



# R & E Grant Application 07-09 Biennium

Project #:  
07-018

## ***Boulder Creek and Middle Fork Restoration Project***

### ***Project Information***

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**R&E Project Request:** \$133,760.00  
**Match Funding:** \$485,269.00  
**Total Project:** \$619,029.00  
**Start Date:** 7/1/2007  
**End Date:** 4/30/2009  
**Project Email:** jfields@tnc.org  
**Project Biennium:** 07-09 Biennium  
**Organization:** The Nature Conservancy (Tax ID #: 53-0242652)

### ***Fiscal Officer***

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### ***Applicant Information***

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**Name:** Jeff Fields  
**Email:** jfields@tnc.org

### ***Past Recommended or Completed Projects***

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This applicant has no previous projects that match criteria.

### ***Project Summary***

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This project is NOT part of ODFW's 25 Year Angling Plan.

**Activity Type:** Habitat  
**Summary:** Past land use in the Middle Fork John Day River watershed has impaired aquatic and riparian habitat and impeded steelhead, Chinook salmon, and bull trout spawning and rearing. The Camp Creek 5th Field HUC has been identified by ODFW as the highest priority for restoration in the Middle Fork watershed. We propose to restore stream channel morphology and fish habitat and enhance riparian communities on approximately 2.5 stream miles located within the Camp Creek HUC. We request ODFW funds to install large wood structures, remove large rock jetties, create pools and, restore historic stream channels.

**Objectives:** Here we propose to address factors limiting aquatic and riparian

ecosystems by restoring habitat on approximately 2.5 stream miles of the Middle Fork John Day river and Big Boulder creek, one of the Middle Fork's major tributaries. Restoration will occur on two adjoining private properties (the Dunstan Preserve, owned by The Nature Conservancy since 1990, and Boulder Creek Ranch, owned by Les Zaitz and Scotta Callister since 2004).

Objectives for the 2.5 miles of watercourses in the project area include:

- Reducing summer stream and river temperatures, and moderating winter low temperatures.
- Improving channel sinuosity and decreasing stream gradient.
- Increasing riparian cover to benefit wildlife, particularly songbirds.
- Increasing retention of steelhead and chinook spawning gravels.
- Increasing instream habitat complexity to benefit juvenile fish (smaller scour pools, debris jams, eddies, etc.)
- Reducing channel width to depth ratios and increasing pool frequency.
- Create cold water adult chinook salmon summer holding pools.

Specific restoration elements that will be completed in order to meet these objectives include:

- Restoring flow to three historic channel segments of Big Boulder Creek.
- Re-establishing native woody vegetation adjacent to the channel with re-established flows in Big Boulder Creek and along selected reaches of the Middle Fork John Day River.
- Installing 57 engineered log jams along 2.5 stream miles of Big Boulder Creek and Middle Fork John Day River to direct channel forming flows, encourage meander formation, create thalweg scour, and capture stream debris and sediments.
- Removing 10 rock jetties that are keyed into the right bank of the Middle Fork John Day River (each approximately 25 feet into the bank)
- Bio-engineering to stabilize one actively eroding bank of Big Boulder Creek that jeopardizes a constructed wildlife pond on Boulder Creek Ranch.
- Creating off-channel rearing habitat in one location on the Middle Fork John Day River.
- Pre-excavating and installing deflection structures over four salmon holding pools in the Middle Fork John Day River.

**Fishery Benefits:**

The reaches of the Middle Fork John Day River that flow through the Dunstan Preserve provide spawning habitat for spring Chinook, rearing habitat for juvenile Chinook, steelhead and resident redband trout, and migratory habitat for federally listed bull trout. The lower reaches of Big Boulder Creek flows through the Boulder Creek Ranch and Dunstan Preserve to its confluence with the Middle Fork, and provides spawning and rearing habitat for listed summer steelhead, rearing habitat for resident redband trout, rearing habitat for juvenile spring Chinook, and in the recent past supported a bull trout population.

Expected fishery benefits from implementing this project include:

Increased quality and quantity of juvenile salmonid summer and winter rearing habitat.

Increased quality and quantity of pool habitat for adult spring chinook holding and migration.

Decreased water temperatures, thus improved migratory habitat for bull trout.

Increased quantity of chinook salmon spawning gravel accumulations in the MFJD river, and of steelhead spawning gravels in Big Boulder creek.

**Watershed Benefits:** The DEQ Basin Coordinator speculates that, based on modeling in similar basins, solar heat loading in the project area could be reduced by roughly 30-40 percent due to channel narrowing and/or increased complexity and sinuosity. Temperature may be further reduced by increased hyporheic exchange rates (a draft study in the upper Umatilla shows a doubling of hyporheic exchange rates over approximately 25 miles due to estimated channel/valley geomorphic and hydrologic recovery) (Don Butcher, personal communication 2006). Looking at a larger scale, restoration of these areas should also lead to an increased supply of cooler water to downstream users.

Other expected watershed benefits from implementing this project include:  
Increased channel length, thus increased sinuosity and decreased gradient.

Water table recovery in the floodplain (supporting ecosystem recovery, including native plants, beaver, Columbia spotted frog, and riparian obligate bird species).

Increased ability of river to flood overbank and develop meanders and secondary channels.

Narrowing and deepening of restored channels and increased riparian shading.

Reduced erosion and sediment transport of creek and river banks.

Increased floodplain activity, creating more favorable growing sites for cottonwood galleries.

Reduced active channel degradation from peak flows.

Accelerated riparian plant community recovery, including ponderosa pine glades.

Improved aquatic food web.

**Current Situation:**

The John Day River is the second longest un-dammed river in the contiguous United States and widely recognized for the importance of its wild salmon, trout, and steelhead populations. The Northwest Power and Conservation Council, The Nature Conservancy, Confederated Tribes of the Warm Springs Reservation, Forest Service, Oregon Department of Fish and Wildlife, Oregon Trout, and others have identified the Middle Fork as a high priority for restoration. Within the Middle Fork John Day Basin, the Camp Creek 5th Field HUC (which contains the project site) has been identified as the highest priority for restoration in current regional plans (John Day Subbasin Plan 2005, Malheur National Forest Aquatic Restoration Strategy 2005).

Substantial investments to improve habitat conditions on the Middle Fork have been made over the past 20 years by many organizations with an interest in aquatic conservation. Actions include protection and enhancement of riparian floodplain habitat, removing passage barriers to allow access to aquatic habitat, and restoring stream flows through instream water leasing.

Despite these actions, the John Day Subbasin Plan (2005) identified several factors that limit salmon and steelhead production in the Camp Creek subwatershed, including a lack of habitat complexity and quantity, elevated water temperatures and excessive fine sediments. These conditions follow in large part from historic land management practices which simplified and channelized streams and reduced connectivity between streams and their floodplains.

The Oregon Department of Fish and Wildlife (ODFW) has monitored the status of MFJD spring chinook and summer steelhead for over 40 years. For the period 1959 to 2000 spring chinook data show a flat to slightly upward trend in escapement. For the same period, summer steelhead escapement data show a slow, but steady, downward trend. While escapement numbers for chinook and steelhead have been relatively higher in the period 2001-2003, the long term trends remain the same. ODFW studies conducted in the 1980's concluded that smolt production was directly related to on-site habitat quality problems, rather than insufficient escapement.

During this same time period, bull trout populations have remained extremely low and geographically isolated. The NWPPC's John Day Basin plan states that of all John Day basin bull trout, the Middle Fork populations "are the most vulnerable and at the highest risk of extinction because the three remaining small populations are widely separated by unsuitable habitat". The USFWS concurs in a 2002 report, stating that the "MFJD portion of the core area of the recovery area is at increased risk due to lack of connectivity for migratory life forms" of the species. A review of bull trout

status in Oregon (Buchanan et. al. 1997) reported that the MFJD population is “extremely vulnerable” because of a variety of factors, including high summer water temperatures, loss of riparian habitat, and loss of instream structure. The same report goes on to say that the species is “probably extinct in most of the upper MFJD, and at high risk of extinction in the three remaining creeks (Big, Granite Boulder, and Clear)” where it is found.

Current data from the Middle Fork John Day River in the project area confirm this assessment: average key wood quantities are fewer than 1 piece per 3000 feet of river; average shading of the stream is only 30 percent; riffles comprise 85 percent of the stream area, with fewer than 1 deep pool (> 3 feet deep) per mile of river; and 7 day average maximum water temperatures of 78 degrees F. (data from ODFW, 2004 and The Nature Conservancy, 2003). A recent Forest Service assessment of Big Boulder Creek reports that “High sediment (embeddedness), low quantities of large woody debris and low pool frequency reduce fish habitat complexity and quality.” (Middle Fork John Day Range Planning Project EIS Appendix F-22, 2005)

**Alternatives:**

The following design alternatives were considered in the project design process, and dropped from further consideration for the reasons stated:

- Complete flow change over to Big Boulder Creek historic channels in Area 1: Dropped because of concerns that creating a dam that could put all the creek into the historic channel would stress the dam, and also increase the possibility of the historic channel avulsing.
- Maintain all flow of Big Boulder Creek in current active channel in Area 1, and focus on habitat enhancement (logjams) there: Dropped because analysis showed this alternative would not decrease gradients, increase sinuosity, or allow for vigorous riparian growth along both banks of the channel. Habitat gains from logjams would be limited due to higher gradient channel at upper end of Big Boulder Creek.
- Historic side channel opening to enhance floodplain connectivity on the Middle Fork John Day in Area 2: Dropped because of concerns for the county road ROW, as well as minimal benefits to resources.
- Historic main channel opening on the Middle Fork John Day to increase water table elevations, enhance floodplain connectivity, and increase total channel length in Area 2: Dropped because of need to protect county road ROW, as well as minimal gains in channel length and morphology and water table elevations, and considerable hard pointing needed in the stream bed to ensure headcutting would not be an issue where the channels re-connected.
- Rock-filled infiltration gallery, to cool water going to off-channel habitat alcove in Area 2: Dropped because considered too disruptive to local soils and plants, and high maintenance over time.
- Channel spanning cross-vane structures to provide grade control and pool habitat on the Middle Fork John Day in Area 2: Dropped because of permanence and artificiality of the structure, as well as logistical need to completely dewater the active channel during construction.
- Half-channel spanning J-hooks on the Middle Fork John Day in Area 2 to diminish bank erosion and provide pool habitat: Dropped because alternative methods using wood and rock (more native configurations) were deemed to be as effective, and less difficult to build on site.
- Historic main channel opening on the Middle Fork John Day to increase channel sinuosity and overall length in Area 3: Dropped because analysis showed that in order for the channel to be functional, significant grade control structure in the river would be necessary, and gains in channel length and morphology were considered minimal.

**Designer:** MWH Americas, based in Boise, Idaho has been contracted by the Bureau of Reclamation to assess field conditions and develop designs for the project.

**Methods:** MWH Americas has assigned a senior environmental scientist (Mr. Brian Liming) and a senior engineer to this project (Mr. Greg Clark). MWH staff work closely with Bureau of Reclamation staff with experience in aquatic restoration, ODFW fishery biologists, Nature Conservancy staff, and the owners of Boulder Creek Ranch to create project elements that meet the habitat goals for this project. Project designs have considered natural events including variation in watershed hydrology and peak flows, hydrodynamic forces including ice loading, sediment supply and transport capacity of the river, and the locations and nature of existing human-built infrastructure.

Designs are currently at 75+ percent complete. The landowners have hosted two field site visit tours and are actively soliciting review and comment from restoration engineers and geomorphologists with permitting agencies (NOAA, USFWS, ACOE, and DSL) to refine designs and ensure that all final designs are appropriate for their respective locations, and will meet permitting requirements. Final deliverables from MWH Americas work will include reports detailing findings on the above mentioned issues, as well as construction ready design sheets for all restoration project elements.

MWH staff work in partnership with Bureau of Reclamation staff with experience in aquatic restoration, ODFW fishery biologists, Nature Conservancy staff ecologist and hydrologist, and the owners of Boulder Creek Ranch to create project features that meet the habitat goals for this project. Project designs have considered natural events including variation in watershed hydrology and peak flows, hydrodynamic forces including ice loading, sediment supply and transport capacity of the river, and the locations and nature of existing human-built infrastructure. The closest downstream infrastructure is an irrigation headgate located 1.5 miles downstream of the closest part of the project. Montgomery, Watson and Harza's analysis concludes that improvements made to the Middle Fork John Day River on the Dunstan Homestead Preserve and Big Boulder Creek on the Boulder Creek Ranch property are not expected to have significant impacts on the project stream reaches or any downstream property and/or structures. Restoration actions proposed in this project are consistent with the recommendations of the John Day Subbasin Plan (Northwest Power and Conservation Council, 2005) and the Draft Steelhead Recovery Plan (NOAA Fisheries, in draft).

One of our goals is to implement the project in a way that helps in future restoration actions on The Nature Conservancy's Dunstan Preserve, as



well as elsewhere in the upper Middle Fork John Day watershed. We will be piloting the implementation of a variety of restoration elements in order to build partnerships, refine designs, permitting processes, construction techniques, and construction costs for these restoration elements. The Upper Middle Fork Working Group focuses coordination of restoration projects among landowners and agencies interested in restoration projects in the Middle Fork John Day. Members of this group (including private, tribal and federal lands) manage another 13 miles of river or stream in the Middle Fork (including another 3 river miles on the Dunstan Preserve) where similar restoration strategies may be appropriate.

<b>Inspector:</b>	MWH Americas -- contract inspection services. John Day Basin ODFW Assistant Fisheries biologist -- general oversight. Permitting agencies may choose to inspect the project at their discretion.
<b>Funding Elements:</b>	Requested funds will be used to pay for the materials and construction of habitat restoration features including re-watering of historic stream channels, large woody debris logjams, and salmon and trout holding pools. Match funds will be used to pay for the materials and construction of habitat restoration features including re-watering of historic stream channels, large woody debris logjams, and salmon and trout holding pools. No staff time will be paid for with R and E funds.
<b>Partners:</b>	<p>Yes</p> <p>Boulder Creek Ranch -- Property owner. Participating in design review, providing in-kind project resources, and assisting in future monitoring, maintenance and public education efforts.</p> <p>U.S. Bureau of Reclamation -- Lead agency for project design and permitting, managing contract with MWH Americas of Boise, Idaho, for conceptual and construction designs, site evaluations, permit applications.</p> <p>Oregon Department of Fish and Wildlife -- Participating in design review, permit and funding applications, and will serve as construction manager for Boulder Creek Ranch portion of project. Agency also will participate in monitoring and public education.</p> <p>Confederated Tribes of the Warm Springs -- Through its John Day Basin Office, providing direct funding (originating with Bonneville Power Administration), and assisting with labor and materials to provide riparian plantings.</p> <p>Oregon Department of Environmental Quality -- Assessing the long term thermal benefits of the project.</p> <p>U.S. Fish and Wildlife Service -- Providing for cultural resources permitting through its Partners in Fish and Wildlife Program.</p> <p>North Fork John Day Watershed Council -- Key point of contact for many of the outreach and public education opportunities for the project as well as a core member of the Upper Middle Fork Working Group.</p> <p>NOAA Fisheries (Integrated Status and Effectiveness Monitoring Project) -- Lead entity for developing basin wide effectiveness monitoring protocols. We propose a partnership between the landowners and the NOAA Fisheries Integrated Status and Effectiveness Monitoring Project (ISEMP) to establish monitoring protocols appropriate to aquatic restoration across the Columbia basin. Relatively large scale restoration projects such as this project proposed by The Nature Conservancy and Boulder Creek Ranch provide an unusual opportunity to evaluate physical and biological changes associated with conservation and recovery activities.</p>

**Existing Plan:**

Yes

The Middle Fork John Day River, and specifically the Camp Creek 5th Field HUC, have been identified in several planning efforts as high and very high priorities for restoration (John Day Subbasin Plan, 2005; OWEB Prioritization Process, 2003; Malheur National Forest Aquatic Restoration Strategy, 2005; and Draft Mid-Columbia Steelhead Recovery Plan, 2006). The recent formation of the Upper Middle Fork Working Group (UMFWG) further focuses coordination of restoration projects among landowners and the many agencies who are implementing restoration projects. This proposed project has been endorsed by the UMFWG members.

To assess conditions and identify restoration needs The Nature Conservancy completed an assessment of riparian and aquatic habitat opportunities and limiting factors on Conservancy property. This work identified historic river channels that could be reconnected, locations where adult spring Chinook holding pools could be constructed, specific locations where existing rock jetties and riprap should be removed to increase the opportunity for lateral channel migration (a more sinuous channel), and other locations where large wood placement would add to channel complexity and create key habitat. The Bureau of Reclamation contracted Montgomery, Watson and Harza, a private consulting firm to build on the Conservancy's assessment by assessing the technical feasibility of these restoration projects and completing site-specific designs for the Middle Fork John Day River and Big Boulder Creek. Assessment work by ODFW and Montgomery, Watson and Harza identified three historic channels on Big Boulder Creek that could be reconnected with the existing channel and several locations where large wood placements would increase potential for scouring pools and add to channel complexity.

Lastly, management plans have been developed for both properties that prevent grazing impacts on riparian and aquatic habitat, use of water rights, weed control, fire and forest management, and passive and active restoration of aquatic and riparian habitat.

**Affected Contacted:** Yes

**Affected Supportive:** Yes

**Affected Comments:** Boulder Creek Ranch, owned by Les Zaitz and Scotta Callister is part of the project site. They initiated discussions with ODFW nearly 3 years ago to investigate the possibilities of restoring Big Boulder Creek. The US Forest Service manages most of the lands surrounding Boulder Creek Ranch and the Nature Conservancy's Dunstan Preserve. They and other organizations and individual landowners active in the watershed participate in the Upper Middle Fork Working Group, and have been informed of the project through this group. The Working Group has reviewed and endorsed this project.

### ***Project Schedule/Participants/Funding***

This project has no Schedule/Participants/Funding.

### **Affected Species:**

Bull Trout  
Chinook Salmon  
Mountain Whitefish  
Pacific Lamprey  
Rainbow Trout  
Steelhead

### ***Project Permits***

Name	Issued By	Secured?	Date Secured	Date Expected
Fill and Removal	ODSL	No	1/1/0001	5/1/2007
404 Fill and Removal	Army Corps of Eng.	No	1/1/0001	5/1/2007
Or Wild and Scenic Waterway	Or State Parks	No	1/1/0001	4/1/2007
Cultural resource clearance	SHPO	No	1/1/0001	5/1/2007

### ***Project Monitoring***

Organization	Address	Activity	Frequency
ODFW	John Day Basin Office Canyon City, OR 97820	Chinook salmon redd counts	Annually, in September
The Nature Conservancy	821 14th Av SE Portland, OR 97214	Sinuosity analysis via air photo interpretation	year 5 and year 15 post implementation, compare to 2005 baseline
The Nature Conservancy	821 14th Ave. SE Portland, OR 97214	Riparian Vegetation Transects and Photopoints	August to early September, year 1, 5, and 10 after implementation
The Nature Conservancy	821 14th Av SE Portland, OR 97214	Water Temperature in Middle Fork John Day and Big Boulder Creek	June thru October, annually, at previously established locations
The Nature Conservancy	821 14th Av SE Portland, OR 97214	Fish Use Snorkel Survey (Middle Fork John Day)	Late July to Early August, annually for 5 years

### ***Project Maintenance***

Organization	Address	Activity	Frequency
Boulder Creek Ranch, Les Zaitz	PO Box 837 John Day, OR 97845	Landowner will work with partners to monitor and maintain wood structures, maintain and continue streamside and berm plantings, monitor low head sills.	Annually for 10 years.

The Nature Conservancy	821 14th Ave SE Portland, OR 97214	TNC will inspect all facets of the project on land belonging to The Nature Conservancy. Maintenance will include enhancement plantings of grass/forbs, shrubs, and trees, and control of any invasive plants that get established during construction.	annually for 5 years or as long as necessary
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## Project Match Funding

Funding Source	Cash	In-Kind	Other	Description	Total	Secured?	Conditions?	Comments
R&E Request	\$133,760.00	\$0.00	\$0.00		\$133,760.00	No	No	
Zaitz Property- Boulder Creek Ranch	\$0.00	\$6,750.00	\$0.00	provide monitoring, spoils disposal, and provide logs	\$6,750.00	Yes	No	
ODFW- John Day office	\$0.00	\$2,550.00	\$0.00	project management	\$2,550.00	Yes	No	
Confederated Tribes of the Warm Springs	\$72,000.00	\$0.00	\$0.00	Contract costs, supplies and materials	\$72,000.00	Yes	No	
The Nature Conservancy	\$12,476.00	\$0.00	\$0.00	Project oversight, signage, equipment costs	\$12,476.00	Yes	No	
TNC/Pacific Gas and Electric Salmon Habitat Fund	\$20,000.00	\$0.00	\$0.00	Contract fees, materials, implementation costs	\$20,000.00	No	No	pending signed agreement
US Fish and Wildlife- Partners program	\$17,600.00	\$0.00	\$0.00	implementation costs, contract fees, materials	\$17,600.00	No	No	pending- in process
Bureau of Reclamation	\$40,000.00	\$0.00	\$0.00	Final design and permitting costs	\$40,000.00	Yes	No	
Oregon Watershed Enhancement Board	\$195,168.00	\$0.00	\$0.00	contracting and materials costs of implementation	\$195,168.00	No	No	pending- recommended for funding
DEQ Section 319 grant program	\$118,725.00	\$0.00	\$0.00	contract and materials implementation costs	\$118,725.00	No	No	pending- recommended for funding
				Total Match Funding:	\$619,029.00			

## Project Budget

Item	Item Type	Units	Unit Cost	R&E Funds	Match Funds	Total
post construction year 1 and 2 monitoring	Administration	2	\$500.00	\$0.00	\$1,000.00	\$1,000.00
project fiscal administration	Administration	1	\$69,182.00	\$12,160.00	\$57,022.00	\$69,182.00
TNC ecologist status reporting	Administration	2	\$470.00	\$0.00	\$940.00	\$940.00
access road improvement- area 1	Contracted Services	1	\$2,000.00	\$0.00	\$2,000.00	\$2,000.00
bank protection installation- area 1	Contracted Services	1	\$1,000.00	\$0.00	\$1,000.00	\$1,000.00
berm construction- area 1	Contracted Services	1000	\$25.00	\$5,000.00	\$20,000.00	\$25,000.00
channel excavation-area 1	Contracted Services	1000	\$20.00	\$5,000.00	\$15,000.00	\$20,000.00
coffer dam construction- area 1	Contracted Services	2	\$2,000.00	\$0.00	\$4,000.00	\$4,000.00
equipment mobilization costs- area 1	Contracted Services	1	\$7,000.00	\$0.00	\$7,000.00	\$7,000.00
equipment mobilization- areas 2 & 3	Contracted Services	1	\$5,000.00	\$0.00	\$5,000.00	\$5,000.00
floodplain access road construction- area 2&3	Contracted Services	3	\$3,000.00	\$0.00	\$9,000.00	\$9,000.00
grass reseeding- areas 2&3	Contracted Services	20	\$18.00	\$0.00	\$360.00	\$360.00
grass seeding labor- area 1	Contracted Services	15	\$18.00	\$270.00	\$0.00	\$270.00
hardwood seedling planting-area 1	Contracted Services	40	\$18.00	\$0.00	\$720.00	\$720.00
holding pool dewatering- areas 2&3	Contracted Services	4	\$5,000.00	\$0.00	\$20,000.00	\$20,000.00
holding pool excavation- areas 2&3	Contracted Services	300	\$20.00	\$6,000.00	\$0.00	\$6,000.00
holding pool pile driving- areas 2&3	Contracted Services	32	\$600.00	\$0.00	\$19,200.00	\$19,200.00
log jam assembly- area 1	Contracted Services	28	\$150.00	\$4,200.00	\$0.00	\$4,200.00
log jam assembly- areas 2&3	Contracted Services	29	\$300.00	\$4,000.00	\$4,700.00	\$8,700.00
log jam dewatering- area 1	Contracted Services	14	\$2,500.00	\$26,000.00	\$9,000.00	\$35,000.00
log jam dewatering- area 2&3	Contracted Services	29	\$3,000.00	\$0.00	\$87,000.00	\$87,000.00
log jam excavation- area 1	Contracted Services	28	\$300.00	\$5,600.00	\$2,800.00	\$8,400.00
log jam excavation- area 2&3	Contracted Services	29	\$500.00	\$0.00	\$14,500.00	\$14,500.00
low head sill construction- area 1	Contracted Services	2	\$3,500.00	\$7,000.00	\$0.00	\$7,000.00
off-channel rearing habitat excavation - area 2	Contracted Services	50	\$20.00	\$1,000.00	\$0.00	\$1,000.00
riparian revegetation- area 2&3	Contracted Services	40	\$18.00	\$0.00	\$720.00	\$720.00
rock jetty removal- area 2&3	Contracted Services	220	\$20.00	\$0.00	\$4,400.00	\$4,400.00

rock material stockpiling- areas 2&3	Contracted Services	1	\$3,000.00	\$3,000.00	\$0.00	\$3,000.00
spoils disposal and shaping- area 1	Contracted Services	1	\$3,000.00	\$0.00	\$3,000.00	\$3,000.00
spoils placing and shaping - areas 2 & 3	Contracted Services	1	\$3,000.00	\$3,000.00	\$0.00	\$3,000.00
sump pump operation- area 1	Contracted Services	2	\$2,500.00	\$0.00	\$5,000.00	\$5,000.00
temporary stream crossings - areas 2 and 3	Contracted Services	3	\$5,000.00	\$12,730.00	\$2,270.00	\$15,000.00
temporary wetland crossing- areas 2&3	Contracted Services	4	\$5,000.00	\$8,100.00	\$11,900.00	\$20,000.00
tree planting auger	Equipment	1	\$500.00	\$0.00	\$500.00	\$500.00
Boulder Creek ranch Monitoring programs	Personnel	1	\$750.00	\$0.00	\$750.00	\$750.00
ODFW Assistant District Biologist	Personnel	85	\$30.00	\$0.00	\$2,550.00	\$2,550.00
TNC Ecologist - planning and oversight	Personnel	240	\$31.35	\$0.00	\$7,524.00	\$7,524.00
TNC Land Steward- project management	Personnel	40	\$15.70	\$0.00	\$628.00	\$628.00
BOR final design and permitting	Production Costs	1	\$40,000.00	\$0.00	\$40,000.00	\$40,000.00
funding partner sign	Production Costs	1	\$500.00	\$0.00	\$500.00	\$500.00
project interpretive signage	Production Costs	2	\$500.00	\$0.00	\$1,000.00	\$1,000.00
bank protection geotech fabric - area 1	Supplies/Materials /Services	200	\$3.00	\$0.00	\$600.00	\$600.00
bank protection log pilings - area 1	Supplies/Materials /Services	2	\$300.00	\$0.00	\$600.00	\$600.00
bank protection rock - area 1	Supplies/Materials /Services	200	\$40.00	\$0.00	\$8,000.00	\$8,000.00
bank protection rootwads - area 1	Supplies/Materials /Services	3	\$100.00	\$0.00	\$300.00	\$300.00
holding pool boulders - areas 2 & 3	Supplies/Materials /Services	60	\$50.00	\$0.00	\$3,000.00	\$3,000.00
holding pool cable - areas 2 & 3	Supplies/Materials /Services	2000	\$6.00	\$0.00	\$12,000.00	\$12,000.00
holding pool cable clamps - areas 2 & 3	Supplies/Materials /Services	300	\$3.00	\$0.00	\$900.00	\$900.00
holding pool log with root - areas 2 & 3	Supplies/Materials /Services	8	\$500.00	\$0.00	\$4,000.00	\$4,000.00
holding pool logs - area 2 & 3	Supplies/Materials /Services	16	\$300.00	\$0.00	\$4,800.00	\$4,800.00
holding pool pilings - areas 2 and 3	Supplies/Materials /Services	32	\$300.00	\$0.00	\$9,600.00	\$9,600.00
logjam ballast rock - area 1	Supplies/Materials /Services	57	\$35.00	\$0.00	\$1,995.00	\$1,995.00
logjam ballast rock - areas 2 & 3	Supplies/Materials /Services	87	\$40.00	\$0.00	\$3,480.00	\$3,480.00
logjam cable - area1	Supplies/Materials /Services	1	\$5,600.00	\$0.00	\$5,600.00	\$5,600.00
logjam cable - areas 2 and 3	Supplies/Materials /Services	1200	\$6.00	\$0.00	\$7,200.00	\$7,200.00
logjam cable clamps - area 1	Supplies/Materials /Services	720	\$3.00	\$0.00	\$2,160.00	\$2,160.00
logjam cable clamps - areas 2 and 3	Supplies/Materials /Services	1100	\$3.00	\$0.00	\$3,300.00	\$3,300.00



logjam logs - area 1	Supplies/Materials /Services	84	\$250.00	\$6,000.00	\$15,000.00	\$21,000.00
logjam logs - areas 2 & 3	Supplies/Materials /Services	174	\$350.00	\$23,700.00	\$37,200.00	\$60,900.00
lowhead sill sheet piling - area 1	Supplies/Materials /Services	160	\$20.00	\$0.00	\$3,200.00	\$3,200.00
native grass seed - area 1	Supplies/Materials /Services	40	\$15.00	\$0.00	\$600.00	\$600.00
rooted hardwood seedlings - area 1	Supplies/Materials /Services	500	\$2.00	\$1,000.00	\$0.00	\$1,000.00
willow cuttings - areas 2 & 3	Supplies/Materials /Services	500	\$1.50	\$0.00	\$750.00	\$750.00
					Total Budget:	\$619,029.00

### ***Project Map***

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Project map is not defined.

Project map is not defined or error creating map.

## ***Additional Files***

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