Weber River Ecological Resiliency Project – WaterSMART EWRP 2022 Proposal

TROUT UNLIMITED

TABLE OF CONTENTS

Contents

TABLE OF CONTENTS ii
Executive Summary 1
Project Location 1
Technical Project Description 3
Evaluation criteria 7
E.1.1. Evaluation Criterion A—Project Benefits (35 points) 7
E.1.1.1. Sub-Criterion A.1—Benefits to Ecological Values 7
E.1.1.2. Sub-Criterion A.2—Quantification of Specific Project Benefits by Project Type 11
E.1.2. Evaluation Criterion B—Collaborative Project Planning (25 points) 17
E.1.3. Evaluation Criterion C—Stakeholder Support (15 points) 22
E.1.4. Evaluation Criterion D—Readiness to Proceed (10 Points) 24
E.1.5. Evaluation Criterion E—Performance Measures (5 points) 27
E.1.6. Evaluation Criterion F—Presidential and Department of the Interior Priorities (10 points) 29
1. Climate Change: E.O. 14008 29
2. Disadvantaged or Underserved Communities 31
3. Tribal Benefits 32
Literature Cited 33
Funding Plan 34
Project Budget 34
Total Project Cost 34
Summary of Non-Federal and Federal Funding Sources 34
Budget Proposal 35
Budget Narrative 36
TU Project Manager Salary Allocations 36
Sageland Collaborative Salary Allocations 38
Fringe Benefit Rate 39
Travel 39
Equipment 39
Materials and Supplies 39
Contractual 41

BDAs 41
Dinsdale Diversion Reconstruction 41
Blackner's Bend Floodplain Restoration 41
Morgan Ranch Floodplain Restoration 41
Third-Party In-Kind Contributions 41
Environmental and Regulatory Compliance Costs 41
Indirect Costs 41
H.1. Environmental and Cultural Resource Considerations 44
Board Resolution 46
Letters of Support 48

Executive Summary

This project proposal is a collaborative project submitted by Trout Unlimited with support from partners including the Utah Department of Agriculture and Food, the Utah Division of Wildlife Resources, Utah Division of Water Quality, the Summit Conservation District, The Dinsdale Irrigation Company, Sageland Collaborative, the Trails Foundation of Northern Utah, and Weber Basin Water Conservancy District. The goal of this project is to improve the ecological resiliency of key values within the Weber River Basin in northern Utah through three primary activities: 1) improving drought resiliency and riparian health in arid mid-elevation tributaries using process-based restoration tools such as beaver dam analogs (BDAs), 2) reconnecting key habitats on the Ogden River through irrigation diversion modernization, and 3) reconstructing important side-channel habitats and restoring floodplain function on two reaches of the Weber River.

Project Location

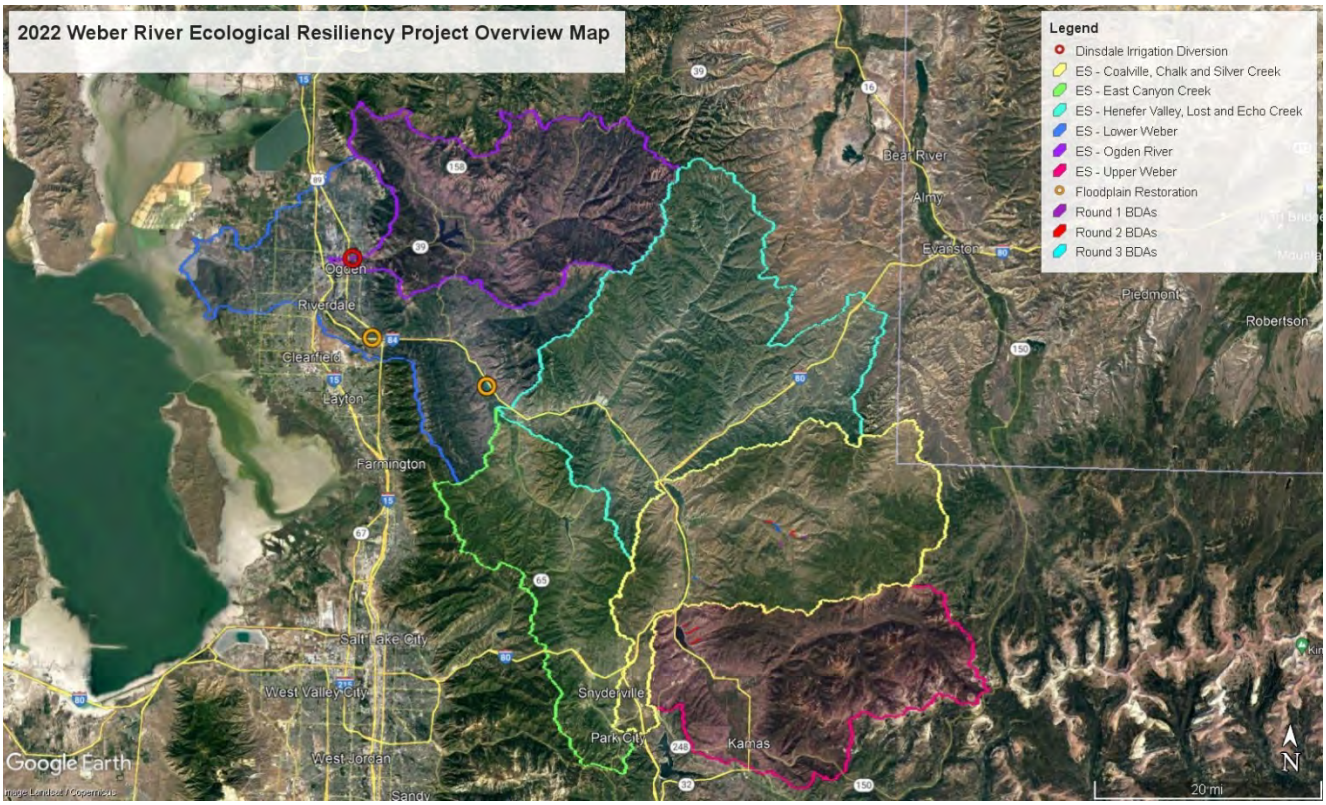

Figure 1: An overview map of the showing the location of all of the elements of the Weber River Resiliency Project. The polygons on the map with labels that begin with ES are Ecological Systems defined in the 2014 Weber River Watershed Plan.

Figure 2: In clockwise order from top left. a) BDA projects in Chalk Creek, b) BDA projects proximal to Rockport Reservoir, c) The Dinsdale Irrigation Diversion, and d) Floodplain restoration areas at the mouth of Weber Canyon and in Morgan Valley.

Table 1: Table indicating specific project locations and actions.

Project Element	Nearest Town	County	Latitude	Longitude	Project Element
Hay Hollow BDA Phase 1					BDA Rnd 1
Fish Creek BDA Phase 4	Coalville, UT	Summit	40.9038	-111.1973	BDA Rnd 1
Cottonwood Canyon	Hoytsville, UT	Summit	40.8424	-111.3449	BDA Rnd 1
Branch Creek Phase 3	Coalville, UT	Summit	40.8937	-111.2354	BDA Rnd 1
SF Chalk Creek BDA Pace	Coalville, UT	Summit	40.9224	-111.2557	BDA Rnd 2
Hay Hollow BDA Phase 2	Coalville, UT	Summit	40.9093	-111.2175	BDA Rnd 2
Fish Creek BDA Phase 5	Coalville, UT	Summit	40.9051	-111.2148	BDA Rnd 2
Crandall Canyon BDA Phase 1	Wanship, UT	Summit	40.7699	-111.3738	BDA Rnd 2
Cottons Canyon NW	Wanship, UT	Summit	40.7893	-111.3933	BDA Rnd 2
Cottons Canyon S	Wanship, UT	Summit	40.7833	-111.3786	BDA Rnd 2
SF Chalk Creek BDA G&E	Coalville, UT	Summit	40.9146	-111.2416	BDA Rnd 3
Pecks Canyon	Hoytsville, UT	Summit	40.8492	-111.3771	BDA Rnd 3
Crandall Canyon BDA Phase 2	Wanship, UT	Summit	40.7789	-111.3574	BDA Rnd 3
Fish Creek BDA Phase 6	Coalville, UT	Summit	40.9058	-111.2215	BDA Rnd 3
Morgan Ranch Restoration.	Morgan, UT	Morgan	41.0810	-111.7312	Restoration
Blackner's Bend Restoration	S. Weber, UT	Weber	41.1381	-111.9254	Restoration
Dinsdale Div. Modernization	Ogden, UT	Weber	41.2361	-111.9627	Diversion

Technical Project Description

This project is a collaboration between Trout Unlimited, the Utah Department of Agriculture and Food, the Utah Division of Wildlife Resources, the Utah Division of Water Quality, the Summit Conservation District, the Dinsdale Irrigation Company, Sageland Collaborative, the Trails Foundation of Northern Utah, and Weber Basin Water Conservancy District. As a partnership, we are seeking WaterSMART EWRP funding to improve the natural river system within the Weber River Basin by implementing key resilience activities. These include:

- Building drought and climate change resiliency into arid, mid-elevation tributaries of the Weber River Basin by implementing an expanded riverscapes restoration program through the implementation of 17 Beaver Dam Analog (BDA) projects covering nine miles of degraded streams in priority, high sediment load watersheds. A scaled-up riverscapes restoration effort will allow us to construct 2,868 BDAs over the period of this project. BDAs are an emerging restoration technique designed to diversify and change the flow dynamics in smaller intermittent and perennial stream channels. BDAs mimic the effect that beavers have on small watersheds in places where they are unlikely to repopulate in the short term. BDAs are relatively simple instream structures composed of 10-18 raw wooden posts driven vertically into the streambed either using a hydraulic post pounder or small excavator equipped with a vibratory plate. The tops of the BDA posts are the same height as the ordinary high water mark. Volunteer labor and

project staff then weave small branches of willow or other species between the posts, with alternating layers of rock and native stream materials placed using hand tools. BDAs address long-term channel degradation (downcutting) in many headwater streams that has occurred as a result of overgrazing, and past beaver removal and flood control efforts. They also improve water quality by causing sediment deposition, restore floodplain resiliency by reconnecting water to historic floodplains, and reduce downstream sedimentation into BOR Reservoirs by retaining sediment in the watershed.

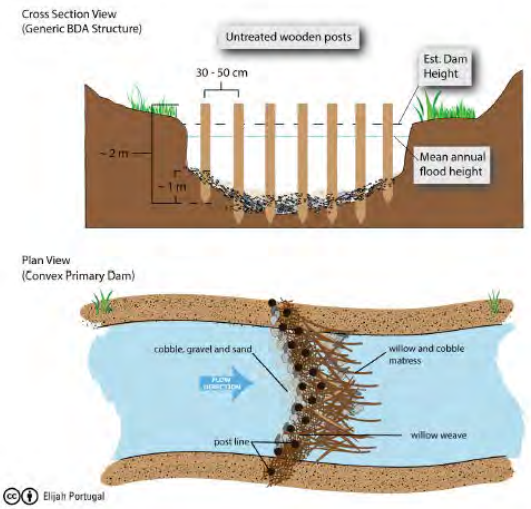

Figure 3: Conceptual illustations of BDAs to facilitate the understanding of how they are built (see Shahverdian et al. 2019).

- Habitat Reconnection on the Lower Ogden River (a major tributary to the Weber River) in partnership with the Dinsdale Water Company (see Figure 4). The existing irrigation diversion is very old and has been managed over the past several decades with a range of patchwork solutions. The main structure itself is composed of an old railroad rail with vertical I-beams protruding out of the water. The rail was recently partially excavated by city park staff managers, causing the rail to protrude out of the water. The structure is also composed of two vertical drops that partially block upstream fish movement. The I-beams just above the water surface pose a serious safety issue. The new modernized design is composed of five 10-inch vertical drops and rebuilt diversion headgate that incorporates safety features for aquatic life. The modernization will provide a reliable source of water for the irrigation company, ensure fish can move up- and downstream throughout the river corridor, and improve the in-river safety for recreators.
- Side-channel restoration and floodplain reconnection on the Weber River will be completed on two important reaches within key Bluehead Sucker habitats. These include a major floodplain reconnection effort on the lower Weber River at an area known as Blackner's Bend (see figure 4 for the conceptual design), and on a ranch near the town of Morgan. Side-channels on the Weber River serve two purposes: First, the Bluehead Sucker is a priority species of conservation concern in the Weber River. Recent studies identified the presence of secondary channels and hydraulically connected zero-velocity backwaters as key habitats necessary for successful recruitment of juvenile bluehead sucker into the adult population. The outcome for Bluehead Sucker is at least a 10% increase in available rearing habitat in different areas of the Lower Weber River Watershed (This is an estimate because Bluehead sucker habitat has not been inventoried). Second, functional floodplains reduce downstream flood impacts by attenuating flood height peaks at typical flood flows and reducing in-channel energy. Weber and Morgan Counties have been fighting flood flows for years, and the side channels create important flood relief areas.

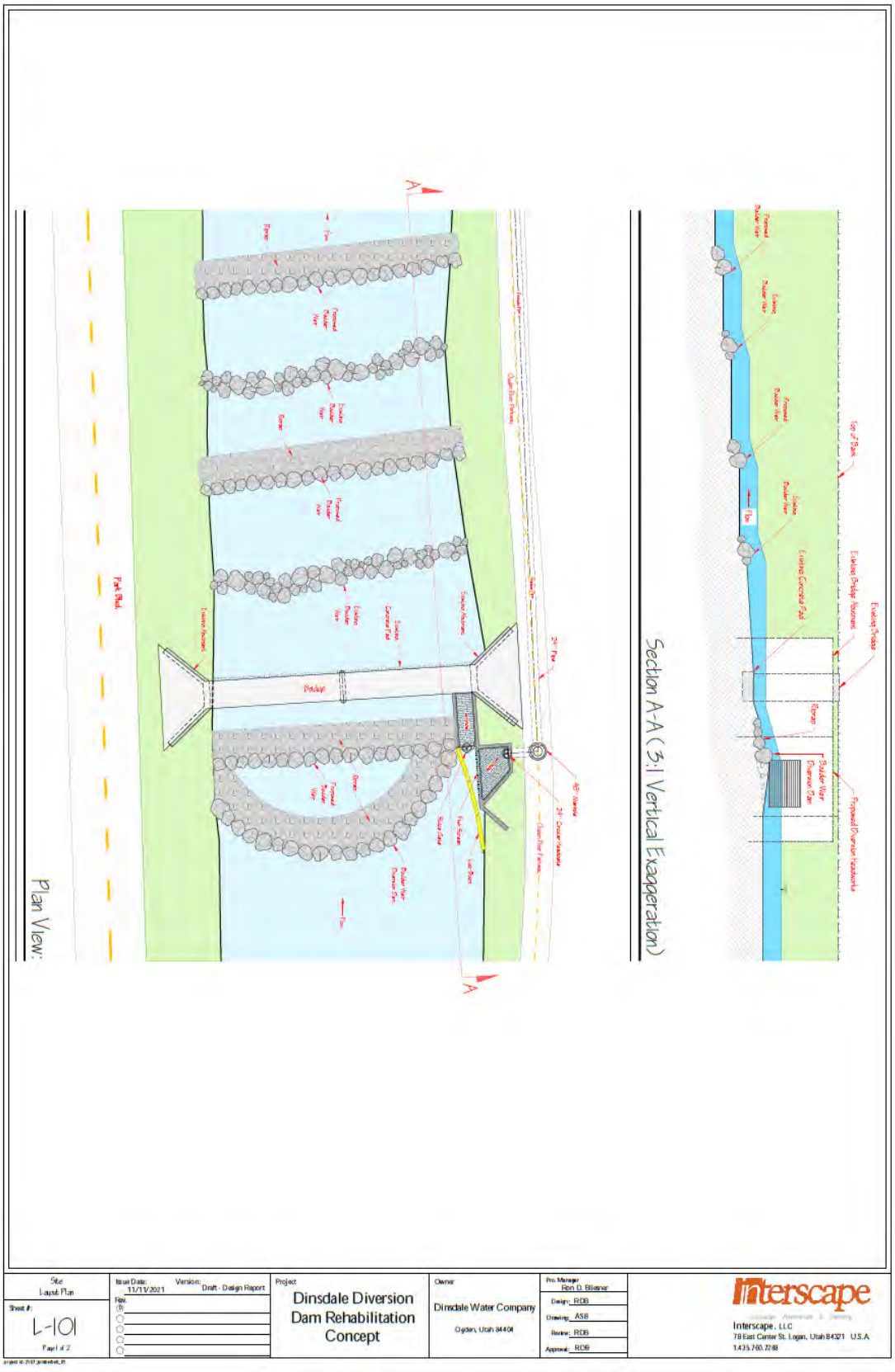

Figure 4: Conceptual Diversion Modernization plan for the Dinsdale Diversion.

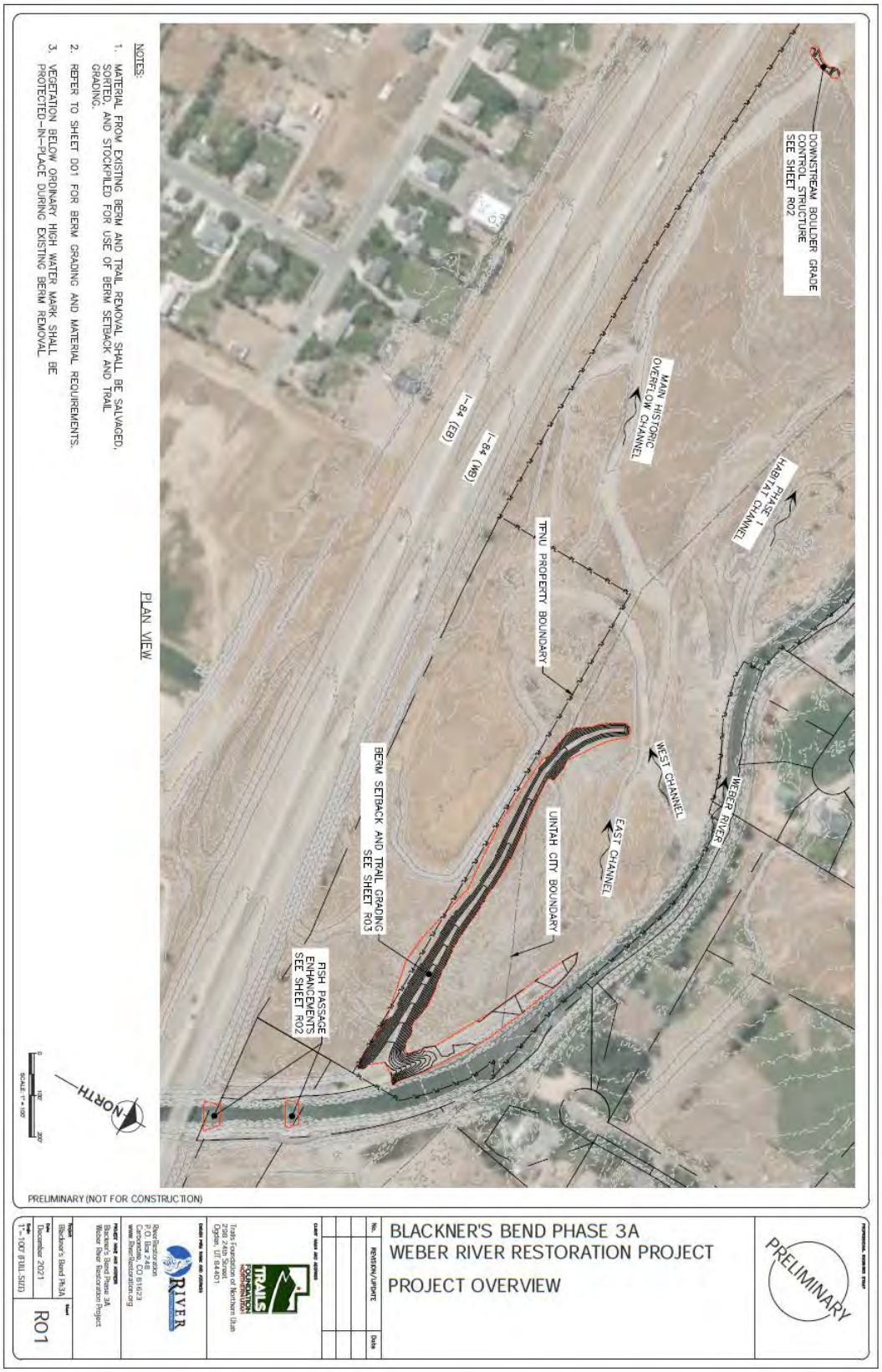

Figure 5: Conceptual design of the Blackner's Bend floodplain restoration project.

Evaluation criteria

E.1.1. Evaluation Criterion A—Project Benefits (35 points)

Up to 35 points may be awarded based on the evaluation of the benefits that are expected to result from the proposed project. This criterion evaluates the extent to which the project will benefit ecological values that have a nexus to water resources or water resources management. Other benefits will also be considered for projects that have multiple benefits.

E.1.1.1. Sub-Criterion A.1—Benefits to Ecological Values

Please provide a general description of how your project will benefit ecological values by responding to the bullets listed below. Note: More detailed information and support for specific project benefits, and the extent (quantification) of those benefits, by project type are addressed under subcriterion A.2. Your responses to A.1. should include brief narrative responses; calculations of specific project benefits should be included in your responses to A.2.

• Please explain how the project will benefit ecological values that have a nexus to water resources or water resources management, including benefits to plant and animal species, fish and wildlife habitat, riparian areas, and ecosystems that are supported by rivers, streams, and other water sources, or that are directly influenced by water resources management. In your response, please identify the specific ecological values benefitted and how those ecological values depend on, or are influenced by, water resources or water resources management.

Despite its relatively modest size, the Weber River supports extensive recreational and ecological values and is the third-most popular river fishery in the State of Utah, behind the legendary Green and Provo Rivers. The Weber River serves as a recreational destination for thousands of people, including anglers, boaters, birdwatchers, and people interested in connecting with the outdoors within their communities through a network of urban river trails and bike paths. Many tributaries, and even the heavily impaired lower river, sustain diverse and unique native fish species, including a migratory population of large native Bonneville cutthroat trout and an imperiled population of bluehead sucker. Although the Weber River and its resources are socially and economically important, the numbers of fish and the condition of the stream corridor have dramatically declined over the past 20 years due to widespread habitat fragmentation from the construction of water diversions, inadequate road and utility crossings, and habitat loss due to channelization, flood control, and channel downcutting.

In addition to being a popular recreational resource, the Weber River also provides critical drinking and irrigation water for approximately 21% of Utah's population. As such, the Weber River is a critical local and regional resource, but it currently faces daunting challenges and fulfills only a small portion of its full potential. Urbanization and the development of transportation infrastructure from the 1960s through the 1980s straightened the river in many

places. Those actions combined with poor land management created severe erosion problems and large-scale bank instability, which led to the placement of extensive riprap composed of rock, waste concrete, and old car bodies. The effects of this habitat degradation are exacerbated by the presence of over 200 irrigation diversions throughout the basin that disrupt fish migrations and kill fish due to entrainment. To this day, urban runoff dumps directly into the river in many urban areas, while rural areas contribute irrigation return flows containing excess nutrients, fine sediments and pesticides. Cumulatively, these impacts have left water quality and stream habitats severely degraded, and, in some areas, made the river more of an eyesore and a liability than a community asset.

Partners in the Weber River have been making improvements to the watershed for years. This includes efforts in underserved areas of our community, such as the Ogden River Restoration Project, Lower Weber River whitewater park, habitat reconnection in the Morgan Area, and extensive partnerships to improve water quality in Chalk Creek. This proposal represents a collaborative effort among many partners throughout the Weber River basin to improve the water resources for agriculture, fisheries, wildlife and recreational interest. This multi-faceted proposal continues to move that effort forward with these important tasks.

This project includes three primary activities that are each intended to deliver a unique, but complementary ecological benefit.

1) Riverscape Restoration using Beaver Dam Analogs – Riverscapes are the composition of stream channels and connected floodplain habitats within valley bottoms of watersheds. Throughout the western United States, tens of thousands of miles of riverscapes have been degraded, caused by structural starvation (e.g., loss of woody debris and channel meanders), through several mechanisms. In arid streams, historical overgrazing has led to this decline, but other factors such as flood control and infrastructure have also contributed. Degraded riverscapes are very efficient at draining water and mobilizing sediment. The goal of riverscape restoration is to reduce the efficiency through which water flows within tributary systems that contributes to mainstem rivers like the Weber River. Slowing the water as it flows through small watersheds increases sediment deposition and creates a heterogeneous flow path of water. By mimicking beaver dams, BDAs reintroduce structural complexity that historically existed within these watersheds, which feeds back to additional wood accumulation and recruitment in the stream channel. The environmental benefit of wood recruitment in the valley bottom includes the natural reconstruction of floodplains, improved distributed natural system storage, and wider riparian corridors. This leads to more diverse fish habitat instream, and increased diversity for riparian-dependent bird species. Riverscape Restoration will be concentrated on arid mid-elevation tributaries because they have historically been overgrazed leading to long-term destabilization and downcutting (or channel degradation) which has dropped local water tables and mobilized massive volumes of sediment downstream.

2) Aquatic Habitat Reconnection by modernizing the Dinsdale Irrigation Diversion- In 2013 Trout Unlimited completed a barrier assessment throughout the entire Weber River basin,

including all the tributaries. Fish passage barriers are pervasive throughout the entire basin, with the presence of at least 396 complete and partial barriers. Aquatic habitat fragmentation by barriers to movement are key determinants of the long-term viability of native fish populations because they limit the amount of habitat available for populations and breakup formerly contiguous habitat into smaller segments (see Hilderbrand and Kershner 2000). Since the time that the assessment was completed, partners in the Weber River Basin have collaborated on the removal of over 20 barriers ranging from channel-spanning irrigation diversions to culvert replacements. Given the pervasiveness of barriers throughout the entire basin, we have focused habitat reconnection within three main geographic areas of the watershed based on the presence of Bonneville Cutthroat Trout and Bluehead Sucker. Modernization of the Dinsdale Diversion on the Ogden River opens 4 miles of mainstem river habitat to bluehead sucker and Bonneville cutthroat trout in the Weber River.

3) Floodplain channel reconstruction. The Lower Weber River from the mouth of Weber Canyon to the confluence with the Ogden River is being studied to determine how improvements will benefit aquatic life. Improving the stream health in approximately two miles of the Weber River is a priority. Historical imagery clearly shows that much of the Weber River followed a braided or anabranched meander pattern with a dynamic floodplain. The anabranched planform created diverse habitat for native fish. Much of the habitat diversity has been lost due to channel straightening, flood control, and infrastructure encroachment. It has been degraded due to extensive previous channel alterations and habitat simplification. This reach of the Weber River is currently listed on the Utah 303(d) list of impaired waters for not meeting the biological standard for cold water fish and their aquatic food chain. Additionally, this reach is one of the most urbanized rivers along the Wasatch Front. Recent studies by the Utah Division of Wildlife Resources and Utah State University have identified a recruitment bottleneck in this location for juvenile Bluehead Sucker (see Maloney 2017) and project partners are currently assessing the entire lower Weber River to identify key habitats in the area.

This proposal will improve sidechannel habitat and floodplain dynamics in 1 ½ miles of the mainstem of the Weber River at two locations (see Figures 1 and 2d for specific locations in the watershed). The two areas identified for restoration are some of the few remaining areas where floodplain restoration is possible on the Weber River mainstem. The project is focused on reducing the risk of an Endangered Species Act listing for the Bluehead Sucker, which is currently a species of special concern in Utah. The main threats to Bluehead Sucker in the Weber River include lack of adequate spawning and juvenile rearing habitats and lack of longitudinal connectivity along the corridor. If these threats are not addressed, the habitat for Bluehead Suckers will reach an ecological threshold that will be difficult for the population to recover from. To abate these threats, the project will focus on creating and enhancing the aquatic and riparian habitats in and adjacent to the river with a specific focus on improving the juvenile rearing habitats and reestablishing suitable conditions for Bluehead Sucker to move up- and downstream throughout the riverscape.

Degraded channel conditions have also restricted access opportunities for the public to enjoy the river. One of the most recognizable impacts to the Weber River is the segment that flows through Henefer Valley immediately below Echo Dam. In the 1960s, much of the entire river segment through the valley was straightened to facilitate the construction of Interstate 84. Based on a GIS analysis, the impacts of that project reduced the length of the river by over one mile, and the straightened habitat that remained is not of the same quality (Barton and Winger 1974). The Henefer Valley impact is an example of one of many that have occurred over the past 60 years as a range of factors have led to significant habitat loss.

Please also explain whether the project will increase water supply reliability for ecological values by improving the timing or quantity of water available; improving water quality and temperature; or improving stream or riparian conditions for the benefit of plant and animal species, fish and wildlife habitat, riparian areas, and ecosystems, or through similar approaches.

This project improves water supply reliability for ecological values in the Weber River watershed in the following ways. The BDAs operate in tandem as a group of structures to alter the timing of water flow as it transits through a reach. BDAs slow down the water, and as a result, cause sediment deposition within the reach where they are constructed, thereby increasing the surface-groundwater dynamics (see Wade et al. 2020) and increasing water supply resiliency for native fish and riparian-dependent species.

Although the habitat reconnection project on the Ogden River does not make a greater volume of water available to fisheries in the Weber and Ogden Rivers, it ensures that aquatic species have access to habitats throughout a larger portion of the riverscape, including the lower Weber and Ogden Rivers, to seek suitable habitat. The floodplain reconnection projects on the Weber River will diversify the availability of habitat for diverse aquatic species on the Weber River.

• If the project will benefit multiple water uses (i.e., benefits to ecological values AND benefits to other water uses, e.g., municipal, agricultural, or tribal water uses), please explain how the project benefits other water uses.

All elements of this this project are intended to benefit multiple water uses. The BDAs are intended to reduce downstream sedimentation and are specifically designed to reduce the volumes of sediment entering Echo and Rockport reservoirs. Reconstructing the failing diversion structure that supplies water to the Dinsdale Irrigation Company will solve their major water supply challenge over the past ten years by allowing them to access their full volume of water. This project will improve the water security for this small water company and allow them to stay in operation.

E.1.1.2. Sub-Criterion A.2—Quantification of Specific Project Benefits by Project Type

Explain the extent of project benefits. Please respond to the following questions for each project type included in your application (i.e., please only respond to the section(s) of this subcriterion that are relevant to your project).

Project Benefits for Watershed Management Projects

• If the project will result in long-term improvements to water quality (e.g., decrease sediment or nutrient pollution, improve water temperature, or mitigate impacts from floods or drought) please explain the extent of those benefits (i.e., magnitude and geographic extent). Please estimate expected project benefits to water quality and provide documentation and support for this estimate, including a detailed explanation of how the estimate was determined.

Recent monitoring of a pilot BDA project on Fish Creek (Weber River Basin) completed in 2019, indicated that the construction of 12 small BDAs induced an average of 0.5 feet of aggradation caused by the deposition of sediment naturally transported by the stream. This deposited sediment has also become key fertile soil for riparian species to reseed and colonize, binding up that sediment permanently. We estimate that this small project alone is storing 119 cubic yards of sediment in 387 feet of stream. Based on construction estimates from recent projects we estimate that this small BDA project is storing at least $8,508.50 of sediment if it were excavated out of Echo Reservoir.

Table 2: An estimate of the value of sediment stored by 12 BDAs on Fish Creek if an attempt were to be made to excavate it and remove it from Echo Reservoir.

Activity	Quantity (cy)	Unit Cost	Total
Excavation	119	$ 25.00	$ 2,975.00
Disposal	119	$ 40.00	$ 4,760.00
Mobilization (10%)			$ 773.50
			$ 8,508.50

Sediment volumes were measured using photogrammetry with drone imagery of BDA reaches before and after installation. By scaling up BDA construction we anticipate preventing up to 28,441 cubic yards of sediment from entering the watersheds and ultimately Echo and Rockport Reservoirs.

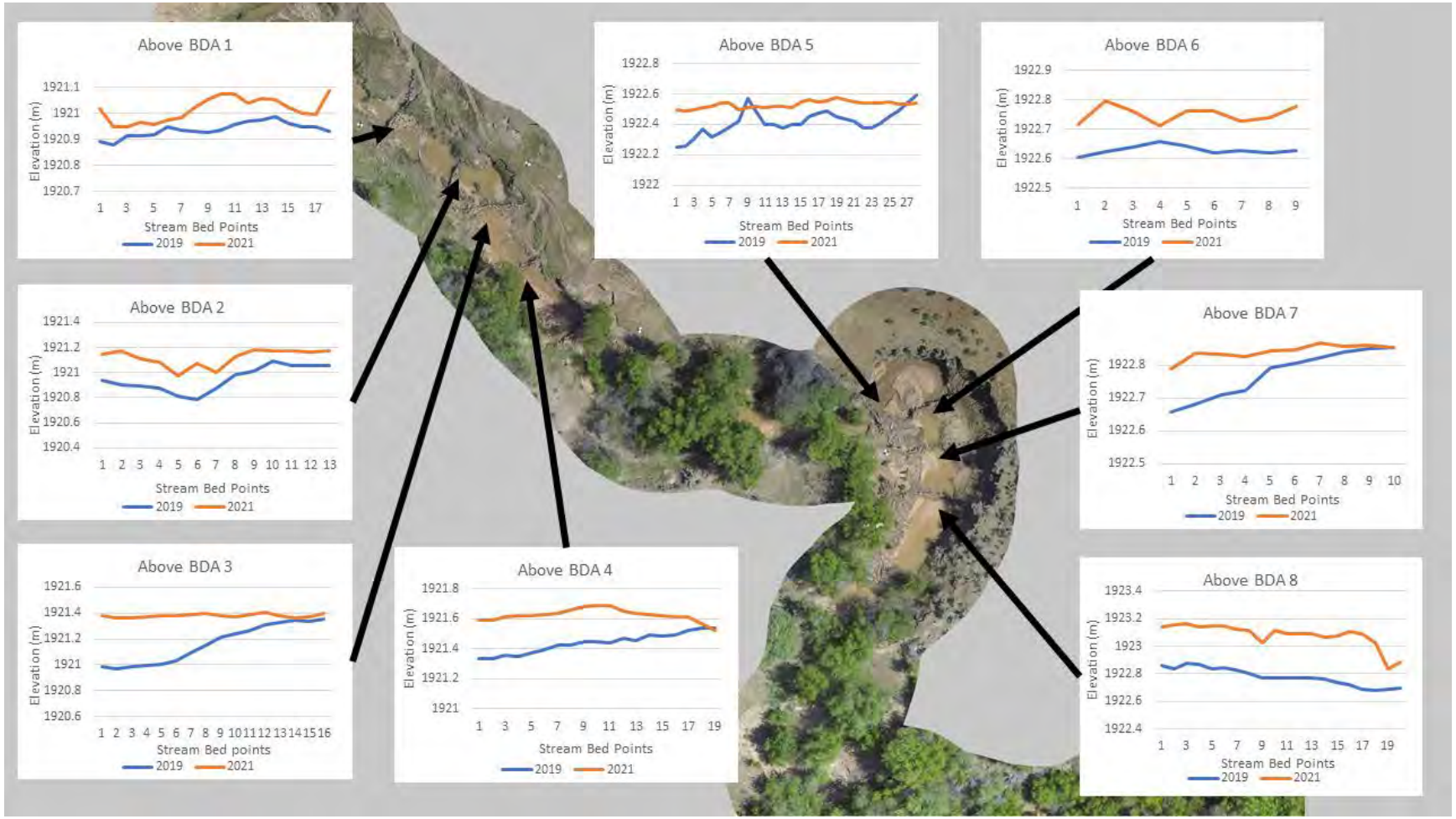

Figure 6: Stream channel bottom profiles on the Fish Creek BDA pilot project, showing the difference between 2019 (pre-project) and 2021 (post-project) elevations based on drone structure-from-motion imagery.

• If the project will benefit aquatic or riparian ecosystems within the watershed (e.g., by reducing flood risk, reducing bank erosion, increasing biodiversity, or preserving native species), please explain the extent of those benefits (i.e., magnitude and geographic extent). Please estimate expected project benefits to ecosystems and provide documentation and support for this estimate, including a detailed explanation of how the estimate was determined.

The water in the small arid streams that we are targeting for this proposal currently transits quickly through the watersheds and enters Rockport or Echo Reservoir, carrying large volumes of sediment along with it. The BDAs will slow the rate at which water flows downstream. Changing the fluvial dynamics of the flow produces significant changes in how that water interacts with the valley bottom and riparian systems. As we observed with our BDA pilot project on Fish Creek (described above), the floodplain width doubled by the simple construction of BDAs. This increases the heterogeneity of flow paths which diversifies instream habitat. This is consistent with research in many other areas in the Western United States. The construction of BDAs has led to the extensive restoration of incised stream ecosystems (see Pollock et al. 2014). This proposal dramatically increases the scale at which we implement BDA projects in northern Utah.

Coincident with increasing our geographic scope of BDA project, the Dinsdale Irrigation Modernization project expands the availability of mainstem river habitat to both Bluehead Sucker and Bonneville cutthroat trout by 4 miles. Floodplain restoration makes available several additional side channel areas for Bluehead sucker that did not exist prior to this project.

• If the project will benefit specific species and habitats, please describe the species and/or type of habitat that will benefit and the status of the species or habitat (e.g., native species, game species, federally threatened or endangered, state listed, or designated critical habitat). Please describe the extent (i.e., magnitude and geographic extent) to which the project will benefit the species or habitat, including an estimate of expected project benefits and documentation and support for the estimate.

The Weber River provides critical habitat for two imperiled fish species: the Bonneville cutthroat trout (BCT) and Bluehead Sucker (BHS). These species are unique native fishes that coevolved in and continue to inhabit many watersheds in the Great Basin in Utah, Nevada, Idaho, and Wyoming. Both species have experienced precipitous declines over the past century as a result of anthropogenic actions, and both are considered species of special management concern throughout their respective ranges. Recent genetic investigations indicate that the BHS in the Weber River are distinct from their Colorado River counterparts. The Weber River supports a rare occurrence where populations of these two species are sympatric, representing a unique opportunity to deliver concurrent benefits to both species.

Despite the river's intrinsic value within our communities and economy, the Weber River is one of Utah's most degraded and at-risk river basins due to the widespread watershed degradation in both the mainstem and tributary systems described previously, impacting over 60 miles of a

historically complex river floodplain system. Concurrently, the development of water diversions, dams, small impoundments and road crossings have resulted in 396 fish migration barriers throughout the watershed, fragmenting the habitat that remains. Water is abstracted through over 220 irrigation diversions, and water demand continues to increase. Consequently, the Bonneville cutthroat trout and the bluehead sucker continue to be seriously imperiled by these habitat impacts because they are unable to complete their life history, or cannot move to refugia and the habitat that they still occupy is degraded. Nevertheless, their survival in razor-thin habitat margins emphasizes the resilience of these native species and continues to elevate them in priority as conservation targets because their status is so tenuous.

Conservation actions to benefit BCT and BHS have been at the forefront of our collaborative efforts within the Weber River because of their high interest among anglers and significant conservation value. This project delivers key benefits to the habitat of these species, by:

- Improving the habitat diversity and drought resiliency within the South Fork of Chalk Creek and other tributaries with BDAs. Although four of the BDA projects occur on intermittent streams, most of the work will occur in perennial streams (6.5 miles). Many of these stream reaches are at high risk of dewatering due to extensive and severe drought. We observed dewatering during the exceptional 2021 drought. BDAs retain enough water to ensure that, during extremely dry periods, enough residual water is retained in the riparian systems to ensure some of the fish can survive.
- Diversifying the habitat along the two mainstem reaches of the Weber River. The studies of bluehead sucker clearly show that lack of habitat diversity is a key factor to their long-term resiliency. Reversing the loss of mainstem habitat diversity is expensive, and this project will restore the key side channel habitats in two distinct areas of the lower Weber River.
- Opening 4 miles of habitat on the Ogden River to bluehead sucker and Bonneville cutthroat trout. The Dinsdale diversion is the last barrier on the Ogden River below Pineview Dam. This project will open 4 miles of habitat.

In addition to fishes, the restoration activities outlined in this proposal will also improve and habitat for migratory bids, such as Willow Flycatcher and Yellow-billed Cuckoo. Over half of neotropical migratory passerine species are in decline, in part due to widespread degradation of riparian habitat across the western United States. These two species are listed as Birds of Conservation Concern by the U.S. Fish and Wildlife Service, Partners in Flight, and Utah's Wildlife Action plan. BDAs improve this crucial habitat by facilitating natural geomorphic processes that reconnect floodplain and riparian soils with stream water, allowing for woody vegetation to re-establish. As willow, cottonwood and other woody riparian species return, they will provide critical nesting habitat for these and numerous other migratory birds.

• Are there project benefits not addressed in the preceding questions? If so, what are these benefits?

In the words of conservationist Aldo Leopold, “an individual is a member of a community of interdependent parts.” Riverscapes Restoration provides key opportunities for members of our community to participate in meaningful restoration work. We see adoption of BDAs broadening each year. All of these projects, bridge the urban/rural divide by allowing ranchers and people from the city to work on a common goal, improving water quality. This leads to a broader acceptance of this approach to restoration by rural landowners as well. Modernizing the Dinsdale irrigation diversion demonstrates that people with diverse interests such as fisheries conservation and water extraction can work towards similar goals of establishing sustainable infrastructure.

Project benefits for multi-benefits projects: If applicable, please describe the extent to which the project will benefit multiple water uses. Please do not repeat information included in your prior responses.

• Please describe the extent to which the project will benefit agricultural, municipal, tribal, or recreation uses? Please explain how your estimate of benefits to multiple uses was calculated and provide support for your response.

All of the tasks of this project include comprehensive actions intended to produce win-win results. For example, landowners in arid watersheds are highly supportive of BDA construction because BDAs begin the process of reversing decades of degradation in these channels. As water tables have dropped, these landowners have witnessed the reduction in productivity on their rangeland. BDAs also improve habitat for native trout and improve water quality. Similarly, irrigation diversion modernization delivers benefits to the water users by providing more sustainable water, fisheries by ensuring the diversion structure is passable, and the public by ensuring that the instream facilities are safe.

• Will the project reduce water conflicts within the watershed?

Yes. Historically, an element of contention has existed among landowners in the headwaters whose cattle management/overgrazing have caused incised streambanks and massive amount of sediment loading downstream. Irrigators downstream have expressed frustration, especially as turbid waters can foul irrigation equipment. BDA construction in the past two years has greatly alleviated tensions among landowners, in the small Fish Creek case study (described above). We anticipate water conflicts to be further reduced upon greater scope and scale of BDA work.

• Will the project provide benefits to other water uses not mentioned above? If so, how and to what extent?

BOR Reservoirs, Echo and Rockport, are directly affected by instream flows from Weber River upstream flows and the headwaters tributaries. Besides irrigation water for agriculture, these

Reservoirs are also state parks managed for recreational amenities including boating, fishing, swimming, and more. Keeping sediment out of these reservoirs directly benefits individuals, communities, and also taxpayer dollars. If each BDA that we construct stores 9.9 cubic yards of sediment, building 2868 BDAs could prevent 28,441 CY of sediment from entering Echo and Rockport Reservoirs. It is truly an investment in efficiency to address eroding streams and drainages upstream of these BOR Reservoirs.

E.1.2. Evaluation Criterion B—Collaborative Project Planning (25 points)

Up to 25 points may be awarded based on the extent to which the proposed project was developed as part of a collaborative process and advances an existing plan or strategy. Reclamation will use the following criteria to prioritize applications based on the extent to which the specific project proposed in your application was developed collaboratively. Please attach a copy of the applicable strategy or plan as an appendix to your application, or provide a link, and identify the sections relevant to the project. These pages will not be included in the total page count for the application.

• Was the proposed project described in your application developed as part of a collaborative process by:

o A watershed group, as defined in section 6001 of the Cooperative Watershed Management Act?
Or
o A water user and one or more stakeholders with diverse interests (i.e., stakeholders representing different water use sectors such as agriculture, municipal, tribal, recreational, or environmental)?

This project is being proposed by Trout Unlimited (a category B nonprofit organization) with development support and coordination from Weber Basin Water Conservancy District (a category A entity). A team of watershed stakeholders in the Weber River Basin have helped develop this project, including:

- Water users: Weber Basin Water Conservancy District and Dinsdale Water Company
- State agencies: Utah Divisions of Water Quality and Wildlife Resources, Utah Department of Agriculture and Food
- Agricultural producers: Summit Conservation District, several private ranches including Wanship Range Company, G Bar Ventures Range Company, and the G&E Ranch.
- NGOs: Trout Unlimited and Sageland Collaborative

Expanded BDA work within headwater tributaries to improve water quality, restore floodplain connectivity, resiliency, and reduce downstream sedimentation into BOR Reservoirs was generated due to grassroots enthusiasm with local agricultural producers in the Conservation District in Summit County, Utah. Communications between various stakeholders within key state agencies, NGOs, and local ranchers led to new contacts and open doors of new BDA project possibilities. Similarly, collaboration with Weber Basin Water Conservancy came about due to quality communication on common goals of water delivery efficiency and sediment reduction in the headwaters. The endorsement of this project from the Dinsdale Water Company comes from years of collaboration between Trout Unlimited and the water company

• Describe the strategy or plan that supports your proposed project.

Weber River Watershed Plan, a collaboration-based plan generated by stakeholders known as the Weber River Partnership, was developed to augment other studies and strategies designed to protect the watershed. The Weber River Partnership is an informal organization and all the partners in this proposal play a key role in that partnership. Goals identified include: 1.) a long-term vision for the Weber Watershed inspiring collaboration and coordination; 2.) understanding the reach scale and watershed scale degradation of ecosystems in the watershed; 3.) leveraging the resources of many partners and stakeholders to more effectively prioritize and address issues and challenges; 4.) plan and implement projects and policies at a scale where net-positive change can occur throughout the watershed; and 5.) Achieve in a cooperative way that will provide accountability and adaptability to all watershed restoration actions in the future. As a result of this plan's development, strategic partnerships emerged with Trout Unlimited, Sageland Collaborative (formerly known as Wild Utah Project), the Weber Watershed Coordinator, Utah Department of Natural Resources, NRCS, local anglers, recreationists, and a multitude of private landowners. Such partnerships are the underpinning of current BDA success and future BDA projects in the headwaters of the Weber. Diverse partnerships have also led to major fish barrier removal and infrastructure modernization projects like the Dinsdale Irrigation Diversion project. Other key strategies identified in the Weber River Watershed Plan include, expanding the scope of large-scale restoration projects, and reconnecting key habitats for native species within the watershed.

o When was the plan or strategy prepared and for what purpose?

The Weber River Watershed Plan was developed in 2014 for the purposes as described above. A planning and advisory team and a separate restoration planning and implantation team, with watershed-wide representation, came together to identify the core ecological and social values throughout the entire watershed. The Vision Statement says: "*To ensure the long-term sustainability of the natural environment, economy, and lifestyles that make the Weber River Watershed a unique and desirable place to live, work, and play*." Formative partnerships and projects initiated since 2014 illustrate the building blocks of success.

o What types of issues are addressed in the plan? For example, does the plan address water quantity issues, water quality issues, and/or issues related to ecosystem health or the health of species and habitat within the watershed?

The 2014 Weber River Watershed Plan was written to sustain the wide array of values within the watershed, ranging from water quality and quantity, to agricultural productivity, to recreation and native species conservation. Conservation of the range of values in the watershed is underpinned by a restoration planning process which includes core values of partnership, intentional innovation, knowledge, sustainable balance, stewardship, and integrity. Tools such as the Conservation Action Planning (CAP) approach, which were developed by The

Nature Conservancy, are an integrated, science-based approach to ecological planning and restoration. The 2014 Weber River Watershed plan is based on the CAP approach, and through that process, we identified key conservation targets, 1) water supply, 2) native fishes, and 3) the ecological health of 6 distinct ecological systems within the Weber River Basin. The CAP approach "is a biologically driven process that guides project teams to identify effective conservation strategies....it provides an objective, consistent, and transparent accounting of all information developed through the process." Stewardship of habitat for native fishes such as Bonneville cutthroat trout and Bluehead sucker is a principal goal. The Bonneville cutthroat trout is a cold-water dependent trout and is also the state fish of Utah. Cold-water aquatic life beneficial use is impaired in several of the Ecological Systems within the Weber River Basin. Other impairments, which have seen marked improvements since water quality project implementation include sedimentation and phosphorus. This framework of the Weber Watershed Plan leads to projects that are not only top-down, implemented from government agencies, but also grassroots projects with a bottom-up, localized approach. Several years deep into the Weber River plan, we are seeing a significant shift from top-down water quality improvement projects led by government agencies to a bottom-up approach focused on ecosystem resilience and proactive sedimentation mitigation measures. Such an approach is illustrated by the private landowner-based BDA enthusiasm. BDAs address both water quality and quantity in the watershed, as they capture suspended sediment while slowing down the flow in critically incised headwater streams and thus restore floodplain connectivity and facilitate recovery of rangeland health. Native Bonneville Cutthroat trout depend upon the spawning habitat found in these upper headwaters tributaries. The surrounding rangeland is critical mule deer and elk winter range. The goals of the Weber Watershed Plan are being met, and funding through this grant opportunity would facilitate a scaling up of progress.

Partnerships with water delivery entities such as Weber Basin Water Conservancy District and smaller water companies such as the Dinsdale Water Company have begun to move the ecological needle in terms of ensuring that new infrastructure is compatible with fish movement and protection. The watershed plan has taken these relationships a step further by providing a strategic framework for barrier removal. We know where the barriers are on the landscape, and that knowledge allows us to proactively identify ecologically meaningful projects.

o Is one of the purposes of the strategy or plan to increase the reliability of water supply for ecological values?

Yes. The 2014 Weber River Watershed plan identified water supply as a key conservation value. This will be addressed through the headwaters BDA projects in this application as they will increase the reliability of the water supply for ecological values, as water flows (particularly after storm events) are slowed down, and in-stream flows become less erratic. This is already being observed in pilot BDAs on different phases within the watershed. Research has shown that, in some cases, BDAs can increase persistence of summer baseflow in arid streams through

localized groundwater recharge and sediment aggradation which increases water table elevation. Although not possible in all situations, maintaining perennial flows clearly has dramatic positive ecological impacts.

o Does the project address an adaptation strategy specifically identified in a completed WaterSMART Basin Study or Water Management Options Pilot (e.g., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes).

We are not aware of a WaterSMART Basin Study or Water Management Options Pilot being completed in the Weber River Basin.

• Was your strategy or plan developed collaboratively?

Yes, the 2014 Weber River Watershed Plan was developed collaboratively with input from a diverse set of stakeholders, from the headwaters to the confluence with the Great Salt Lake wetlands in the Lower Weber River delta. The restoration plan was developed with input from both realms of environmental policy: bottom-up and top-down approaches, involving private landowners and government officials.

o Who was involved in preparing the plan? Was the plan prepared with input from stakeholders with diverse interests (e.g., water, land, or forest management interests; and agricultural, municipal, tribal, environmental, recreation uses)? What was the process used for interested stakeholders to provide input during the planning process?

The 2014 Weber River Watershed plan was developed by a small Restoration Planning and Implementation Team. That team met frequently with the Planning Advisory Team, which was a larger set of watershed stakeholders representing, water users, agricultural producers, and municipalities and state agencies (identified on page 2 of the Weber River Watershed Plan).

Consequently, the collaboration that the 2014 plan put into motion built the framework of many successful restoration efforts that are ongoing today. Infrastructure improvement and floodplain restoration are key actions that partners in the plan have identified increase the ecological resiliency of the system. Riverscape Restoration in the form of pilot BDA projects in the headwaters of Chalk Creek (a major Weber River tributary) have dramatically reduced sedimentation and erosion in headwater streams, and are in the process of slowly restoring floodplain connectivity. These salient examples of BDAs at work really speak to other riders of the range, and the word of their success has gotten out at the grassroots level in the Conservation Districts. Word-of-mouth endorsement is the best kind of advertising and mobilization. These stakeholders provided their input to local state agency staff such as the Weber Watershed Coordinator, in the visioning and scoping of future BDAs proposed under this proposal and feel part of the process from the grassroots level. Also, downstream producers rely on irrigation water from BOR Reservoirs, so it is in the best interest of the Agricultural

community to maintain healthy headwaters streams, to prevent sedimentation of infrastructure downstream.

o If the plan was prepared by an entity other than the applicant, explain why it is applicable.

N/A

• Describe how the plan or strategy provides support for your proposed project.

The 2014 Watershed Plan has guided our restoration and conservation efforts since it was finalized. It outlined key components needed within the watershed. This included a solid social structure, adequate policy to equitably address trends in water and land development, and a restoration program guided by science. The plan was not prescriptive in restoration methods, but focused more on ensuring that multi-partner, large scale efforts were pursued.

A vital component of our strategy is engaging volunteers in the act of BDA-building. The in-kind donation of volunteer labor keeps BDAs quite affordable. More importantly, these events build community. Volunteers where we can all teach and learn about watershed health, becoming proponents of restoration and stewards of the watershed

o Does the proposed project implement a goal or need identified in the plan?

Yes, the proposed project directly meets the criteria identified in the Weber River Watershed Plan, including the five steps described in detail earlier, which are built upon a framework of collaboration and leveraging partnerships for success. In addition, this proposal meets a major strategy of the plan, which was to begin implement meaningful large-scale restoration efforts.

o Describe how the proposed project is prioritized in the referenced plan or strategy.

As referenced above, the Weber Watershed Plan is framed by a spirit of bringing stakeholders together for common goals of river stewardship and leveraging the strengths of these diverse partners into projects on the ground. Specifically stated as goal *4.) plan and implement projects and policies at a scale where net-positive change can occur throughout the watershed.* We see this proposal as an example of that plan in motion with BDA projects in the tributaries, Habitat Reconnection on the Lower Ogden River (a major tributary to the Weber River), and floodplain and side channel re-connectivity on the mainstem of the Weber. The scale of these projects is simultaneously manageable yet expansive; net-positive change will occur watershed wide both ecologically and socially (receptivity to these projects). Such a strategy of incremental, results oriented projects directly fits into the vision of the Weber Plan for long term success.

E.1.3. Evaluation Criterion C—Stakeholder Support (15 points)

Up to 15 points may be provided based on the level of stakeholder support for the proposed project and the extent to which the project will complement, and not duplicate, other ongoing efforts. Applications which demonstrate support for the project from a diverse array of stakeholders, and which will complement other ongoing activities, will receive the most points under this criterion.

• Please describe the level of stakeholder support for the proposed project. Are letters of support from stakeholders provided? Are any stakeholders providing support for the project through cost-share contributions, or through other types of contributions to the project?

Yes, a diverse coalition of stakeholders is supporting this project, ranging from the local Summit County Conservation District (comprised of farmers and ranchers) to the Utah Department of Agriculture and Food (UDAF)'s Weber Watershed Coordinator to Utah Division of Water Quality (DWQ) and local Aquatics Biologist with the Utah Division of Wildlife Resources to other watershed partners like Sageland Collaborative (nonprofit organization), who have participated in water quality improvement projects over the past several years. Letters of support are provided from several entities.

Stakeholders who are directly benefiting, such as private landowners with headwater stream access and rangelands, are providing in-kind match in the form of BDA materials and time.

• Please explain whether the project is supported by a diverse set of stakeholders (appropriate given the types of interested stakeholders within the project area and the scale, type, and complexity of the proposed project). For example, is the project supported by entities representing agricultural, municipal, tribal, environmental, or recreation uses?

Yes, as referenced in several sections above, the project is supported by a diverse and motivated set of stakeholders, from nearly all user groups identified above. These stakeholders represent a diverse set of interests including but not limited to agricultural uses, municipal water resources, recreational uses, and environmental uses. Please see letters of support, which includes one from the local Conservation District, comprised of local private landowners.

• Is the project supported by entities responsible for the management of land, water, fish and wildlife, recreation, or forestry within the project area? Is the project consistent with the policies of those agencies?

Yes, the project is supported by the Utah Division of Water Quality (DWQ), through the Weber & Uinta Basin Coordinator and the Utah Department of Agriculture and Food (UDAF) with the

Weber Watershed Coordinator, and the Utah Division of Wildlife Resources, with the Aquatics Biologists, and the project is consistent with the goals of all three agencies. It is the essence of collaboration and vision.

• Will the proposed project complement other ongoing water management activities by state, Federal, or local government entities, non-profits, or individual landowners within the project area? Please describe other relevant efforts, including who is undertaking these efforts and whether they support the proposed project. Explain how the proposed project will avoid duplication or complication of other ongoing efforts.

Yes, the State of Utah is working with private landowners on water optimization efficiency projects, drought response, climate change adaptation, non-point source water pollution, and numerous BDA projects, so this WaterSMART proposal is entirely complementary and capable of harnessing the ongoing momentum in the watershed. Simultaneously, non-profit partners such as Sageland Collaborative, TU, Audubon, and a local stakeholder watershed group, the East Canyon Creek Watershed Committee, are all working together on in-stream flows and connectivity between the reaches within the Weber River watershed. There is no duplication of the same efforts, but instead a dynamic synergy! This synergy has momentum and is at a positive tipping point!

The East Canyon Creek Committee is working with homeowners around Park City to embark on Trout Friendly Landscaping initiatives, including: drought tolerant and pollinator plants, reductions in fertilizer and herbicide, and reducing overall water use. This fits well within the framework of efforts by Weber Basin Water Conservancy to also reduce municipal water use. The state's Slow the Flow Campaign (about personal reductions in water consumption) also complements the efforts of this coalition. These efforts underly the importance of ongoing watershed education and forging personal connections with water users; WaterSMART ideas further build upon this platform and will enable greater reach and receptivity of water users throughout the watershed. East Canyon Creek is also home to several pilot BDA projects over the past five years, which laid the foundations for current BDA enthusiasm in Utah.

• Is the project completely or partially located on Federal land or at a Federal facility? If so, explain whether the agency supports the project, whether the agency will contribute toward the project, and why the Federal agency is not completing the project.

No. The BDA projects are located primarily on private land, as many parts of the watershed are vast acreages of working lands. However, the nexus with public lands and waters is of critical importance. For example, the proposed BDA sites on land owned by Wanship Range Company, drain directly into BOR managed Rockport Reservoir, which provides drinking water, agricultural water, and recreational water to the community as a Utah State Park. Addressing

sediment loading above Rockport Reservoir, with low-tech BDAs, will directly enhance water quality for all downstream. We plan to contact Rockport State Park and BOR (The local Reclamation office knows we are pursuing this grant opportunity) regarding the private land projects with positive downstream impacts on the Reservoir and Weber River. We anticipate these entities will be pleased to hear of the private land conservation initiatives.

• Is there opposition to the proposed project? If so, describe the opposition and explain how it will be addressed. Opposition will not necessarily result in fewer points.

No. There is no known opposition to the project. In years past, a few downstream landowners have not been fans of the Beaver Dam Analogs (BDAs) in theory and practice, due to the way BDAs slow down the flow of stream water. However, such attitudes majorly changed during summer 2021, when historic drought conditions coupled with two major flash flood events caused rapid stream flows and sediment deposition in BDAs currently working well. The Chalk Creek Watershed stakeholders now see BDAs quite favorably and are seeking more landowner buy-in around various canyons and stream areas.

E.1.4. Evaluation Criterion D—Readiness to Proceed (10 Points)

• Up to 10 points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement. Applicants that describe a detailed implementation plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates, and a detailed budget) will receive the most points under this criterion.

• Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. This may include, but is not limited to, design, environmental and cultural resources compliance, permitting, and construction/installation.

Task	**Anticipated Completion Date**
Task 1: Processed Based Restoration (BDAs)	
Task 1a Round 1 BDAs	
1aa Design	August 2022
1ab Permitting	November 2022
1ac Contracting	January 2023
1ad Implementation	August –November 2023
1ae Site Assessment and Monitoring	August 2022, and August 2024
Task 1b Round 2 BDAs	
1ba Design	September – November 2023
1bb Permitting	January – March 2024

1bc Contracting	July – August 2024
1bd Implementation	August –November 2024
1be Site Assessment and Monitoring	August 2023 and August 2025
Task 1c Round 3 BDAs	
1ca Design	July – August 2024
1cb Permitting	December 2024
1cc Contracting	January 2024
1cd Implementation	August – November 2025
1ce Site Assessment	August 2024 and November 2026
Task 2: Dinsdale Diversion Reconstruction	
Task 2a Final Design	Summer 2023
Task 2b Environmental	Spring 2023
Task 2c Permitting	Summer 2023
Task 2d Construction	Fall-Winter 2023
Task 3: Blackner's Bend Channel Reconstruction	
Task 3a Final Design	Summer 2023
Task 3b Construction	Winter 2023-2024
Task 4: Morgan Valley Restoration	
Task 4a Conceptual Design	Summer 2023
Task 4b Environmental	Summer 2023
Task 4c Final Design	Fall 2023
Task 4d Permitting	Winter 2023
Task 4e Construction	Summer 2024
Task 5:	

• The project budget outlining costs for specific tasks should identify costs associated with the tasks in your project schedule, and all contractor costs should be broken out to identify the specific tasks included in those costs.

Please see the project budget section below.

• Describe any permits and agency approvals that will be required, along with the process and timeframe for obtaining such permits or approvals.

A stream alteration permit, a joint permit with the state and Army Corps, are part of the BDA planning process, and may take 3 months to procure. Depending upon location of project area to a FEMA floodplain zone, other permits may be required with various federal, state, and county entities. Cultural Resources Inventory/Review with the State of Utah are also necessary for a project to proceed, and this process typically takes a couple of months. The local Watershed Coordinator may be able to assist with part of these processes and timeframe goals, in partnership with TU and Sageland Collaborative.

• Identify and describe any engineering or design work performed specifically in support of the proposed project, or that will be performed as part of the project. Priority will be given to projects that are further along in the design process and ready for implementation.

This project is composed of several elements, all of which are in various stages of design and engineering:

- BDAs -Project partners at TU and Sageland Collaborative are experts in design and implementation of low-tech process-based restoration techniques, including BDAs. Sageland Collaborative has a portfolio of BDA implementations in over 20 stream reaches across Utah, including nearly 600 BDA structures built since 2018. Project design for BDA projects involves site selection for the overall project, then site selection of individual structures. In the process of developing this proposal, we have already identified six out of the ten overall project locations through partnerships with landowners described above. Design of specific BDA locations within a site takes approximately one day of staff time for either TU or Sageland Collaborative, and we typically complete design 9-12 months ahead of implementation.
- Dinsdale Diversion Reconstruction – Trout Unlimited has partnered with the Dinsdale Irrigation Company and has developed a 30% design with hydraulic modeling, alternatives analysis, and operational considerations completed. This grant will allow us to implement the project in a timely manner dependent upon securing additional, matching funding sources. If we receive funding in October 2022, we will request funding through partners, which will be available in July 2023. We would anticipate completing construction in Fall of 2023.
- Mainstem River Floodplain Reconnection
    - Blackner's Bend - Our partners with the Trails Foundation of Northern Utah have several phases of the project in variable stages of design on the Blackner's Bend Project. The first two phases include sidechannel reactivation, with Phase 1 being completed during the Winter of 2021, and we anticipate construction of Phase 2 during January 2022. Phase 3 will include levee removal, to activate additional floodplain areas. Conceptual design has been completed and if we are awarded this funding, then design for Phase 3 will begin in the fall of 2022. We would anticipate final design in the summer/fall of 2023 and construction in January 2024.
    - Morgan Ranch Floodplain Reconnection – This project will need to go through a full design phase prior to implementation. We have had conversations with the landowners about project concepts but have not developed any designs. We anticipate applying for funding to complete surveys and engineering to be completed in 2022, but will likely need to finalize design and permitting during 2023 with implementation taking place in 2024-2025.

• Does the applicant have access to the land or water source where the project is located?

Yes. In the scoping process of this grant proposal, all project partners, including private landowners with headwater tributary streams were contacted and through a series of communications over the phone and in person, access agreements established. Established relationships with private landowners for stream restoration projects laid the foundation for the success of future work as described in this proposal. TU has a long-established relationship with the Dinsdale Water Company who is eager to partner with us on this project.

Has the applicant obtained any easements that are required for the project? If so, please provide documentation. If the applicant does not yet have permission to access the project location, please describe the process and timeframe for obtaining such permission.

No Easements will be necessary for the project tasks identified in this proposal.

• Identify whether the applicant has contacted the local Reclamation office to discuss the potential environmental and cultural resource compliance requirements for the project and the associated costs. Has a line item been included in the budget for costs associated with compliance? If a contractor will need to complete some of the compliance activities, separate line items should be included in the budget for Reclamation's costs and the contractor's costs. Describe any new policies or administrative actions required to implement the project. Note: Proposed projects must not include activities or costs for the purchase of water or land, or to secure a permanent easement. Costs associated with these activities are not eligible project costs and cannot be used to meet the non-Federal cost-share requirement.

The local Reclamation office has been contacted about this proposal, but we have not discussed environmental and cultural resource compliance requirements. We typically work with the Utah Division of Wildlife Resource to address cultural resources issues and will do so on all project elements associated with this proposal. Our project team is experienced with the stream alterations and 404 compliance requirements. Environmental compliance requirements are included in the contractor budgets for the Dinsdale Diversion Modernization as well as the mainstem river floodplain restoration projects.

E.1.5. Evaluation Criterion E—Performance Measures (5 points)

Up to 5 points may be provided based on the extent to which the application describes a plan to monitor the progress and effectiveness of the project once complete. Note: program funding may be used to establish a monitoring and data management plan or to install necessary equipment to monitor progress. However, program funding may not be used to measure performance once the project is completed (these costs are considered normal operation and maintenance costs and are the responsibility of the applicant).

• Please describe the performance measures that will be used to quantitatively or qualitatively

define actual project benefits upon completion of the project. Include support for why the specific performance measures were chosen.

The following are our quantitative performance measures:

- Doubling of the floodplain width caused by BDAs
- 0.5 foot aggradation of stream channel caused by BDAs
- Long-term increase in Rapid Stream Riparian Assessment Stream Rating
- Increased acres of active floodplain habitat on the weber river
- Increased length of active side channel habitat on the Weber River
- Increased availability of habitat for Bluehead Sucker and Bonneville Cutthroat Trout in the Ogden River

• All applicants are required to include information about plans to monitor improved streamflows, aquatic habit, or other expected project benefits. Please describe the plan to monitor the benefits over a five-year period once the project has been completed. Provide detail on the steps to be taken to carry out the plan.

Trout Unlimited has been monitoring BDA projects using drone imagery and measuring the changes on the landscape by analyzing the digital surface models that we produce with the drone imagery. Our monitoring plan is to continue to collect drone imagery to monitor the results of this project as well. Ultimately, we expect to complete a formal study characterizing the effects of BDAs on stream channels. This project will provide enough replicates to complete that research. The Sageland Collaborative has established a broadly accepted riparian monitoring method in Utah, known as the Rapid Stream and Riparian Assessment (RSRA). This assessment method looks at several factors of geomorphic function, riparian health, and instream habitat, producing a rating value, which is a measure of overall health. We typically observe a short-term decline in overall rating scores with the implementation of BDAs, due to the increase in fine sediment. But as riparian areas re-establish in response to elevated water tables and recruited wood, the rating scores begin to increase. In addition, TU and partners have developed a robust water quality monitoring network throughout the Weber River basin. Although it is prohibitive to sample every small watershed, we have established over 60 temperature logger sampling locations over the past 6 years. We will continue monitoring to help us understand the watershed-scale effects of BDAs on the stream temperature profiles where BDA projects are being implemented.

Our capacity to monitor the effectiveness of habitat reconnection and floodplain restoration projects in the Weber River is limited, and trying to determine the fish population effects of is difficult because a wide range of factors influence fish populations. Therefore we need to rely on basic conservation biology principles that if we establish larger patches of habitat for Bluehead Sucker and Bonneville cutthroat trout, their long-term resilience will be improved. TU will work with our partners to monitor use of the sidechannel habitats by juvenile Bluehead Sucker as a metric of success.

E.1.6. Evaluation Criterion F—Presidential and Department of the Interior Priorities (10 points)

Up to 10 points may be awarded based on the extent that the project demonstrates support for the Biden-Harris Administration's priorities, including E.O. 14008: Tackling the Climate Crisis at Home and Abroad and E.O. 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. Consideration under this criterion is also given for Tribal benefits.

Please address only those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the application.

Without repeating benefits already described in previous criteria, describe in detail how the proposed project supports a priority(ies) below.

1. Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.

• How will the project build long-term resilience to drought? How many years will the project continue to provide benefits? Please estimate the extent to which the project will build resilience to drought and provide support for your estimate.

This project addresses the challenges of extended drought and climate change head-on. BDAs are intended to be temporary (<ten years) and deformable structures, but they leave long-term effects on the landscape by restoring the structural complexity of valley bottoms.

- Large scale implementation of BDAs in arid headwaters ensures that the valley bottoms will sustain their function during drought conditions by retaining water within the natural system later into the year. This ensures that the aquatic and riparian habitats in the stream systems have a higher probability of sustaining important fisheries and wildlife populations.
- Climate predictions include more frequent and intense storm events. By restoring natural floodplain function, the valley bottoms reduce the hydrological flashiness of the system by distributing water, debris and sediment onto the floodplains. Robust valley bottoms will deliver less sediment downstream and act as buffers to receiving basins.
- Habitat fragmentation caused by barriers to movement are a significant risk to the sustainability of native fisheries. Aquatic habitat fragmentation by barriers caused by structures such as irrigation diversions, and habitat degradation by urban encroachment

are two primary threats to fish living in the lower Weber and Ogden Rivers and consequently a threat to species conservation and angling opportunities. Habitat fragmentation limits the habitat available to fish in the Weber River by restricting their upstream movements. These movements can be in response to poor water quality, low flow conditions or life history requirements such as spawning migrations. Short stream reaches with limited available habitat to trout and mountain whitefish in the Weber River can destabilize populations or preclude population rebounding in the case of cutthroat trout and bluehead sucker. Reconstructing irrigation diversions in a sustainable manner restores resiliency in our native fisheries by allowing them to move up- and downstream throughout the river networks. This is a key strategy to ensuring that native fisheries have the ability to adapt to climate change.

• In addition to drought resiliency measures, does the proposed project include other natural hazard risk reductions for hazards such as wildfires or floods?

Yes. Healthy floodplains and riparian areas attenuate flood height elevation at typical flooding (e.g. 0.2-0.5 exceedance probability see Jacobson et al. 2015). Our floodplain restoration projects on the Weber River mainstem are intended to reconnect key floodplain elements such as overflow channels and side channels, thereby improving flood height at typical flows.

BDAs constructed in smaller tributaries have similar effects of attenuating typical flood flows and temporarily storing water within floodplain and Hyporheic zones.

Similarly, a recent Master's Thesis published by Weirich (2021) found that robust riparian systems, facilitated by beaver, act to retard or stop catastrophic wildfires from spreading. The arid rangelands in Utah face significant catastrophic fire risk due to higher snowmelt variability and extended summer dry seasons. Ecologist recognize that the increased drought conditions on the rangelands contribute to catastrophic fire risk. A key strategy in Utah is to try to intersect the rangeland fuels with fire breaks. Wider riparian zones in smaller may reduce the catastrophic fire risk, but also will maintain function as a buffer if the surrounding watershed burns.

• Will the proposed project reduce greenhouse gas emissions by sequestering carbon in soils, grasses, trees, and other vegetation?

Recent studies have indicated that robust riparian forests have the ability to store significant levels of carbon. The most productive riparian areas are those in moist and tropical regions of the worlds (see Dybala et al 2018). Our intent is to improve the robustness of small stream riparian areas, which will likely sequester carbon in the soils and trees, but we do not anticipate that this project will be of sufficient scale to store large volumes of Carbon.

• Does the proposed project include green or sustainable infrastructure to improve community climate resilience such as reducing the urban heat island effect, lowering building energy demands, or reducing the energy needed to manage water? Does this infrastructure complement other green solutions being implemented throughout the region or watershed?

Riverscape restoration using process-based tools such as BDAs is green infrastructure. At the writing of this proposal approximately 200 BDAs have been constructed within the Weber River basin with the intent of establishing more sustainable tributaries. Processed-based restoration allows the water to do a majority of the restoration work within the valley bottoms eliminating the need for heavy equipment and allowing the stream channels to recover naturally over time.

• Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?

Riverscape restoration using BDAs is intended to improve water quality by reestablishing diverse flowpaths, habitat heterogeneity, and by forcing water onto the floodplain during high water events. In addition to reductions in suspended sediment as water velocities slow, BDAs have been shown to increase hyporheic exchange in streams. Expanding the surface area of sediment-water interaction encourages microbially-mediated removal of water pollution such as nitrate and e coli. Cleaner water in the tributaries leads to improved water quality in downstream segments of the watershed.

• Does the proposed project have a conservation or management component that will promote healthy lands and soils or serve to protect water supplies and its associated uses?

Yes. BDAs are a significant component of the overall riparian and rangeland health strategies that the project team has implemented over the years. BDAs complement our effort to increase rotational grazing practices on rangelands, reestablish floodplain connectivity, and restore wet meadows found within arid rangelands. The educational components generated from these BDA projects is invaluable, when producers are able to observe BDAs on their own time, significant landowner buy in to this type of conservation blossoms.

• Does the proposed project contribute to climate change resiliency in other ways not described above?

2. Disadvantaged or Underserved Communities: E.O. 14008 and E.O. 13985 affirm the advancement of environmental justice and equity for all through the development and funding of programs to invest in disadvantaged or underserved communities.

• Will the proposed project serve or benefit a disadvantaged or historically underserved community? Benefits can include, but are not limited to, public health and safety through water quality improvements, new water supplies, or economic growth opportunities.

Most of the shareholders within the service area of the Dinsdale water company are within US Census Tracts that are among lowest 10% of household income in the State of Utah. The water

company is unable to raise sufficient funds with assessments because the shareholders do not have the ability to pay. Completing the Dinsdale Diversion Modernization project is critical to providing sustainable irrigation to this community. Secondarily, the diversion structure is located in an area where a large number of people wade and recreate in the river during the summer months. Ensuring that the diversion structure is not a safety hazard benefits the surrounding community as well.

• If the proposed project is providing benefits to a disadvantaged community, provide sufficient information to demonstrate that the community meets the applicable state criteria or meets the definition in Section 1015 of the Cooperative Watershed Act, (i.e., defined as a community with an annual median household income that is less than 100 percent of the statewide annual median household income for the state).

As described above US census tracks 2004 and 2005 contain households that are significantly poorer than other tracts within the state of Utah.

• If the proposed project is providing benefits to an underserved community, provide sufficient information to demonstrate that the community meets the underserved definition in E.O. 13985, which includes populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.

Not applicable to this project.

3. Tribal Benefits: The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to Nation Relationships, asserts the importance of honoring the Federal government's commitments to Tribal Nations.

• Does the proposed project support Tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, or economic growth opportunities?

This project does not occur in an area with known tribal interests.

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

This project does not occur in an area with known tribal interests.

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Funding Plan

As nonprofit organizations, Trout Unlimited and Sageland Collaborative must competitively secure outside grants to fund the nonfederal portion of the project work proposed under this proposal. We have a track record of securing successful grant applications, and we will work with our partners to apply for state funding including from the Utah Watershed Restoration Initiative, Nonpoint Source Program, and other sources such as local foundations and corporate entities. Our agency partners are unable to commit to funding to this project until they receive formal requests, which are upcoming. Most of the state agencies that fund restoration work in Utah only allow for one-year agreements, so we will likely apply for several grants through those sources.

Project Budget

Total Project Cost

Source	Amount
Costs to be reimbursed with the requested Federal Funding	$ 1,864,031.98
Costs to be paid by the Applicant (through grants)	$ 621,343.99
Value of third-party contributions (volunteer in-kind contribution)	$ 286,800.00

Summary of Non-Federal and Federal Funding Sources

Funding Sources	Amount	Note
Nonfederal Entities		
Utah Watershed Restoration Initiative	$310,406.39	Competitive funding proposals need to be submitted
Utah Nonpoint Source Funding	$198,937.60	Competitive funding proposals need to be submitted
Dee Foundation	$40,000.00	Secured by TU
Trails Foundation of Northern Utah	$50,000.00	Secured by TFNU
Weber Basin Water Conservancy District	$25,000.00	Funding has not been requested
Total Nonfederal Funding	$621,343.99	25%
Requested Reclamation Funding	$ 1,864,031.98	75%

Budget Proposal

	$/unit	Quantity	Quantity type	Cost
Salaries and Wages				
Paul Burnett - TU Project Coordinator	$32.00	3214	per hour	$102,848.00
Sageland Collaborative Coordinator	$28.85	2476	per hour	$71,432.60
Fringe Benefits				
TU Coordinator	$15.04	3214	per hour	$48,338.56
Sageland Collaborative Coordinator	$13.56	2476	per hour	$33,573.32
Travel				
Ground Travel	$0.56	4000	per mile	$2,240.00
Supplies and Materials				
Round 1 BDA posts	$2.25	6552	per post	$14,742.00
Round 2 BDA posts	$2.25	15948	per post	$35,883.00
Round 3 BDA posts	$2.25	16560	per post	$37,260.00
Tools for BDA installation	$15.00	100	per tool	$1,500.00
Contractual/Construction				
BDA Round 1 Installation	$2.00	8200	Foot	$16,400.00
BDA Round 2 Installation	$2.00	21100	Foot	$42,200.00
BDA Round 3 Installation	$2.00	18500	Foot	$37,000.00
Dinsdale Pipeline Replacement	$82,930.00	1	Lump Sum	$82,930.00
Dinsdale Headwoarks Upgrade	$90,293.00	1	Lump Sum	$90,293.00
Dinsdale Diversion Dam Modernization	$177,085.00	1	Lump Sum	$177,085.00
Dinsdale Permitting/Environmental	$19,000.00	1	Lump Sum	$19,000.00
Dinsdale Construction Survey	$5,000.00	1	Lump Sum	$5,000.00
Dinsdale Mobilization	$21,020.00	1	Lump Sum	$21,020.00
Dinsdale Engineering Oversight	$56,050.00	1	Lump Sum	$56,050.00
Dinsdale Contingency (20%)	$70,060.00	1	Lump Sum	$70,060.00
Blackner's Bend Construction	$804,720.00	1	Lump Sum	$804,720.00
Morgan Ranch Engineering	$35,000.00	1	Lump Sum	$35,000.00
Morgan Ranch Floodplain Restoration	$350,000.00	1	Lump Sum	$350,000.00
Total Direct Costs				**$2,154,575.48**
TU Indirect Costs	13.26% NICRA			$271,772.92
Sageland Collab Indirect Costs	10% de minimis rate for salary and fringe rate			$10,500.59
BOR Compliance Costs	2% of Budget			$48,526.97
Total Costs				**$2,485,375.97**

Budget Narrative

TU Project Manager Salary Allocations

Task	Rate	Units	Unit Type	Total	Notes
Task 1 BDAs					
Task 1a Round 1 BDAs					
1aa Design	$ 32.00	64	Hours	$ 2,048.00	Collection of survey data and design of BDAs
1ab Permitting	$ 32.00	64	Hours	$ 2,048.00	Completion of stream alteration and other permits
1ac Contracting	$ 32.00	96	Hours	$ 3,072.00	Field visit, and procurement of contractors
1ad Implementation	$ 32.00	96	Hours	$ 3,072.00	Includes post installation, and coordination of field days with volunteers
Task 1b Round 2 BDAs					
1ba Design	$ 32.00	96	Hours	$ 3,072.00	Collection of survey data and design of BDAs
1bb Permitting	$ 32.00	96	Hours	$ 3,072.00	Completion of stream alteration and other permits
1bc Contracting	$ 32.00	96	Hours	$ 3,072.00	Field visit, and procurement of contractors
1bd Implementation	$ 32.00	72	Hours	$ 2,304.00	Includes post installation, and coordination of field days with volunteers
Task 1c Round 3 BDAs					
1ca Design	$ 32.00	96	Hours	$ 3,072.00	Collection of survey data and design of BDAs
1cb Permitting	$ 32.00	96	Hours	$ 3,072.00	Completion of stream alteration and other permits
1cc Contracting	$ 32.00	72	Hours	$ 2,304.00	Field visit, and procurement of contractors
1cd Implementation	$ 32.00	80	Hours	$ 2,560.00	Includes post installation, and coordination of field days with volunteers
Task 2: Dinsdale Diversion Reconstruction					
Task 2a Final Design	$ 32.00	80	Hours	$ 2,560.00	Review of final design
Task 2b Environmental	$ 32.00	160	Hours	$ 5,120.00	Cultural resources and NEPA compliance
Task 2c Permitting	$ 32.00	160	Hours	$ 5,120.00	Stream alterations and 404 permitting, city construction permitting
Task 2d Construction	$ 32.00	320	Hours	$ 10,240.00	Field oversight of construction
Task 3: Blackner's Bend Channel Reconstruction					

Task	Rate	Units	Unit Type	Total	Notes
Task 3a Final Design	$ 32.00	40	Hours	$ 1,280.00	Review of final design
Task 3b Construction	$ 32.00	80	Hours	$ 2,560.00	Field oversight of construction
Task 4: Morgan Valley Restoration					
Task 4a Conceptual Design	$ 32.00	320	Hours	$ 10,240.00	Survey data collection and consultation with engineer on design
Task 4b Environmental	$ 32.00	160	Hours	$ 5,120.00	Cultural resources and NEPA compliance
Task 4c Final Design	$ 32.00	80	Hours	$ 2,560.00	Review of final design
Task 4d Permitting	$ 32.00	160	Hours	$ 5,120.00	Stream alterations and 404 permitting
Task 4e Construction	$ 32.00	320	Hours	$ 10,240.00	Field oversight of construction
Task 5: Grant and Project Oversight and Compliance	$ 32.00	310	Hours	$ 9,920.00	Grant reporting and compliance, budgeting, and coordination with partners and Bureau.
Total		3214	Hours	$ 102,848.00	

The Trout Unlimited staff time allocations are estimates of what the time we anticipate spending on all of the tasks identified in the project schedule. Paul Burnett is the field staff responsible for coordinating this project. The expenses related to this project equate to just over 50% of full time employment activities over a proposed three-year period of this agreement.

Sageland Collaborative Salary Allocations

Task	Rate	Units	Unit Type	Total	Notes
Task 1 BDAs					
Task 1a Round 1 BDAs					
1aa Design	$28.85	64	Hours	$1,846.40	Collection of survey data and design of BDAs
1ab Permitting	$28.85	64	Hours	$1,846.40	Completion of stream alteration and other permits
1ac Contracting	$28.85	96	Hours	$2,769.60	Field visit, and procurement of contractors
1ad Implementation	$28.85	132	Hours	$3,808.20	Includes post installation, and coordination of field days with volunteers
1ae Site Assessment	$28.85	240	Hours	$6,924.00	Pre & 1 year post-installation habitat assessment (RSRA)
Task 1b Round 2 BDAs					
1ba Design	$28.85	96	Hours	$2,769.60	Collection of survey data and design of BDAs
1bb Permitting	$28.85	96	Hours	$2,769.60	Completion of stream alteration and other permits
1bc Contracting	$28.85	96	Hours	$2,769.60	Field visit, and procurement of contractors
1bd Implementation	$28.85	308	Hours	$8,885.80	Includes post installation, and coordination of field days with volunteers
1ae Site Assessment	$28.85	360	Hours	$10,386.00	Pre & 1 year post-installation habitat assessment (RSRA)
Task 1c Round 3 BDAs					
1ca Design	$28.85	96	Hours	$2,769.60	Collection of survey data and design of BDAs
1cb Permitting	$28.85	96	Hours	$2,769.60	Completion of stream alteration and other permits
1cc Contracting	$28.85	96	Hours	$2,769.60	Field visit, and procurement of contractors
1cd Implementation	$28.85	276	Hours	$7,962.60	Includes post installation, and coordination of field days with volunteers
1ae Site Assessment	$28.85	360	Hours	$10,386.00	Pre & 1 year post-installation habitat assessment (RSRA)
Total		2476		$71,432.60	

Trout Unlimited is teaming up with a fellow nonprofit organization, Sageland Collaborative to implement the scaled-up BDA projects. Activities related to BDA project management and monitoring equate to 40% of a Full Time employee.

Fringe Benefit Rate

Both Trout Unlimited and Sageland Collaborative have a Fringe Rate of 47% of the salary. The total value of the fringe benefit is calculated using the following formula:

Hourly Salary Rate * 0.47 *Total Number of Hours

Table 3: Calculations of fringe benefits for TU and Sageland Collaborative.

Organization	Hourly Salary Rate	Fringe Rate	Total # of Hours	Total
TU	$32.00 per Hour	47%	3214	$48,338.56
Sageland Collaborative	$28.85 per Hour	47%	2476	$33,573.32

Travel

Based on other projects within the area, we anticipate traveling 4000 miles to complete this project. Travel Rate is based on TU's and Sagelands reimbursement policy to reimburse at the federal rate. At the time of this proposal that is $0.56 per mile. We do not anticipate charging any other travel expenses to this project.

Equipment

We do not plan to purchase any equipment greater than $5000.

Materials and Supplies

We plan to itemize and purchase BDA posts and tools to aid in installing the BDAs. In general, we plan to purchase new and replacement tools as needed to facilitate BDA installation. We have a cache of tools, but they inevitably disappear during our volunteer projects. These typically include pruning saws, shovels, loppers, and gloves. We used a general rate of $15 per item, expecting that some may be more expensive, and some may be less.

To estimate the number and costs of the posts we made several assumptions based on experience constructing BDAs.

- BDA spacing was estimated at 16 feet, so a 1000 foot long bda project would have contain 62 bdas.
- The number of posts per BDA were estimated based on the stream width, ranging from 10 posts per BDA on small streams to 18 posts per BDA on larger streams like the South Fork of Chalk Creek.
- Costs per post were estimated from past projects where it costs $2.25 per post delivered to the project site.
- The total number of posts per project were the product of the (estimated number of BDAs) * (the number of posts per BDA).

The project-by-project numbers are summarized in Table 3.

Table 4: Materials and contractual cost estimates for BDA construction.

Name	Type	Stream Length (ft)	#BDAs	posts /BDA	# of Posts	Cost of Posts	Installation Cost	BDA Round	Estimated # of Volunteer Days
Hay Hollow Phase 1	Intermittent	900	54	10	540	$1,215.00	$1,800.00	1	2
Fish Creek Phase 4	Perennial	2100	126	18	2268	$5,103.00	$4,200.00	1	4
Cottonwood Creek	Natural Stream	2200	132	12	1584	$3,564.00	$4,400.00	1	4
Branch Creek Phase 3	Natural Stream	3000	180	12	2160	$4,860.00	$6,000.00	1	5
South Fork Chalk Creek - Pace	Perennial	4000	240	18	4320	$9,720.00	$8,000.00	2	7
Hay Hollow Phase 2	Intermittent	1500	90	10	900	$2,025.00	$3,000.00	2	3
Fish Creek Phase 5	Perennial	1600	96	18	1728	$3,888.00	$3,200.00	2	3
Crandall Canyon Phase 1	Perennial	5000	300	12	3600	$8,100.00	$10,000.00	2	9
Cottons - East	Intermittent	7000	420	10	4200	$9,450.00	$14,000.00	2	12
Cottons - West	Intermittent	2000	120	10	1200	$2,700.00	$4,000.00	2	3
South Fork Chalk Creek - G&E	Perennial	7000	420	18	7560	$17,010.00	$14,000.00	3	12
Pecks Canyon	Perennial	3500	210	12	2520	$5,670.00	$7,000.00	3	6
Crandall Canyon Phase 2	Perennial	6000	360	12	4320	$9,720.00	$12,000.00	3	10
Fish Creek Phase 6	Perennial	2000	120	18	2160	$4,860.00	$4,000.00	3	3
Totals		**47,800**	**2868**		**39,060**	**$87,885.00**	**$95,600.00**		**82**

Contractual

BDAs

Contractors will be hired to install BDA posts. Based on past projects, the cost to install BDAs is estimated at $2 per foot of stream length. We developed estimates and report them in Table 4. The installation cost is estimated as (Stream Length) * $2 per foot.

Dinsdale Diversion Reconstruction

TU and the Dinsdale Water Company have already teamed up to develop a 30% design with Interscape LLC. We are using the engineer's cost opinion in the 11/11/2021 Design Report to estimate the anticipated expenses (see Table 5 and 6). Major project elements are included in the budget but tables 5 and 6 provide itemized expenses. Interscape LLC was hired by competitive bid by Dinsdale Water Company, but all future contractual items will meet the standards in 2 CFR Part 200.320.

Blackner's Bend Floodplain Restoration

The Trails Foundation of Northern Utah has contracted with RiverRestoration to develop a conceptual design for Phase 3 of the project as well as design and implement Phase 1 and 2. The Lump Sum estimate in the project budget is based on the engineer's opinion in Table 7. RiverRestoration was hired by Trails Foundation of Northern Utah by a competitive bid process, but all future contractual items related to this project will meet the standards in 2 CFR Part 200.320.

Morgan Ranch Floodplain Restoration

We currently do not have any contracts established for this project. If we receive pre-award funding in 2022, we will begin the design process, and ensure that the contractual items associated with this project meet the standards in 2 CFR Part 200.320. Our estimates of engineering and implementation are based on a similar restoration project that we completed in 2015 approximately 2 miles upstream.

Third-Party In-Kind Contributions

This project has a large in-kind component. The project partners rely extensively on volunteer labor. Sageland Collaborative estimates that the in-kind value of each BDA is $100. Our estimated in-kind value of installing 2868 BDAs is $ 286,800.00.

Environmental and Regulatory Compliance Costs

We have not spoken to the local Reclamation office regarding this line item, but estimated that 2% of the total project costs would be needed to address Reclamation's costs associated with compliance activities.

Indirect Costs

Trout Unlimited has a Nicra that allows a 13.26% indirect rate for agreements with agencies within the Department of the Interior. Sageland does not have a NICRA and will charge a de minimis 10% indirect rate which are tied to their direct salary and fringe benefits. Total direct costs = $105,005.92, total indirect costs = $10,500.59.

Table 5: Engineering cost estimate for the Dinsdale Irrigation Diversion Modernization project.

Table 3. Feasibility level engineering cost estimate for Dinsdale Diversion Dam

Part 1. Pipeline Replacement

Item	Description	Quantity	Units	Cost ($/unit)	Total
1	Excavate trench and remove existing steel culvert	605	yds^3	$20	$12,100
2	Install 24-inch N12 HDPE Type S pipe w/ w.t. joints	340	l.f.	$52	$17,680
3	Backfill and compact trench	415	yds^3	$30	$12,450
4	20" Roadbase	252	yds^3	$62	$15,624
5	Repave hiking path (3" asphalt)	467	yds^2	$28	$13,076
6	Dispose of pipe, removed asphalt and excess fill	320	yds^3	$25	$8,000
7	48" manhole w/ 30" lid and ring	1	ea.	$4,000	$4,000
	Subtotal				**$82,930**

Part 2. Headworks

Item	Description	Quantity	Units	Cost ($/unit)	Total
8	24-Inch C-10 Waterman Headgate	1	ea.	$2,500	$2,500
9	48-inch A-250 Waterman Slide Gate	1	ea.	$22,000	$22,000
10	4-inch steel vent pipe with return	1	ea.	$500	$500
11	Reinforced Concrete	38	yds^3	$700	$26,600
12	Excavation, site prep and tree removal	1	l.s.	$5,000	$5,000
13	Galvanized steel grate decking	153	ft^2	$63	$9,639
14	Galvanized steel pipe railing	61	l.f.	$74	$4,514
15	Security Fence	56	l.f.	$40	$2,240
16	Bar Screen	30	ft^2	$60	$1,800
17	Stainless Steel wedge-wire fish screen - 5/8" opening	30	ft^2	$250	$7,500
18	Floating trash-boom	30	l.f.	$100	$3,000
19	Backfill and site restoration	1	l.s.	$5,000	$5,000
	Subtotal				**$90,293**

Part 3. Rock Diversion Dam and Fish Weirs

Item	Description	Quantity	Units	Cost ($/unit)	Total
20	Water control cofferdams (pushed up)	1245	yds^3	$20	$24,900
21	30" culverts for diversion channel crossing	40	l.f.	$60	$2,400
22	Excavation for rock weirs	319	yds^3	$20	$6,380
23	3-4 ft diameter flat-topped quarry rock, installed	288	yds^3	$300	$86,400
24	Riprap for scour protection, installed	213	yds^3	$150	$31,950
25	Grade excavated material on upstream side of weirs	319	yds^3	$20	$6,380
26	Remove water control cofferdams	1245	yds^3	$15	$18,675
	Subtotal				**$177,085**

Table 6: Continuation of the engineering cost estimate for the Dinsdale Irrigation Diversion Modernization project.

Summary

Item	Description	Quantity	Units	Cost ($/unit)	Initial Cost
	Project Subtotal (rounded)				**$350,310**
27	Permitting	lump sum			$19,000
28	Construction Surveying and Testing	lump sum			$5,000
29	Mobilization	percentage		6%	$21,020
30	Engineering & Project Management	percentage		16%	$56,050
31	Contingency	percentage		20%	$70,060
	Total Implementation Cost				**$521,440**

Table 7: Engineer cost estimate for the Blackner's Bend floodplain restoration project.

IN-CHANNEL IMPROVEMENTS

Item #	Description	Quantity	Unit	Unit Cost	Total Cost	Totals	Notes / Assumptions
	Site Preparation						
1	Protect in Place (PIP)	1	LS	$ 5,000.00	$ 5,000.00		*Tree and utility protection*
2	Construction Access and Repair	1	LS	$ 3,000.00	$ 3,000.00		
3	Erosion Control and General BMPs - Furnish, Install, and Manage	1	LS	$ 5,000.00	$ 5,000.00		
4	Care of Water - Furnish, Install, and Manage	1	LS	$ 45,000.00	$ 45,000.00		
5	Site Restoration	1	LS	$ 10,000.00	$ 10,000.00		*Reseed all disturbed areas*
					Sub Total:	**$ 68,000.00**	
	Available Stockpiled Material from Phase 2						
6	General Excavation and Stockpiling	1,004	CY	$ -	$ -		*Assume this is all usable alluvium*
					Sub Total:	**$ -**	*No cost (assume already paid for in Phase 2)*
	Downstream Grade Control						
7	Clear and Grub	211	SY	$ 3.00	$ 633.00		
8	Haul Off and Disposal of Alluvial Material	0	CY	$ 50.00	$ -		*56 CY stockpiled in location on plan sheet G02 (item 6 - item 9)*
9	General Excavation and Stockpiling	259	CY	$ 10.00	$ 2,593.00		*Incl. overexc for grade control placement*
10	Alluvial Backfill	173	CY	$ 20.00	$ 3,459.00		
11	Furnish Boulder	152	TON	$ 100.00	$ 15,195.00		
12	Install Boulder (grade control)	152	TON	$ 100.00	$ 15,195.00		
13	Type 1 Seed Mix (Riparian)	0.02	ACRE	$ 4,000.00	$ 95.00		*Placed on banks*
14	Hydromulch	0.02	ACRE	$ 3,500.00	$ 83.00		
					Sub Total:	**$ 37,253.00**	
	Fish Passage Enchancements						
15	Roughened Boulder Ramp	2	LS	$ 125,000.00	$ 250,000.00		*North of I-84 bridge over Weber River*
					Sub Total:	**$ 250,000.00**	
	Berm Setback and Trail Grading						
16	Clear and Grub	10,480	SY	$ 3.00	$ 31,439.00		
17	Salvage and Stockpile Existing Boulder	0	TON	$ 80.00	$ -		*Assume zero for conservative estimate**
18	Haul Off and Disposal of Alluvial Material	0	CY	$ 50.00	$ -		
19	General Excavation and Stockpiling	5,557	CY	$ 10.00	$ 55,565.00		*Incl. excv of existing berm and trail*
20	Alluvial Backfill	6,623	CY	$ 20.00	$ 132,456.00		*Berm fill material to 6" below finish grade*
21	8" Crushed Gravel	303	CY	$ 50.00	$ 15,166.00		*Unit cost is a guess. TRNU will provide*
22	Type 2 Seed Mix (Upland)	0.85	ACRE	$ 4,000.00	$ 3,389.00		*Placed on berm slopes*
23	Place Topsoil	683	CY	$ 30.00	$ 20,503.00		*Placed on berm slopes*
					Sub Total:	**$ 258,618.00**	
	ITEMIZED CONSTRUCTION SUBTOTAL					**$ 613,771.00**	
	Contingency (15%)					**$ 92,065.65**	
A1	Land Survey (LS)						*Not required*
A2	Geotechnical Engineering						*Not required*
A3	Structural Engineering						*Not required*
A4	Utility Relocations						*Not required*
A5	Traffic Control					$ 14,000.00	*Based on Phase 1 bids*
A6	Hydrographic Survey						*Included in current design/planning contract*
A7	Cultural Resource Survey and Report						
A8	Full Wetland Delineation						*Included in current design/planning contract*
A9	Lands and Easements (Permanent)						*Not required*
A10	Lands and Easements (Construction)						*Not required*
A11	Lands and Easements Processing						*Not required*
A12	Construction Bonding/Ins (5%)					$ 30,688.55	*6% construction*
A13	Mob and Demob (5%)					$ 30,688.55	*6% construction*
A14	Environmental Assessment Recovery Prgm						*Not required*
A15	Public Outreach and Coordination						*Not required*
A16	Engineering Design						*Included in current design/planning contract*
A17	Hydraulic Modeling						*Included in current design/planning contract*
A18	Permitting 404, 401						*Included in current design/planning contract*
A19	UDOT ROW Encroachment Permit					$ 2,000.00	*Based on Phase 1 bids*
A20	Permitting Floodplain						*Included in current design/planning contract*
A21	Plans and Specifications for bid						*Included in current design/planning contract*
A22	Construction Stakeout					$ 5,000.00	*Based on Phase 1 bids*
A23	Construction Review Observations					$ 11,500.00	*Eric and Jack to review*
A24	Vegetation Replacement YR 2					$ 5,000.00	
A24	Grant Writing Assistance						*Not required*
A25	Interpretive Design Programming/Details						*Not required*
A26	Irrigation Consultant (Irrigation Design)						*Not required*
	TOTAL PROJECT COST OPINION					**$ 804,720.00**	

* Current stockpiled boulder is assumed 0 CY for a more conservative estimate. There will likely be salvageable boulder from the berm removal area.

H.1. Environmental and Cultural Resource Considerations

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

As with any construction project there is the possibility of impacting the surrounding environment. There will be earth-disturbing work that occurs with the modernization of the Dinsdale Irrigation Diversion and the two floodplain restoration projects. TU works closely with regulators such as the Corps of Engineers, EPA and Utah Division of Water Rights to ensure that best practices are applied for all of our work. We make efforts to complete as much work in the dry as is practicable. For example, all of the Dinsdale construction work will be completed in the dry by constructing a mid-channel coffer dam and drying out each side of the channel to complete the headgate and diversion structure work. All channel reconstruction activities for floodplain restoration are completed in the dry. BDAs are minimally invasive project and no excavation with heavy equipment occurs. Volunteers will use hand tools to move around natural alluvium but these impacts are minimal.

We time all of our restoration work to occur during the late summer and fall to avoid nesting of migratory birds within riparian and upland areas.

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

Potential threatened or endangered species include the Ute Ladies' Tress, Southwest Willow Flycatcher, and the Western Yellow Billed Cuckoo. All of these restoration sites are either degraded or highly disturbed. However, we will complete surveys for T&E Species as necessary. Our primary actions to avoid any potential impacts to the Birds listed above are to complete restoration outside of the nesting window – generally from August through February.

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

We believe all waters associated with these projects fall under CWA jurisdictions, and will permit them appropriately. All of the project tasks are intended to improve or restore stream channels or wetlands. The largest potential impacts to the Waters of the United States are the floodplain restoration tasks. Both project are intended to greatly increase the distribution of water across a variety of reconstructed habitat types.

When was the water delivery system constructed?

We are not completely sure, but records suggest that current infrastructure for Dinsdale Irrigation system was constructed in the 1940's-1950's.

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

Yes, we are proposing time to modify and modernized the basic infrastructure of the Dinsdale Water Company. The current system, including the diversion structure, headgate, and conveyance system are highly degraded. As stated above, we believe the delivery system was constructed in the 1940's -1950's but few documentary records remain to help us understand the history. Other than yearly O&M no major upgrades or modifications have been made since the 1950's.

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

No.

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

No archeological sites are known to occur within the project areas.

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

No.

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

No.

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

No.

Board Resolution

TROUT UNLIMITED

Trout Unlimited, Inc. Board of Trustees Resolution
Authorizing Application to Bureau of Reclamation Notice of Funding Opportunity
No. R22AS00026, Environmental Water Resources Projects for FY2022:

"Weber River Ecological Restoration."

Whereas: Trout Unlimited, Inc. ("Trout Unlimited") has prepared an application for funding to use process-based restoration techniques on headwater tributaries of Utah's Weber River to improve water quality, restore floodplain resiliency, and reduce downstream sediment transport into Bureau of Reclamation reservoirs;

The Board of Trustees of Trout Unlimited, upon motion made, seconded, and duly carried, it is hereby **RESOLVED** that:

1. Trout Unlimited is authorized to submit an application to the Bureau of Reclamation for grant assistance for the above-titled project.

2. Trout Unlimited has prepared and reviewed the application, and Chris Wood, President and Chief Executive Officer of Trout Unlimited, or his designee, is authorized to sign the application and enter into a funding agreement, if awarded.

3. Any grant assistance received under this application will be used for costs associated with implementation of the above-titled project. Trout Unlimited is authorized to commit to the provision of in-kind contributions and other resources identified in the funding application, and will work with Reclamation to timely meet all deadlines associated with an award of funding.

4. Trout Unlimited acknowledges that if the Bureau of Reclamation approves grant assistance for the project, the Bureau of Reclamation will pay Trout Unlimited only on a reimbursement basis. Trout Unlimited understands reimbursement basis means that Trout Unlimited will only request payment from the Bureau of Reclamation after Trout Unlimited incurs eligible and allowable costs and pays them.

Trout Unlimited
Board of Trustees

Attested by: Patricia Bhigam

Position: Secretary

Date: 12/8/21

Letters of Support

WEBER BASIN WATER CONSERVANCY DISTRICT

2837 EAST HIGHWAY 193 • LAYTON, UTAH • PHONE (801)771-1677 • SLC (801) 359-4494 • FAX (801) 544-0103

Tage I. Flint
General Manager/CEO

December 2, 2021

Paul Burnett, Utah Water & Habitat Program Lead
Trout Unlimited
5279 South 150 East
Ogden, UT 84405

Dear Paul,

Weber Basin Water Conservancy District is pleased to write in support of your grant application being submitted to the Bureau of Reclamation Environmental Water Resources Projects for Weber River Ecological Resiliency Project. We applaud your efforts to implement restoration work that provides broad-based benefits within river basins that contribute water to Bureau of Reclamation projects. We understand that this project will improve watershed health within headwater tributaries, improve fish passage through diversion modification, and restore floodplain processes in the Lower Weber River.

The District recognizes the importance of watershed restoration. This project will provide great benefits to the regional environment, and the District looks forward to continued collaboration and partnerships into the future.

We strongly support your grant application and appreciate the advancements it will make in watershed health and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District.

Sincerely,

Tage I. Flint, PE
General Manager/CEO

TIF/DH/dh

Summit Conservation District
P.O. Box 882
Coalville, Utah 84017

November 29th, 2021

Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

Dear Bureau of Reclamation:

The Summit Conservation District enthusiastically supports the WaterSMART grant proposal facilitated by Utah Trout Unlimited, Sageland Collaborative, and other partners in the Weber River Watershed. As farmers and ranchers, water quality and quantity is critical to our livelihoods and the continuation of family land legacies. Throughout the past several years, we have worked closely with these watershed partners on various water quality projects in the Chalk Creek watershed, outside Coalville, Utah, a critical tributary to the Weber River (which flows into the Great Salt Lake).

In summer 2021, we observed severe drought conditions throughout the watershed, with streams and springs drying up at alarming rates while producers faced many challenges. Severe thunderstorms brought several inches of rainfall in late June and later in July, causing dramatic flash flood events to the Chalk Creek and Hoytsville areas. As referenced in the proposal, the BDAs already in place captured an astounding amount of sediment and kept it from flowing downstream into the South Fork of Chalk Creek and into the Weber and into Echo Reservoir. Consequently, we are excited about future BDA opportunities and locations elsewhere in the watershed, and the willingness of landowners to facilitate this low-tech stream restoration tool in collaborative partnerships.

BDAs help slow down the flow, especially in fast moving water events, and provide a low tech and low cost mechanism to address sedimentation. This is good for rangeland health and irrigation too. Of particular interest are the streams and incised drainages above Rockport Reservoir, which have a direct nexus with a BOR Reservoir! Addressing the incised banks and sediment loading above Rockport with new BDAs would be of great consequence for water quality in an important Reservoir with multiple uses of water resources. Thank you for your consideration of this dynamic WaterSMART grant proposal.

Sincerely,

Colby Pace, Chairman of Summit Conservation District

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
BRIAN C. STEED
Executive Director
Division of Wildlife Resources
MICHAL D. FOWLKS
Division Director

December 7, 2021

Paul Burnett
Trout Unlimited
5279 S 150 E
Ogden, UT 84405

Subject: U.S. Bureau of Reclamation WaterSMART EWRP Proposal

Dear Mr. Burnett:

As the Aquatics Habitat Restoration Biologist in Northern Utah for the Utah Division of Wildlife Resources (UDWR), I am pleased to write in support of Trout Unlimited and their partners. I applaud their efforts to increase the efficiency within the Weber River drainage to conserve valuable water. All water savings in the Weber River drainage are valuable to ensure that we have adequate water for future generations.

The Bonneville Cutthroat Trout and Bluehead Sucker are native fish species found in portions of the Weber River. Bonneville Cutthroat Trout are covered by a conservation agreement the State of Utah has entered into with the U.S. Fish and Wildlife Service and other parties. The population status of these sensitive species warrants an additional conservation effort to diminish the likelihood of future listings under the Endangered Species Act. UDWR's approach to aquatic species conservation and management in the Weber River drainage, in part, focuses on reconnecting and maintaining connectivity of priority habitats by removing unnecessary barriers to fish migration, or by modifying existing barriers to allow upstream movement of these species. Naturally of course, stable and connecting flows between habitats are a fundamental requirement for those conservation actions to be successful. Within that context, most any project that enhances the continuity and maintenance of flows within the Weber River is a step in the right direction, as we work cooperatively to protect and conserve native species.

The Trout Unlimited has been a great partner and has provided open dialogue on this project with UDWR. We are very excited to support TU and its partners as they promote better water quality and quantity, better fish movements within the system, and sediment retention. This project encompasses a large area and the need to work together towards very specific goals as outlined in the grant application with greatly benefit these two native species. Water saved within this project and by making the diversion fish passable will allow

1594 West North Temple, Suite 2110, PO Box 146301, Salt Lake City, UT 84114-6301
telephone (801) 538-4700 • facsimile (801) 538-4709 • TTY (801) 538-7458 • *www.wildlife.utah.gov*

UTAH DNR WILDLIFE RESOURCES

for Bluehead Sucker and Bonneville Cutthroat Trout to move safely and efficiently upstream and downstream as needed. We applaud you efforts in making these changes.

Sincerely

Clint Brunson
Aquatics Habitat Restoration Biologist
Utah Division of Wildlife Resources

Dinsdale Water Company, Inc.
531 17th Street
Ogden, UT 84404
801.540.6107

November 29, 2021

Paul Burnett
Utah Water and Habitat Program Director
Trout Unlimited
5279 S 150 East
Ogden, UT 84405

Subject: Support of funding for Dinsdale Diversion Dam Replacement

Dear Paul:

Dinsdale Water Company, Inc. (DWCI) has reviewed the design work prepared by Interscape LLC, which was made possible by the funding procured by your work with Trout Unlimited. The design work will replace the past life and failing weir and inlet for DWCI's point of diversion. The design work exceeds our expectations in scope and provides an elegant solution to address many current issues.

After reviewing the designs for the diversion dam replacement, the following outcomes will be highly significant to both DWCI, the Ogden River and the Department of Natural Resources Watershed Restoration Initiative:

1. The design accommodates fish passage with a series of new weirs and moving the point of diversion to allow for better flow in the river with lower drops than leaving the point of diversion in situ.
2. The proposed diversion dam replacement is expected to improve fish habitat in support of the ecosystem value to improve watershed health and biological diversity.
3. DWCI's new administration has determined only strategic partnerships will help us meet our goals. This includes modernizing and allowing for habitat to be reconnected allowing passage and protection for the fish both in stream and at the point of diversion.
4. DWCI has held a water right with a priority date of 1855 and holds an interest in our ability to divert water, which will be highly compromised without the needed diversion dam replacement.

DWCI fully supports efforts to procure funding and collaborative partnerships to move this project forward in conjunction with other restoration projects and resolve impediments to the habitat while addressing DWCI's ability to continue diverting water under the Company's water right.

Sincerely,

Stacey Kunz
Managing Director
Dinsdale Water Company, Inc.

Cc: Interscape

State of Utah
SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

December 8, 2021

Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

Dear Bureau of Reclamation,

The Utah Department of Environmental Quality's Division of Water Quality (DWQ) strongly supports the WaterSMART Ecological Resiliency Project grant proposal submitted by Trout Unlimited (TU) to improve drought resiliency and riparian health through low-tech restoration techniques, increased connectivity through improvements to irrigation diversions, and the restoration of floodplain functionality on portions of the Weber River.

DWQ protects, maintains, and enhances the quality of Utah's surface waters and groundwater to protect beneficial uses and public health. The Division oversees the classification, protection, and remediation of the waters of the state (Clean Water Act (CWA)§304 and Utah Code §19-5-110). Responsibilities include development of Total Maximum Daily Load plans (TMDLs) to restore impaired waters to their designated beneficial uses, along with the facilitation and implementation of nonpoint source projects that restore these waters to their beneficial uses.

The Weber River Basin contains a number of reaches where water quality is impaired for its beneficial uses due to excess sedimentation and nutrient loading from nonpoint sources. Recent drought conditions have only exacerbated the situation, with low or no flows concentrating pollutants and further degrading these waters. DWQ has prepared three TMDL plans for impairments from sediment, dissolved oxygen, and total phosphorus in the areas covered under the project proposal, and we have numerous other waterways in the basin on the CWA 303(d) list of impaired waters. Two Bureau of Reclamation dams in the Basin impound reservoirs with TMDLs in place. In addition, DWQ has designated Chalk Creek as a priority watershed for state and federal nonpoint source funding.

DWQ has worked closely with the partners on projects in the proposal area and been extremely pleased with both the collaboration and water quality outcomes. The Beaver Dam Analog (BDA) projects in Fish Creek have reduced sediment loading to Echo Reservoir, improved riparian areas, reduced channel degradation, and improved floodplain connectivity. We are excited about the

potential opportunity to install BDAs above Rockport Reservoir to reduce erosion and sediment loading in this area. The project proposal will provide the watershed and its water users with important water quality and quantity benefits that are critical in a time of climate change and drought.

We wholeheartedly endorse this proposal and look forward to continuing our work with TU and our other partners in the Weber River Basin to improve the ecological health of the watershed.

Sincerely,

Jodi Gardberg
Watershed Protection Section Manager
Utah Division of Water Quality

SAGELAND
COLLABORATIVE
SCIENCE IN SERVICE OF WILDLIFE AND WILDLANDS

Partner: Sageland Collaborative
824 S 400 W Suite B119
Salt Lake City, UT, 84101

December 7, 2021

Project Lead: Paul Burnett, Trout Unlimited
Address: 5279 South 140 West Ogden, Utah 84405

RE: WaterSMART: **Notice of Funding Opportunity No. R22AS00026**

Dear Project Leader:

I am writing to document Sageland Collaborative's support of Trout Unlimited's proposal to the Bureau of Reclamation's WaterSMART *"Environmental Water Resources Projects for Fiscal Year 2022"* Program, titled "Weber River Ecological Resiliency Project". Sageland Collaborative is familiar with the proposal, understands general expectations, and supports the efforts to address the natural resource concerns identified in therein.

If this WaterSMART proposal is selected for funding, Sageland Collaborative commits to providing partner contribution to this project over 3 years. Specifically, we will work closely with Trout Unlimited to support site assessment, design, permitting, volunteer coordination, and implementation of beaver dam analogs (BDA) in the Weber River basin. Sageland Collaborative's efforts on this project are to be commensurate with the tasks outlined in the project budget. Sageland Collaborative's portion of the project budget totals $90,103.07, including $81,911.88 in Direct Costs and $8,191.19 in Indirect Costs. Indirect Costs are equivalent to 10% of direct costs for Sageland Collaborative's portion of the project.

Sincerely,

Rose M Smith
Stream Ecologist

Joshua Wood
Executive Director
Authorized Signatory for Sageland Collaborative

State of Utah

SPENCER J. COX
Governor

DEIDRE M. HENDERSON
Lieutenant Governor

Department of Agriculture and Food

CRAIG W. BUTTARS
Commissioner

KELLY PEHRSON
Deputy Commissioner

JAMES D. BOWCUTT
Director, Division of Conservation

November 29th, 2021

Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

Dear Bureau of Reclamation:

As a Watershed Coordinator with the Utah Department of Agriculture and Food (UDAF), I work closely with farmers and ranchers in the Weber River Watershed, as well as collaborative watershed non-profit partners like Trout Unlimited and Sageland Collaborative. I enthusiastically support the WaterSMART grant proposal submitted to BOR by Utah Trout Unlimited, seeking additional funding for Beaver Dam Analogs (BDAs) in the headwaters of the Weber River as well as water efficiency improvements downstream in the main stem of the Weber River. These tangible projects and collaborative partnerships have the potential to facilitate many positive outcomes for water quality and bring many diverse water users together.

During summer 2021's dire drought conditions in the Chalk Creek area of the Weber Watershed, we observed the success of current BDA projects in slowing down the flows of water and facilitating riparian resiliency. After fast moving thunderstorms dropped several inches of rain, the areas where BDAs were established held back significant amounts of sediment, thus keeping it from traveling downstream. The Summit Conservation District is very enthusiastic about future BDA projects, and gave me contact information for several additional landowners with incised streams and drainages appropriate for BDAs. Such projects are described in the proposal narrative.

In fact, the drainages above Rockport Reservoir have a direct nexus with BOR's waters. The potential to fix erosion and sedimentation in the incised areas above Rockport with BDAs is significant. Using such low tech, process-based tools in the streams and drainages with willing landowners will make a large difference in improving headwaters water quality. I am excited about this opportunity and the other projects in the WaterSMART grant proposal. Thank you for the consideration.

Sincerely,

Melissa E. Early

Melissa Early
Weber River Watershed Coordinator

EXTENSION
UtahStateUniversity

SUMMIT COUNTY OFFICE

December 7, 2021

Attn: Paul Burnett
Utah Water and Habitat Program Lead
Trout Unlimited
5279 South 150 East
Ogden, UT 84405

Paul,

As the Utah State University Extension Agriculture, Small Farms, and Natural Resources faculty for Summit County, Utah, I am pleased to be writing a letter for Trout Unlimited to support your proposal to the WaterSMART Environmental Water Resources Projects. The Weber River Ecological Resiliency Project will improve the ecological resiliency of key values within the Weber River Basin in northern Utah.

Utah State University Extension strongly supports this grant application, and the proposal reflects a collaborative group developing these projects to improve the broader watershed.

Thank you,

Elizabeth Cohen
Extension Assistant Professor
Agriculture, Small Farms, & Natural Resources
Utah State University