projects, in part, because successes of earlier projects built support for current efforts.

6. *Describe the benefits of meeting project objectives (including enhanced knowledge).*

The overall goal of this project is to restore natural hydrology in the Pine Creek watershed. Objectives in support of this goal include: 1) increase streamflow in Pine Creek; 2) improve aquatic, riparian and meadow habitat; 3) reduce erosion; 4) improve connectivity for spawning ELRT and other aquatic species; 5) reduce grazing impacts; 6) reduce wildfire fuel; and 7) increase organizational capacity for restoration in Pine Creek.

1) Increase Streamflow: Meeting this objective will benefit ELRT and other species because, as described above, low flow is a primary limiting factor for species recovery and health.

2) Improve aquatic, riparian and meadow habitat: In addition to the riparian habitat improvements accomplished by increasing flows, riparian habitat will be improved where water holes and the railroad grade/borrow ditch are removed. Water holes increase evaporation and result in bare banks and stagnant pools with elevated water temperatures throughout much of the period when the area is free of snow and used by native species. These areas of poor-quality habitat will be regraded and revegetated to match the natural meadow and will provide improved meadow, floodplain, and riparian habitat. In addition, encroaching conifers will be removed to restore the size of meadows in the watershed. These actions will promote the recovery of ELRT by increasing spawning success and improving the condition of the watershed to restore the natural hydrology as well as the meadow and riparian communities of Pine Creek.

3) Reduce Erosion: An estimated 30% of the material excavated to construct the waterholes and railroad grade has been lost to water and wind erosion (approximately 25,000 cubic yards). Recontouring and revegetating these areas will reduce erosion to natural rates, while rebuilding meadow soils.

4) Improve Connectivity: Increasing the duration of flow in the intermittent reach between Highway 44 and Eagle Lake will improve the connectivity between the two areas of perennial aquatic habitat in the watershed.

5) Reduce Grazing Impacts: Water holes in the stream channel attract livestock and concentrate impacts, including streambank destabilization, increased areas of bare ground, potential impacts to water quality, and reduced riparian vegetation and recruitment. Removing one waterhole and moving the others outside the stream channel will eliminate the impacts caused by attracting livestock to riparian areas.

6) Fuel Reduction: Removing small conifers from meadow perimeters will eliminate fuel ladders between the meadow grasslands and the forest edge, while also reducing water withdrawn through evapotranspiration.

7) Increase Capacity: The Pine Creek CRMP has been coordinating restoration since 1987. Proposition 1 is an opportunity to build upon strong existing relationships and accomplish priority projects within the watershed. Simultaneously, successful on-the-ground restoration will catalyze additional planning and attract more resources to the watershed, at a time when big steps for restoration are needed to restore ELRT. For example, support for chemical treatment for brook trout and restoration of large meadow flats (see TU proposal *Pine Creek Meadow Restoration to Enhance Instream Flows*) depend on a continued track record of success.

Meeting the project objectives will result in multiple benefits, as described above. If this project and related efforts are successful, we will recover a wild spawning population and prevent the listing of ELRT under the ESA. The project will also enhance our knowledge of the linkage between upper watershed condition and streamflow. The project will also achieve Pine Creek CRMP objectives and thereby rejuvenate CRMP efforts to pursue habitat restoration. This will accelerate the pace of restoration because it will continue to attract new partners and initiate new assessments to fill knowledge gaps (for example the 2015 meadow assessments noted in the *Conservation Strategy*).

Improved outreach is the fourth goal of the Conservation Strategy, and this partnership includes NGOs that are very well versed in leading stakeholder groups and communicating conservation needs to a national audience. In addition, the Pine Creek CRMP stands as an example of successful restoration and adaptive management amongst mixed stakeholders.

a) How will ecological benefits of the project be realized?

The project will increase flows and improve habitat. The ELRT is designated a California Heritage Trout, and is a strong driver for tourism in the region. Improving the watershed will benefit the species as well as other wildlife that depend on the Pine Creek riparian system. Flows and habitat improvement will be monitored by this project, and ELRT survival is monitored by CDFW.

b) Quantify to the best of your ability the ecological benefits anticipated from successful completion of this project.

The ecological benefits of relatively small increases in flow are very difficult to quantify in a stream channel such as Pine Creek, where flows fluctuate widely from year to year. We therefore restrict our discussion here to the small diversion at the head of Bogard Springs Creek. Here, instream flow benefits of the project include the dedicated water right of 4.7 acre feet per year at the source of Bogard Springs Creek. We estimate that this could add 50 percent to the flow of the creek at times, which would impact 2 miles, or about 15 percent of the perennial habitat within the watershed.

Additional ecological benefits to ELRT will result from the removal of 14 points of diversion amounting to 10 acres of potential ELRT entrapment. This amounts to the removal of more than half of the stock ponds in the channel of Pine Creek.

Removing stock ponds from the main channel will also reduce grazing impacts in the meadow, especially the 200 acres surrounding the 14 diversions. Reduced in-channel grazing will encourage the recruitment of willow and aspen, reduce bank trampling, and reduce sedimentation downstream. We are unable to estimate these effects quantitatively.

The conifer thinning will enhance 1,390 acres of meadow fringe, improving forage and habitat and increasing water yield from this area by reducing evapotranspiration. We will quantify the benefit from reduced evapotranspiration after the project is complete. (see attached monitoring plan).

c) How will the benefits of the project be maintained for 20+ years?

This project will add to the Pine Creek CRMP restoration legacy that has implemented projects since 1987. Successful projects enable future projects to move ahead more quickly, and lessons learned are remembered and applied, because the CRMP has a long-term perspective with long-term goals.

Additionally, the instream flow benefits provided by the water rights dedication will be permanent.

Although climate change remains a threat to ELRT and to the gains made by this project, studies indicate that within a healthy watershed, ELRT were able to persist even during extended droughts that were much worse than we are currently experiencing. We expect that restoring a fluvial population of ELRT in the perennial reaches and restoring meadow and upper watershed health will enhance climate resilience for the species.

DURABILITY OF INVESTMENT

7. *What is the durability/permanency of the stream flow enhancement? What are the provisions to maintain the enhancement and for what period of time?*

The streamflow enhancements are permanent and will be maintained by the USFS in perpetuity with assistance from CRMP members. See also the attached Maintenance and Management Plan.

8. *How will the completed project deliver sustainable flow related outcomes into the future? Describe the long-term management that will assure the entire project's sustainability beyond the term of the grant agreement?*

This project addresses legacy impacts on USFS land. Once restoration returns impacted areas and flows to the natural state (water holes removed, diversion capped, railroad grade removed, conifers removed), the resources will be preserved under the Lassen National Forest Land and Resource Management Plan and the flow will be preserved under the Conservation Agreement for Eagle Lake Rainbow Trout, which contains the project reach and the stream above and below, and includes CDFW, the USFS and US Fish and Wildlife Service and prioritizes instream flow improvement.

CLIMATE CHANGE CONSIDERATIONS

9. *Describe the extent to which climate change considerations are adequately taken into account in the proposed project, including how future climate conditions might affect the project's long term benefits. Using the latest regional scenarios, predictions and trends, describe how the project objectives may be vulnerable to impacts (fire, drought, species and habitat loss, etc.) from climate change. What design, siting, or other measures are you incorporating into the project to reduce these vulnerabilities?*

The role of intact watersheds in our ecosystem and water cycle is becoming ever more important under climate change. Scientists agree that a rise in temperature will raise the snow-elevation level, increase the proportion of precipitation falling as rain instead of snow, increase the incidence of rain-on-snow events, reduce the depth of the snowpack, and accelerate spring snowmelt in the Sierra Nevada (Mount et al, 2009, Metha and Purkey, 2008). This will significantly increase peak flows and reduce the duration and magnitude of late season flows. A model developed for the Carson watershed, the nearest eastern Sierra watershed for which we could find data, predicts a 67 percent decrease in snowpack, a 30 percent increase in peak flows, and a concomitant 50 percent decrease in low flow under a business-as-usual scenario

(Dettinger et al. 2004). The Carson watershed rises substantially higher in elevation, while much of Pine Creek is frequently near the snow line, so changes as substantial as those in the Carson watershed may be expected in Pine Creek.

Additionally, since mountain snowpack provides important water storage in California and other arid regions of the West, a reduced snowpack and earlier peak snowmelt will reduce water supplies and prolong summer drought. Across the larger Sierra Nevada and Intermountain West, regional models predict a 30 to 70 percent decrease in spring snowpack by 2100 under moderate climate change scenarios (Hayhoe et al. 2004). These impacts are already being felt—the start of the spring snowmelt recession in the northern and central Sierra Nevada occurs one to three weeks earlier than in it did 60 years ago (Peterson et al. 2008). In practical terms, this means that there is much less snowmelt to recharge streams and maintain a reliable water supply for people and wildlife through late summer and autumn, and the timing of water availability threatens life cycles that have evolved in concert with the natural timing of snowmelt recession (Yarnell et al 2010).

Climate change is a very real threat to ELRT and the Pine Creek watershed. This and allied projects are designed to improve climate change resilience by increasing natural water storage capacity in the watershed and reducing unnatural withdrawals by diversion and unnatural meadow and forest conditions.

By increasing natural water storage potential, this project will partially compensate for decreased snowpack. The reduction in surface water evaporation and warming caused by instream water holes will partially compensate for predicted climate warming, and the thinning will help compensate both for increased incidence of long-term drought and more frequent wildfire.

However, the fact remains that the Pine Creek watershed is on the cusp of the Great Basin, and depending on the magnitude of climate change, all efforts to protect the watershed and preserve ELRT may not be enough if desertification progresses to a point unprecedented in the history of this fish. However, submerged stumps below the current waterline of Eagle Lake and Lake Tahoe indicate that the water levels of these lakes were once lower than they are now, and that these low levels persisted for a period of at least 200 years (Hardin, 1935). This indicates that with an intact watershed, the ELRT was able to persist in conditions of extended drought much worse than we are currently experiencing. Members of the Pine Creek CRMP are working to preserve the species, the lake level, and current ecological benefits. Increasing flow in this watershed is critical in the face of climate change and to recover ELRT.

10. *Will the project reduce effects of climate change? Please describe.*

Under the altered precipitation and hydrologic conditions predicted for the Sierra Nevada, meadows and intact watersheds are especially important for safeguarding California's ecosystems, wildlife, and water supplies. A significant set of empirical and modeling studies demonstrate that meadow restoration is capable of helping to address the very impacts that climate modelers predict. Specifically, the restoration of meadows results in attenuated peak flows, prolonged summer base flows, reduced in-stream water temperatures, and increased groundwater storage capacity (Sagraves 1998,

Liang, 2006, Loheide and Gorelick, 2006, Cornwell and Brown 2008, Hammersmark et al 2008, Hill 2012 and references therein). This project will be especially beneficial for improving summer baseflows through the removal of impoundments, the capping of the Bogard Spring diversion and the permanent dedication a consumptive water right to instream flow. Furthermore, the importance of meadows as a water-cycle buffer is likely to increase as climate change results in a shift from snowmelt to rainfall-dominated runoff at mid-elevations in the Sierra Nevada, where many critical meadows are located (DWR 2009, American Rivers 2011, California Roundtable 2012). At these elevations snowpack currently exerts a large influence on local hydrology, and as the proportion of precipitation shifts toward more rain, the local hydrology will be influenced significantly (Mehta and Purkey, 2008).

APPROACH/FEASIBILITY

11. *Has the applicant completed the environmental documents (including CEQA, which is required prior to WCB approval of funding for implementation) and obtained the necessary State, federal and local permits for the projects? If not, give the current status and expected completion date(s).*

NEPA is complete (The Lassen National Forest was the lead agency, and the decision was a Finding of No Significant Impact. Documents are available upon request). CEQA documents have been filed with the State Clearinghouse, and completion is anticipated by October 2018 (see details below). A 401 and 404 certifications and a stormwater pollution prevention plan (SWPPP) will be acquired before June, 2020 (funding is requested from WCB to complete permitting) and implementation is anticipated for summer/ fall of 2019 (no in- channel elements until permits are complete), 2020, and 2021.

- *If the proposed project qualifies for a CEQA exemption(s), please specify which exemption and why it qualifies. If the project does not qualify for a CEQA exemption, specify who is the “lead agency” under CEQA, the status of preparing the environmental review document, and your views as to which type of document would be required for the project. Provide the State Clearinghouse Number if available. For more information on CEQA, visit: <https://www.califaep.org/ceqa/ceqa-flowchart>.*

The lead agency is the Lahontan Regional Water Quality Control Board. They filed a Mitigated Negative Declaration for the project in 2017. We are currently preparing the 401 application, which is required for the Lahontan Board to finalize the CEQA process. We are working with Brian Judge at the Board to complete Section 401 compliance and CEQA.

12. *What would happen to the project if no funds were available from the WCB? What project opportunities or benefits could be lost if the project is not implemented in the near future? Explain:*

The Lassen National Forest completed NEPA for the project in 2014. The project had no funding support for implementation and none was anticipated until the Proposition 1 grant programs were announced. The Pine Creek CRMP has been in quiescence for

the past two years and was recently reinvigorated by meadow restoration and planning assessments. WCB funds would allow the project team to advance a high-priority on-the-ground effort and further build momentum for restoration in Pine Creek.

In addition, during the last 15 years the U.S. Fish and Wildlife Service has been petitioned three times to consider listing ELRT. To date, the listing has been postponed because of active restoration projects underway. ELRT recently completed a 12-month review by the U.S. Fish and Wildlife Service. Because of the pace of progress toward goals in the ELRT Conservation Strategy, the species was not listed. However if the pace of restoration slows, it appears likely that ELRT will again be considered for listing, which would delay and complicate future restoration projects.

- *If WCB awards only partial funding, are other funding sources available?*

If WCB awarded partial funding, we could either scale back the project or seek funding from foundations or under the new Proposition 68 grant programs. The National Fish and Wildlife Foundation is a potential funder. We applied to the Sierra Nevada Conservancy for the conifer removal portion of the project. However, the design of the removal—adjacent to meadow fringes—is not a direct wildfire treatment, which is the agency’s focus at this time. Because the project’s primary purpose is to augment flows, rather than prevent wildfire, WCB was recommended as a better fit.

- *We coordinate with other funders. Have you applied to other funding entities, Prop 1 or other, for all or part of this project? Identify these entity(ies).*

We applied to WCB in 2017, but the project did not have a CEQA lead and we were unable to complete CEQA in time. We applied to SNC in 2016, with the request that they lead CEQA, if awarded. SNC determined that the project was not a fuels reduction project because the conifer removals were along meadow fringes rather than in the most fire-threatened areas. (The Lahontan Board is now the identified CEQA lead). The National Fish and Wildlife Foundation has funded project planning for additional meadow restoration efforts adjacent to the proposed project, and implementation for decommissioning of a major diversion affecting Pine Creek. In addition, American Rivers was recently awarded funding from CDFW for planning at two additional meadow sites, Bogard and Logan Springs. We will also apply to CDFW for implementation for meadow restoration at Confluence Meadow, located a few miles downstream of this project (implementation at Confluence Meadow is partially funded by the US Fish and Wildlife National Wetland Conservation Act program). We also received support from the Joseph and Vera Long foundation to support restoration in the Pine Creek watershed.

13. *Is (are) the landowner(s) willing to allow the construction of the project and agreeable to the proposed maintenance plan for the project on a long-term basis (typically, 20 years or more)? See Solicitation Section 3.7*

- *If access or long-term maintenance is required from a party other than the perspective grantee, provide a draft landowner access agreement.*

Yes. The USFS is the landowner (letter of support attached).

14. *Willing Seller: Projects that involve acquisition of water, water rights and/or property must involve a willing seller. If your project includes acquisition, please describe the status and expected conclusion of landowner negotiations.*

This is not applicable because this project does not include acquisition.

SCIENTIFIC MERIT – SCIENTIFIC BASIS

15. *Describe the scientific basis of the proposed project illustrating how the best available science will be utilized and how, if relevant, the project will address key scientific uncertainties and fill information gaps. How will the data collected be managed and made publicly available?*

As noted in sections 1 and 3 above, ELRT spawning and rearing in Pine Creek is limited by the duration of flow and is impossible during many years due to a period that is too short to enable spawning, egg maturation and outmigration. According to the literature, incision, impoundment and disconnection of floodplains can be major contributors to this problem, constricting the hydrograph and resulting in an abrupt decrease in flow following snowmelt (Shilling et al. 2004; Hammersmark et al. 2010; Jencso et al. 2010). As discussed in the climate change section (see section 9 above), meadow restoration is capable of addressing these impacts and prolonging summer baseflows, as well as providing other benefits for fish species including decreased downstream water temperatures, decreased erosion and associated fine sediment deposited, and increased cover and shade (Sagraves 1998, Liang 2006, Loheide and Gorelick 2006, Cornwell and Brown 2008, Hammersmark et al 2008, Hill 2012 and references therein).

Healthy meadows act as natural reservoirs, soaking up and then slowly releasing snowmelt and rainfall runoff. While meadows do not create “new” water, they alter the temporal distribution of streamflow so that less water flows downstream during peak runoff periods in the winter and spring, when water is not in high demand, and more is released during the summer low-flow season (Ohara et al 2013). Increased groundwater storage in meadows can also enhance summertime instream flows (Liang and others, 2006). Also, in healthy meadows high flows often overtop the stream channel, and native meadow vegetation slows the water, allowing sediment to be deposited on the meadow floodplain and minimizing sediment input from local bank erosion. Hydrologically functional meadows reduce erosion and capture suspended sediment, aid in floodplain development, and provide conditions in which riparian shrubs and wet meadow plant species can thrive.

In the past three decades, meadow restoration has shifted from a novel and untested practice to a widely and frequently implemented practice throughout the Sierra Nevada region. It is now a technique whose feasibility and benefits have been widely demonstrated through the successful implementation of numerous projects in a variety of settings, including several implemented by American Rivers. As an example, Plumas Corporation, a pioneer in meadow restoration, has successfully completed over 50 meadow restoration projects in the Sierra since 1985 (http://www.feather-river-crm.org/index.php?option=com_content&view=article&id=4&Itemid=4). These projects have been extensively studied and similar restoration techniques have been employed

by at least 25 other meadow restoration practitioners throughout the region (UC Davis Meadows Database – Projects Page), including American Rivers and the Lassen National Forest.

This project will fill information gaps by increasing knowledge about meadow restoration. The project will include analysis of the impact of restoration by comparing baseline conditions to post-project outcomes. This will be added to the growing body of literature about the benefits of meadow restoration. Although meadow restoration benefits are well-known, there is still a need to come to consensus on some critical topics (such as water supply security increases as a result of restoration). Because each meadow location is different, this project will help to build the shared understanding of meadow restoration outcomes across the Sierra Nevada landscape.

As described in detail below, the project data will be stored online at the UC Davis meadows clearinghouse: meadows.ucdavis.edu. This site provides a straightforward, user-friendly interface, and the information is available to the general public. Additionally, reports (described in detail under section 21, task 3 below) regarding project assessment and project outcomes will be circulated widely and made available in an easy-to-understand, concise format.

16. Identify any new or innovative technology or practices that will be used, and explain rationales for their use.

As noted elsewhere in this proposal, meadow restoration has become an established practice with tested methodologies. Likewise, instream flow dedications have been gaining traction as an established restoration practice. However, the two have seldom been applied in tandem and seldom with such specific goals for the reestablishment of a species, as proposed by this project. This represents a novel approach to meadow restoration, instream flow enhancement and species conservation that has the potential to provide an economy of scale, achieving additional benefits with limited resources.

This project will act as a pilot project of this approach with the potential to be replicated more widely among meadow restoration practitioners. In particular, it is an important pilot project for implementing meadow restoration jointly with instream flow enhancement on a National Forest. The project is timely because the USFS Pacific Southwest Region has recently shown interest in instream flow dedication, including a current partnership with American Rivers to identify and validate their existing water rights that could be dedicated to instream flow use under California Water Code Section 1707. In our extensive experience working with the USFS on meadow restoration projects we have seen that once USFS personnel have completed a pilot project, they significantly increase their capacity to pursue and lead similar projects. We anticipate that the Pine Creek Restoration Project will yield a similar result.

MONITORING, ASSESSMENT AND REPORTING

17. For projects involving restoration, construction or land acquisition, describe your 20-year management and monitoring plans. As appropriate for meeting project and program objectives, WCB advocates including the costs for gauging or metering equipment necessary to capture flow results.

- *Who will be responsible for implementing ongoing management and monitoring?*
- *Beyond the proposed estimated completion date, who will be responsible or what options will the applicant pursue for funding the projects' long-term monitoring and management?*

The USFS will manage the project post-restoration, as described in Attachment 6 Long Term Management Plan. Pre and post-project monitoring will be conducted by Trout Unlimited, American Rivers, USFS, and Todd Sloat Biological Consulting. Additional monitoring will be included in budgets of a future planned restoration project because the flow data will be used to monitor multiple phases of restoration.

18. Describe in detail how the proposed project will be monitored and assessed to determine project success.

Monitoring and reporting are described in detail in Attachment 7. The monitoring plan includes:

Discharge. The project team will set up long-term, continuous streamflow monitoring at the upstream and downstream ends of the habitat restoration reach. This data will be used to evaluate improvements in the timing and magnitude of baseflow. The project team will establish suitable long-term streamflow monitoring sites and install pressure transducers to develop a continuous record of stream flow data.

Photo Points. Photo-point monitoring will be performed to visually evaluate changes in streambank and riparian vegetation associated with the project. A number of permanent photo points will be established at sites informed by the baseline condition assessment. These photo points will be monitored at least annually pre- and post-project.

- Describe your plans for compiling baseline data. (For acquisition projects please review Solicitation Section 2.2)*

Photo points will be established pre-restoration, and above and below-project stream gauges will be in place for the habitat restoration reach to provide temperature and discharge data. For the diversion cap, pre-project diversion rates will provide baseline data, and there will be no diversion post-project. Baseline meadow condition data was collected in 2015 using the American Rivers Meadow Condition Scorecard.

- Describe your plans for implementing adaptive management strategies, if necessary.*

The project is most vulnerable to erosion in the early years following implementation. Project partners are engaged in planning multiple future restoration projects and will monitor performance of the current project and, if necessary, seek additional funds in combination with future restoration requests.

- How will enhancements to flow be monitored and reported?*

Instream flow enhancements from the capped diversion will be easily quantified because following the project diversions will cease. Stream gauges above and below the project will be used to quantify flow benefits. There are no other water rights

downstream, so flow enhancements will not need enforcement, as downstream land is entirely owned by the USFS until Pine Creek reaches Eagle Lake.

d. *How will benefits to fish and/or wildlife be documented and monitored?*

Benefits to fish have been and will continue to be quantified at the CDFW fish trap as annual number of days with flow. Wildlife habitat benefits will be quantified as the acres of meadow habitat restored.

e. *How will improvements to water quality be documented and monitored?*

Water temperatures will be measured at stream gauges above and below the project reach. Sediment will not be monitored directly, but the area of eroding bare ground and extent of unstable banks supplying sediment to Pine Creek will be measured before and after the project.

f. *How often will reports be issued giving an analysis of the data?*

Reports will be issued upon project completion, and whenever ensuing projects are completed, estimated to be approximately every two years for at least six years.

g. *Who is responsible for analyzing the data and issuing reports?*

Trout Unlimited, American Rivers, USFS and Sloat Biological Consulting (with input from the Pine Creek CRMP) will work together to analyze the data and issue reports.

h. *Provide key contact information if another agency, program, or individual will be collecting, storing, and evaluating the flow, biological and water quality data.*

Not applicable.

DATA MANAGEMENT AND ACCESS

19. *Refer to Section 3.5, Data Management, of the Solicitation for specific requirements related to data management activities (e.g., geospatial data, water quality data, wetland and riparian restoration data).*

Describe how data and other information generated by the project will be handled, stored, and shared (i.e., disseminated to the public, participants, stakeholders, and the State), taking into account the specific requirements stipulated in Section 3.5, Data Management, of the Solicitation. Environmental data collected under these grant programs must be made visible, accessible, and independently understandable to general users in a timely manner, except where limited by law, regulation, policy or security requirements. Unless otherwise stipulated, all data collected and created through WCB-funded grant projects are a required deliverable and will become the property of WCB.

For Acquisition and Implementation projects, the data management activities described in this section shall cover the monitoring activities described in the Monitoring and Reporting Plan (Solicitation Section 3.4).

The data and reports produced by this project will be made publicly available through the UC Davis meadows clearinghouse (<https://meadows.ucdavis.edu>) and the California Data Exchange Network. Project data will also be uploaded to EcoAtlas. In addition, interim and final reports will be presented to stakeholders including the USFS, U.S. Fish and Wildlife Service and CDFW at Pine Creek CRMP meetings. Fact sheets will also be distributed through American Rivers' and partners' websites and distributed at CRMP field visits.

PROJECT TEAM QUALIFICATIONS

20. Describe your organization's qualifications, experience, and capacity to perform the proposed tasks to complete this project as proposed. Provide specific examples of similar projects completed to date.

American Rivers is a leader in meadow restoration with a decade of technical, on-the-ground experience and a track record of building successful and efficient partnerships and completing projects on time and within budget. Our work to restore headwater meadows has covered all aspects of the field, including the development of science-based assessment and monitoring protocols, restoration planning for meadows on private and public lands, implementation of large-scale restoration projects, and training programs to build the capacity of the restoration field. We have advanced meadow restoration in seven watersheds, including completing restoration of three sites. We are leading an additional 15 projects in various stages of completion, including the project proposed here. We have also conducted comprehensive science-based assessment and prioritization of meadows in eight watersheds.

In 2012, American Rivers worked with partners Plumas Corporation, USFS, the National Fish and Wildlife Foundation, Coca-Cola and the Alpine Watershed Group to restore 275-acre Indian Valley Meadow. The project repaired one mile of eroded stream channel in the headwaters of the Mokelumne watershed on the El Dorado National Forest. This project employed the plug-and-pond technique to rapidly raise the water table, resulting in an immediate increase in groundwater storage and augmented peak and base flows. It also resulted in a shift from xeric meadow vegetation to hydric meadow vegetation and enhanced recruitment of riparian cover across much of the project area. Post-project monitoring has shown that even after several years of drought, restoration resulted in increased streamflows downstream of the site during the late summer season, as well as elevated groundwater levels and restoration of wet meadow vegetation in areas that were transitioning to sagebrush uplands.

In 2014 and 2015, American Rivers, in partnership with the Humboldt-Toiyabe National Forest, restored China Camp meadow, a 30-acre site in the lower Walker River watershed. This meadow is an active breeding and lekking site for Greater Sage Grouse, but this habitat was being threatened by self-reinforcing meadow degradation.

The project repaired the incised channel using a series of grade controls, stabilized headcuts that were threatening to erode intact healthy meadow and repaired an eroding dirt road that was augmenting flow at the lower end of the meadow, causing the meadow to drain unnaturally.

In 2015, American Rivers worked with the Stanislaus National Forest to restore 3-acre Shell Meadow. This site was classified as a high priority due to important breeding habitat for the threatened, endemic Yosemite toad and the presence of two large headcuts threatening the meadow's hydrology and habitat value. The project stabilized these headcuts to prevent severe degradation of the meadow.

Since 2012, American Rivers has been pursuing restoration of 1600-acre Hope Valley Meadow, one of the largest and most iconic meadow complexes in the Sierra. WCB has contributed funds to the project and our other partners include the Humboldt-Toiyabe National Forest, CDFW, Alpine Watershed Group, Friends of Hope Valley, Institute for Bird Populations and Trout Unlimited. We completed implementation in 2016. The project stabilized approximately 1 mile of stream bank and enhanced habitat within 400 acres.

American Rivers also developed a rapid assessment tool that has been used on 400 meadows by academic institutions, conservation organizations, and land management agencies to prioritize meadows for restoration. We also attracted the first private investors to meadow restoration for hydrologic benefit: Coca-Cola and Keurig Green Mountain. American Rivers has also partnered with seven out of the nine National Forests in the Sierra Nevada, and has partnered with the California Department of Fish and Wildlife (CDFW) on three meadow restoration and climate resilience projects. We assisted researchers in the effort to revise the accepted range of beavers (allies in meadow restoration). With UC Davis and others, we created a meadow database that includes data, reports, and assessments. With funds from the National Fish & Wildlife Foundation, American Rivers also developed a meadow restoration training and mentorship program that was provided to the USFS and other restoration practitioners in 2016. The training program will cover all stages of collaborative restoration planning, design, permitting, implementation and monitoring.

American Rivers conservation staff who will participate in this project include Luke Hunt, Julie Fair, and Max Odland. *Luke Hunt* leads American Rivers' Headwaters Conservation Program in California. Luke has 20 years of experience in research and monitoring and is currently managing numerous watershed restoration projects. Luke is also spearheading American Rivers' meadow restoration training and mentorship program in partnership with NFWF and the Forest Service. In 2012, Luke was awarded the Forest Service Regional Forester's Honor Award for Leadership in Ecological Restoration. Luke holds a PhD in ecology from Stanford University. *Julie Fair* is the Associate Director of California Restoration at American Rivers. Julie has worked on over ten watershed restoration projects with diverse agencies, including the Forest Service. She is currently leading \$1 million in restoration projects to be implemented by November of this year. Julie holds a B.A. Geography and Environmental Studies from UCLA. *Max Odland* has assisted in the planning phase of several meadow restoration projects, as well as Meadow Condition Scorecard assessment and prioritization efforts

for the Pine Creek Watershed in Lassen National Forest and the Truckee River Watershed. He holds a B.A. in conservation biology and environmental studies from Middlebury College.

Members of the Pine Creek CRMP have been advancing watershed restoration together since 1987, and this project was developed with input from stakeholders including, CDFW, the USFS, UC Davis Extension, Eagle Lake Guardians, grazing permittees, Trout Unlimited, American Rivers, and Todd Sloat Biological Consulting. CRMP members have strong working relationships, long-term trust, and a successful track record of collaboration.

SCHEDULE AND DELIVERABLES

21. *Describe in detail how the project will be carried out (i.e. provide a work plan). Illustrate the schedule demonstrating the sequence and timing of project tasks, milestones, and deliverables. Provide sufficient detail to illustrate that the project is technically feasible and provide sufficient detail illustrating how each element of the project will be implemented (e.g. methods/ techniques used, material and equipment necessary to complete each element of the project).*

Project implementation includes five tasks, which are described below.

Task 1: Project Management and Administration. Under this task, American Rivers will complete all invoicing, subcontracting and reporting necessary to complete the work and fulfill the grant requirements. This includes project team meetings, bidding, evaluating and awarding subcontracts, reporting to WCB, reporting to partners and stakeholders, and managing the project budget and timeline. American Rivers has undertaken numerous projects of similar scope before and the project team has a strong track record.

Task 2: Complete Permits. Project partners will work with the Lahontan Regional Water Quality Control Board (LRWQCB) and Army Corps of Engineers (Army Corps) to complete permits. American Rivers, Trout Unlimited, Todd Sloat Biological Consulting and the USFS have experience expediting permitting of priority watershed projects, including strong working relations with regulatory staff at the LRWQCB and Army Corps.

Task 3: Monitoring and Project Evaluation. Under this task, project partners will install stream gauges used to monitor flow above and below this and future watershed restoration projects that are currently being planned for the reach. Gauges will record stream stage and will be calibrated to provide discharge. Stage and temperature will be logged every 15 minutes and will be analyzed and reported following the plan described here: <http://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2016/06/21173430/Hydrology-Monitoring-Protocol.pdf>

The project team has a strong track record of monitoring and evaluating projects and understands that quantitative evaluation is critical for demonstrating benefits and expanding support for watershed restoration. Reports will be circulated widely and made available in an easy-to-understand, concise format for individuals with management or regulatory responsibility for similar landscapes.

Task 4: Dedicate Water Right at Bogard Spring to Instream Flow. American Rivers, Trout Unlimited and the Lassen National Forest will collaborate to file the petition and supporting documents with the State Water Resources Control Board. The diversion will be decommissioned under Task 5.

Task 5. Restoration Implementation. This project will remove seven water holes, four raised railroad grades and four abandoned roadbeds that divert or impound water of Pine Creek and its tributaries. The water holes will be filled by removing the berm created during the initial excavation and using the material in the berm to fill the excavated depressions. Likewise, the material in the railroad grades and roadbeds that is elevated above the meadow surface will be removed and placed in the borrow ditches to either side, resulting in a return to the natural grade and return of natural flow paths. Approximately 30 percent of the excavated material (the material excavated from the borrow ditches and used to construct the elevated railroad grade) has been lost due to wind and water erosion, and this material will be hauled in from borrow sites identified on National Forest lands. The treated areas will be revegetated with native species.

In addition, conifers will be removed using hand labor and either piled and burned, or lopped and scattered.

The size of the restoration action is as follows:

Feature	Area or Length
Railroad (RR) 1	.01 acre
RR 2	0.45 miles
RR 3	0.3 miles
RR 4	0.03 miles
Road 1	0.11 mile
Road 2	0.19 miles
Road 3	0.10 miles
Road 4	0.1 miles
Waterhole 1	0.5 acre
Waterhole 2	1.5 acre
Waterhole 3	1 acre
Waterhole 4	0.3 acre
Waterhole 5	1 acre
Waterhole 6	0.2 acre
Waterhole 7	0.1 acre
Conifer Thinning and Removal	1,390 acres

SCHEDULE AND DELIVERABLES

Task No.	Task Title	Deliverables and Key Project Milestones	Estimated Completion Dates
1	Project Management and Administration	<ol style="list-style-type: none"> 1. Invoices 2. Subcontractor Selection and Scope of Work 3. Signed Participating Agreement 	<ol style="list-style-type: none"> 1. Quarterly 2. Within 30 days of agreement execution 3. July 1, 2019

		with USFS 4. Progress Reports 5. Draft Final Report 6. Final Report	4. Quarterly 5. 60 days prior to end of grant term 6. 30 days prior to end of grant term
2	Complete Permits	1. 401 Certification 2. 404 Permit 3. SWPPP	1. December 1, 2019 2. December 1, 2019 3. December 1, 2019
3	Monitoring and Project Evaluation	1. Monitoring Equipment installed (under separate funding) 2. Pre-project data collected 3. Post-project data collected 4. Year 1 Effects Report	1. November 30, 2018 2. July 1, 2019 3. July 1, 2021 4. November 1, 2021
4	Dedicate Water Right at Bogard Spring to Instream Flows	1. Petition to State Water Resources Control Board Filed 2. Transfer completed	1. July 1, 2020 2. March 1, 2020
5	Restoration Implementation	1. Seven waterholes removed 2. Four railroad grades removed 3. Four roadbeds removed 4. Conifers removed from 1,390 acres of meadow 5. Piles burned 6. Bogard Spring diversion decommissioned and natural flow path restored	1. October 15, 2020 2. October 15, 2020 3. October 15, 2020 4. October 15, 2020 5. May 1, 2021 6. June 15, 2020

BUDGET - Applicant must use Budget template (download at <https://wcb.ca.gov/>). Sample provided as Appendix B.

22. *Provide a complete line item budget for the proposed project. Provide a complete list of all partners contributing toward the project and include: 1) all sources of cash; 2) landowner's contribution; and 3) in-kind services. If in-kind services are to be used as part of the matching requirement, please explain the type of service that will be provided, the number of hours the service will be provided, and the hourly rate associated with the service. Cost share must be secured prior to grant award, must be used to support the proposed project, and must be spent during the WCB grant term. Also, be sure to identify any funding that is available for long-term operation and maintenance costs. Submit budget electronically using the attached budget templates.*

A completed budget template is attached to the proposal submission email.

LEVERAGES OTHER STATE FUNDS

23. *Are other STATE funds being leveraged? Describe below and use budget template to illustrate (Provide evidence of match via letters of commitment, contact name and phone number, etc.)*

Other state funds will be leveraged. The State Water Resources Control Board provides a fee waiver for federal projects (worth \$800), which will be applied to this project.

NON-STATE COST-SHARE FUNDS

24. *Does this proposal provide non state (i.e. federal, local, private) cost share (either In-kind or cash)? Use budget template available on <https://wcb.ca.gov/> to illustrate (provide evidence of match via letters of commitment, contact name and phone number(s), etc).*

Yes, the project includes \$461,137 in cost-share contributions, including \$313,000 from the USFS for fill material costs, \$50,000 from NRCS through a grant to the USFS for off-channel water source replacement, \$60,000 in-kind contribution from the USFS for pile burning, and \$37,366 from American Rivers (indirect costs that are not funded by WCB and volunteer time).

25. *In-kind Services*

In-kind services or contributions include volunteer time and materials, bargain sales, and land donations. Please describe and estimate value of current and future in-kind contributions.

The project includes \$411,137 in in-kind cost-share contributions, including \$313,000 from the USFS for fill material costs and \$60,000 in-kind labor from the USFS for pile burning. \$800 is from the State Water Resources Control Board for permit fees and \$15,000 is from American Rivers' volunteers for monitoring, and \$22,337 in unrecovered overhead costs from American Rivers. The in-kind contribution will be obtained and expended during project implementation and monitoring.

COMMUNITY SUPPORT AND COLLABORATION

26. *Does the project demonstrate broad-based public and institutional support, at the local, regional, or larger scale? Describe efforts to include stakeholders in project planning, design, outreach/education, implementation, monitoring, maintenance, etc.*

The project team itself demonstrates broad-based support for the proposed effort. The team includes several non-profit organizations, government agencies, and a university (see below). Most of the Pine Creek watershed is on public land, so the deep involvement of public agencies and groups like the Eagle Lake Guardians (a small organization with close ties to the community) was particularly important. Some elements of the early stages of the project were supported by the National Fish and Wildlife Foundation. The specific details of this project were developed through the multi-stakeholder Pine Creek CRMP, active in the watershed since 1987. Meetings were held during project development, and field visits and distribution of monitoring results to stakeholders will be part of project implementation and performance monitoring.

27. *Which public agencies, non-profit organizations, elected officials, and other entities and individuals support the project and why (attach support letters to application)?*

This project is supported by a diverse group of entities, including CDFW*, USFS*, Trout Unlimited*, Eagle Lake Guardians*, American Rivers*, CalTrout, UC Davis*, and Honey Lake RCD*. Letters of supported from most of these organizations are provided as attachments. Organizations marked with an asterisk are participants in the Pine Creek CRMP. The CRMP is not an entity that can write a letter of support, rather support is provided by CRMP participants individually.

DISADVANTAGED COMMUNITIES

28. *Will the project provide benefits to one or more disadvantaged communities, as described in CWC section 79505.5? Please refer to Section 3.9 of the Solicitation for guidance on how to determine if the project is located within and/or will benefit a Disadvantaged Community.*

Yes, the city of Susanville is a disadvantaged community with substantial reliance on tourism revenues. Fishing in Eagle Lake is an important economic contributor, as indicated by the surge in Pine Creek CRMP attendance, media coverage of ELRT and concerns about fishing tourism during the drought. This project will improve habitat and increase visibility of the species to continue to attract anglers.

WATER RIGHTS AND HYDROGEOMORPHIC FACTORS (answer all questions, even if the question does not apply. N/A will be accepted if appropriate).

29. EXISTING WATER RIGHTS ASSOCIATED WITH THE PROPOSED PROJECT.

Please fill out the following table for all of the water rights associated with your project (attach additional sheets if necessary). This information can be found using the State Water Resources Control Board’s (State Water Board) Electronic Water Rights Information Management System (eWRIMS):

<https://ciwqs.waterboards.ca.gov/ciwqs/ewrims/EWPublicTerms.jsp>

If you have difficulty locating your water rights information using eWRIMS, consider calling the State Water Board’s Division of Water Rights general helpline for assistance: (916) 341-5300.

APPLICATION OR STATEMENT NO.†	WATER RIGHT TYPE	PRIMARY OWNER	DIVERSION SEASON	DIVERSION AMOUNT*	DIVERSION RATE*
A014559	Appropriative	Lassen National Forest	3/1-12/31	4.7 acre-feet	1.5 X 10-6 CFS (5,000 gallons per day)

† Application numbers are for post-1914 appropriative water rights and start with the letter “A”; statement numbers are for other types of water rights, such as riparian and pre-1914 appropriative rights, and start with the letter “S”.

*Include unit of measure

30. **PROPOSED CHANGES TO EXISTING WATER RIGHTS.** *Would implementation of your project require changes to any of the water rights listed above? If yes, please*

describe the changes, specify the parties and water right(s) involved (Application and/or Statement numbers), and answer the questions below.

Yes. See details above and below.

- a) *Have you or do you plan to file a petition with the State Water Board seeking approval for the changes described above?*

We plan to file a petition but have not submitted it yet.

- b) *Does your project involve an instream flow dedication? If yes, please explain the anticipated purpose, amount, timing, duration, and geographic scope of the dedication.*

The water right listed above (Application number A014559) will be dedicated to instream flow.

- c) *Petitions for changes to existing water rights for the purposes of preserving or enhancing wetland habitat, fish and wildlife resources, or recreation in or on the water are processed under Water Code section 1707. Do you plan to file a petition pursuant to Water Code section 1707?*

Yes

- d) *Have you consulted with the State Water Board or any other local, state, or federal agencies regarding the proposed changes and/or petitions described above? If yes, please describe the scope and outcome of the consultations.*

The Lassen National Forest (owner) has confirmed that the water right is active and the reporting is up to date.

31. WATER RIGHT COMPLIANCE ISSUES AND ENFORCEMENT PROCEEDINGS.

Are there any pending water right compliance issues or enforcement proceedings associated with any of the water rights listed above? If yes, please describe the water rights involved (Application and/or Statement numbers) and the nature of the compliance issues and/or enforcement proceedings.

There are no pending water right compliance issues or enforcement proceedings associated with the water rights listed above.

Questions 32-36 apply to specific types of water rights. Please answer only the questions that apply to your water right type. Use N/A if not applicable.

32. ADJUDICATED RIGHTS. *If the right is an adjudicated right, please attach a copy of the court order that established the adjudicated right and all subsequent court orders. Indicate which right your claim is based on. Not applicable*

a) *Are you in compliance with the terms of the court order(s) establishing your right? If not, please explain.*

Not applicable.

33. RIPARIAN RIGHTS. *If the right is a riparian right, please attach a copy of the deed upon which the riparian right is claimed.*

Not applicable.

a) *Was the parcel that forms the basis of this right ever part of a larger parcel?*

Not applicable.

i. *If so, was the riparian right reserved, either expressly or impliedly, when the original parcel was subdivided?*

Not applicable.

b) *Has the riparian right been made subordinate to other water rights through an adjudication?*

Not applicable.

i. *If so, please attach a copy of the relevant court order and any subsequent orders affecting your right.*

Not applicable.

34. APPROPRIATIVE RIGHTS. *If the right is an appropriative right, has the right or any portion of the right been unused over a five-year period? If so, please explain. No*

a) *Has any other appropriator used or made a claim to the unused portion of the right? If so, please explain. No*

b) *Has the appropriative right been abandoned? No*

35. PRE-1914 APPROPRIATIVE RIGHTS. *If the right is a pre-1914 appropriative right, please attach documentation of the right. Not applicable.*

a) *Please explain the basis of the pre-1914 claim.*

Not applicable.

b) *Has the full amount of the right been put to continuous, beneficial use since it was established? If not, what portion of the right has been put to continuous, beneficial use?*

Not applicable.

36. POST-1914 APPROPRIATIVE RIGHTS. *If the right is a post-1914 appropriative right, do you have a permit or license from the State Water Resources Control Board? Yes. If so, please attach the most recent filing(s) submitted to the State Water Resources Control Board. Attached.*

a) *Are you in compliance with all terms of your permit or license? If not, please explain. Yes.*

b) *If you do not have a permit or license from the State Water Resources Control Board, have you filed an Application with the State Water Resources Control Board? If so, please explain the status of your Application and list the proposed date for final action, if known.*

N/A.

37. INITIATION OF NEW WATER RIGHTS. *Would implementation of your project involve the initiation of new water right(s)? If yes, please describe the type of water right(s) involved, the source of water to be diverted, the method of diversion (direct diversion or diversion to storage), diversion amount, diversion rate, diversion season, and purpose(s) of use.*

Implementation of this project would not involve initiation of a new water right.

38. WATER LEASES. *Would implementation of your project involve a water lease? If yes, please specify the water rights(s) involved, describe the scope of the lease(s), and answer the question below.*

Implementation of this project would not involve a water lease.

- *Have you consulted with the State Water Board or any other local, state, or federal agencies regarding the proposed the water lease(s) described above? If yes, please describe the scope and outcome of the consultations.*

This is not applicable because the project does not involve a water lease.

39. FOREBEARANCE AGREEMENTS. *A forbearance agreement is a formal arrangement between an individual or organization and a water right holder that specifies how a water diversion will be managed for instream use. These agreements do not change the terms of the water right, but specify conditions under which a water right holder will forgo diversion to allow water to be left instream. Will implementation of your project involve a forbearance agreement? If yes, please describe the anticipated scope of the agreement, the water rights that would be involved (Application and/or Statement numbers), and the parties that would be signatory to the agreement. Please note that WCB will not enter into forbearance agreements with applicants or other entities. Please provide a draft agreement, if available.*

Implementation of this project will not involve a forbearance agreement.

40. OTHER VOLUNTARY AGREEMENTS. *Would implementation of your project involve other formal, voluntary agreements with outside parties or organizations with regard to the operation of existing or pending water rights? If yes, please describe the anticipated scope of the agreement, the water rights that would be involved (Application and/or Statement numbers), and the parties that would be signatory to the agreement.*

Implementation of this project will not involve other formal, voluntary agreements with outside parties or organizations with regard to the operation of existing or pending water rights.

41. TRANSFER OF WATER RIGHT. *Would implementation of your project involve a transfer of water or water rights? If yes, please explain the anticipated purpose, amount, timing, and duration of the transfer.*

See section 30, above.

- *Petitions for long-term transfers of water or rights involving a point of diversion, place of use, or purpose of use are processed under Water Code section 1735, 1736, and 1737. Do you plan to file a petition pursuant to Water Code section 1735?*

We do not plan to file a petition pursuant to Water Code section 1735.

- *Have you consulted with the State Water Board or any other local, state, or federal agency regarding the proposed changes and/or petitions described above? If yes, please describe the scope and outcome of the consultations.*

No, but see section 30, above.

42. STREAMFLOW EFFECTS. *Quantitatively and qualitatively explain how the water rights changes described above will measurably enhance stream flow, and explain the significance of these effects. Please make sure your answer speaks to the geographic scope, timing, duration, and quantity of the enhancement.*

The instream flow dedication will replenish water diverted from Bogard Spring, the source of Bogard Creek, which is a perennial tributary to Pine Creek. The total dedication is 5,000 gallons per day during the spring, summer and fall periods. The summer and fall periods are the low-flow periods within the watershed. The spring is ungauged, however an order-of-magnitude estimate of flow is 1 to 10 gallons per minute (photo of spring outlet is attached), which is the same order of magnitude as the water right. The effect on downstream flow seems minor; however, habitat in this reach is limited and there is very little flow in Bogard Springs Creek. Data collected for this project would allow us to estimate the benefits of this small dedication to this small stream.

43. EFFECTS ON OTHER WATER RIGHTS. *Please describe how your project will affect water availability for water rights located upstream and downstream of your project.*

There are no other water rights downstream, and all land is owned by the USFS.

HYDROGEOMORPHIC FACTORS

44. EFFECTS OF PROJECT ON STREAM HYDROGRAPH. *Will the hydrograph of any stream be altered as a result of the proposed project? If yes, please clearly describe how the hydrograph will be altered.*

Yes. Flows to Pine Creek will be increased and the snowmelt recession will be made more gradual. These are currently limiting conditions for ELRT, and a primary management issue in Pine Creek.

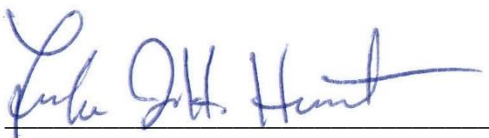
45. EFFECTS OF PROJECT ON GEOMORPHOLOGY. *Is the anticipated stream flow enhancement significant enough to alter the geomorphology of affected stream channels and floodplains? If yes, please describe how these alterations would affect fish and wildlife.*

The anticipated streamflow enhancement will not alter geomorphology of the affected stream channels and floodplains.

Signature

Information in this Application may be transmitted to the State Water Resources Control Board as part of the California Stream Flow Enhancement Program's review of this Application. I certify that the information contained in this Application, checklists, and all required attachments, is accurate. I have been authorized to apply for this grant.

Date: 8/30/18

Signature: 

END OF APPLICATION