Title: Deadman Creek Native Species Restoration

Status: Construction completed 2020

ASA FishAmericaFoundation: $16,900 (**c**onstruction)

Total Direct Cost: $177,000

Other funders/partners: Utah Endangered Species Mitigation Fund, UintaLands subdivision, Utah Watershed Restoration Initiative, U.S. Forest Service, Utah Division of Wildlife Resources, U.S. Fish and Wildlife Service, The Nature Conservancy.

Resource issues: Brook Trout competition with and predation on native species (Cutthroat Trout, Northern Leatherside Chub, and Boreal Toad). Lower pond earthen embankment with inadequate water control structures. Both upper and lower ponds filling with sediment. Road being inundated.

Actions: Lower pond dam rebuilt to serve as a fish barrier and pond enlarged. Upper pond allowed to continue to fill with sediment and provide toad habitat. Brook Trout removed by rotenone treatment (September 2020). Sterile trout stocked in lower pond to provide angling for Uintalands members. Dam and road adjacent the lower pond raised about four feet.

The lower pond dam embankment and washout near road during July 2017.

Rebuilt dam and primary spillway installed, July 2020.

The lower pond dam embankment and overspill on the middle of dam during August 2019.

The rebuilt lower pond dam with emergency spillway (foreground) and primary spillway in background, July 2020.

Title: Hovarka Canal Diversion Rebuild and Fish Screen

Status: Construction completed during autumn 2013

National Fish Habitat Partnership: $105,000 (design for two canals and construction completed on one)

Total Cost: Hovarka: $125,000 (note: NFHP funding was also used for planning and design on the East Fork Hilliard Canal, see that project summary and those separate costs)

Other funders/partners: Trout Unlimited, Wildlife Conservation Society, Utah Watershed Restoration Initiative, Bonneville Environmental Foundation (Coca-Cola), U.S. Forest Service.

Resource issues: The East Fork Bear River originates in the Uinta Mountains at elevations over 10,000 feet and flows through the Uinta-Wasatch-Cache National Forest to its confluence with the Bear River. The East Fork has a resident population of Bonneville Cutthroat Trout and also provides spawning and early rearing habitat for migratory cutthroat trout from the Bear River. Two irrigation diversions have their points of diversion within the lower two miles of the East Fork Bear River and both were documented to entrain cutthroat trout, whitefish, and sculpin. The objective of the NFHP grant was to plan, design, and construct fish passage improvements and eliminate fish entrainment at both canals. The Hovarka Canal is the smaller (15 cfs maximum), upper diversion on the East Fork Bear River. During spring runoff, the canal headgate frequently overtopped. During low stream flows, the water rights holder had to build a small push-up dam by hand every year to divert his water.

Actions: All objectives were achieved at the Hovarka canal. During autumn 2013, a large-rock barb was installed for a diversion structure, along with a larger headgate and a horizontal flat-plate fish screen. The diversion and screen have operated well since the 2014 irrigation season. During the past two years, algae has become more of an issue with screen fouling.

Before

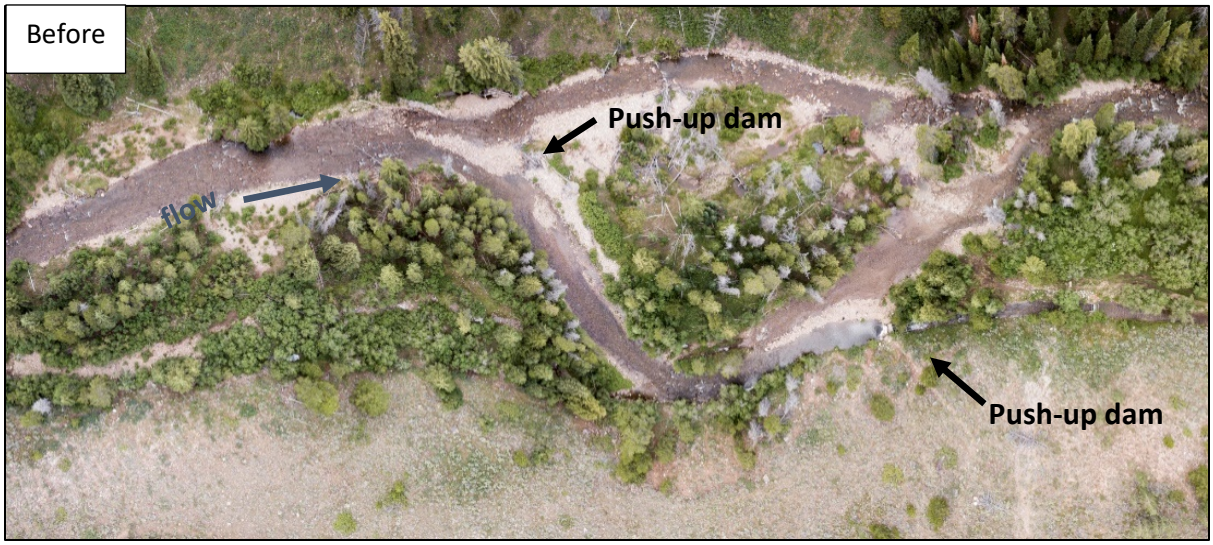
Looking across and downstream at the Hovarka headgate in 2012. Note the boards and tarps used to back up water.

Hovarka Canal with new large rock diversion structure and headgate shortly after construction during autumn 2013.

Looking from the headgate down the Hovarka Canal fish screen in 2017. Water flows through the horizontal screen and into a pipe that delivers flows to the canal. Debris and fish are bypassed back to the river.

Title: East Fork Hilliard Canal Diversion Rebuild

Status: Phase 1: Diversion rebuild and the fish screen completed in November 2020. Phase 2: canal pipe installation planned for 2021.
Open Rivers Fund: $100,000 (Phase 1 construction); $50,000 (Phase 2 construction).
Total Cost: $443,000 (Phase 1), $242,000 (Phase 2 estimate).
Other funders/partners: Utah Watershed Restoration Initiative, Natural Resources Conservation Service, U. S. Fish and Wildlife Service, Utah Department of Environmental Quality, U. S. Forest Service, Trout Unlimited.
Resource issues: Diversion dams at this site were the last main barriers on the East Fork Bear River. Old push-up dam diversions required frequent maintenance as the channel has switched from main to side channel. Fish were being killed in the canal (entrainment). Hillside along canal is eroding and blocking water conveyance.
Actions: Removed and replaced two earthen push-up diversion dams with permanent rock cross vane structures and installed a fish screen. Project has reconnected 22 miles of river, improved water quality, eliminated fish entrainment, improved water supply reliability, and reduced diversion operation and maintenance costs. Installation of conveyance pipe in the irrigation canal (phase 2) will eliminate canal blockages from hillside erosion and sloughing.



Aerial view of East Fork Hilliard Canal diversion July 2018 (Jason Jaacks).

Looking downstream at earthen push-up dam and old headgate at East Fork Hillard Canal during August 2012.

After

Looking downstream at rock cross vane structure and new headgate during November 2020.

After

Looking down canal at a dual modular horizontal flat-plate fish screen from Farmer's Conservation Alliance (June 2021).

Title: Danielsen Canal Diversion Rebuild and Fish Screen

Status: Construction completed September 2018.
Open Rivers Fund: $30,000 (construction)
Total cost: $210,680
Other funders/partners: Natural Resources Conservation Service, U.S. Fish and Wildlife Service, Wyoming Wildlife and Natural Resource Trust, Wyoming Game and Fish Department, Trout Unlimited, Upper Bear River Trout Unlimited chapter.
Resource issues: The canal supplies three water users and has a maximum diversion rate of about 15 cfs. The headgate was failing and water users had to get in the river every year to pile rocks up by hand to create a barb to divert water into their canal. In addition, the diversion entrained fish from the river into the canal. The 0.5 mile access road to the headgate was a two-track that forded the canal twice and went through several low wet spots that were impassable to vehicles.
Actions: The road was upgraded with several culverts and road base added for numerous sections of the road. This allowed the hauling of large rock and the movement of construction equipment into the site. Removed push-up diversion dam and replaced with a rock cross-vane structure to send water to the irrigation canal and installed a Farmers Conservation Alliance fish screen. The headgate was replaced and a sediment sluice added. Project completion opened 2 miles of river. During November 2018, a fence was installed by volunteers around the fish screen to protect it from damage by cows and moose.

The previous Danielson Canal headgate. Winches were attached by the water users to the headgate to keep it from falling forward into the river. The headgate was difficult to operate and water flow to the canal could not readily be shut off when needed.

Danielson Canal and the previous rock barb (arrow points to it) that was built by hand by the water users every year after high water runoff to turn water into their canal.

Upper (in midground) and lower (in foreground) rock cross vanes installed September 2018.

A four-rail steel fence (repurposed from oil and gas well projects) was installed by TU chapter members around the fish screen and down to the water measurement flume on November 3, 2018.

Title: Pine Grove/Crown Diversion Rebuild

Status: Diversion design complete
Open Rivers Fund: $24,248 (design)
Total Cost: $40,500
Other funders/partners: Natural Resources Conservation Service, U.S. Fish and Wildlife Service, Trout Unlimited
Resource issues: The Pine Grove-Crown diversion on the Bear River currently has two different headgates that are about 100 feet apart. Both gates are still used, but neither works well over all river flows. The water users build a 150-foot-long push-up dam every year to turn water into their headgates. It is a challenging site with a side channel and a relatively high gradient. The plan is to consolidate to a single headgate (eliminating a headgate and about 800" of canal length) and install rock cross vanes and fish screen 32cfs flow (maximum), while improving water delivery for 6 water users and about 1,900 permitted acres associated with natural flow water rights.
Actions: The engineering firm of McMillen Jacobs and Associates (MJA) completed a 100% design for the diversion. The design covers installation of large rock cross vanes for the diversion structure, consolidating two headgates and canal length into a single headgate structure and canal, installing a fish screen, and moving the canal measuring flume to just below the fish screen.

Current condition

Looking across the Bear River at the push-up dam constructed to divert water for the Pine Grove/Crown canal headgates during October 2017. Note the sandbags placed on the river rocks for additional diversion height.

Title: Evanston Dam Removal

Status: Design and permitting process ongoing for dam removal. Culinary well installation completed November 2020.
Open Rivers Fund: $40,000 (design for dam removal and culinary well installation).
Total Cost: $76,200
Other funders/partners: Natural Resources Conservation Service, City of Evanston Wyoming, Uinta County Conservation District, U. S. Fish and Wildlife Service, Trout Unlimited, Upper Bear River Trout Unlimited chapter, Wyoming Game and Fish Department.
Resource issues: A 100-foot long, 5-foot tall full-span concrete dam that used to serve as the City of Evanston's water supply on the Bear River is failing. The dam also supplied culinary water to five nearby households. Dam is mostly impassable to fish. A rock ramp was previously installed in 2013 but has had issues with high flows and debris.
Actions: Proposal is to remove dam, realign river, and rebuild an upstream irrigation diversion for the Myers Canal. The 60% design plans are completed. In the process of permit application submittal to the Army Corps of Engineers.

Because this project is awaiting final approval and the Uinta County Conservation District has funding, they are contributing to this project that can only be used for design and engineering work, WNTI made a request to RLF on June 14, 2021, that the funding allocated to this project from RLF ($25,000), along with the $12,543 in our 2019 no cost extension be reallocated to the Almy ditch diversion project. On June 15, the requested amendment was approved.

Current condition

Looking upstream at the Evanston Dam during moderate flows of the Bear River.

Current condition

Looking upstream and across the Evanston Dam along with the rock ramp installed for fish passage during 2013.

Current condition

Looking downstream at rock ramp and the dewatered condition that doesn't provide fish passage at moderate to low river flows.

Title: Booth Diversion Rebuild and River Restoration

Status: Phase 1 construction completed November 2018. Phase 2 completed September 2020.
Open Rivers Fund: $50,000 (Phase 1 construction); $60,000 (Phase 2 construction)
Total cost: $476,268 (Phase 1); $254,744 (Phase 2)
Other funders/partners: Natural Resources Conservation Service, Wyoming Department of Environmental Quality, Wyoming Wildlife and Natural Resource Trust, Trout Unlimited, Upper Bear River chapter of Trout Unlimited, U.S. Fish and Wildlife Service, Uinta County Conservation District, Wyoming Game and Fish Department.
Resource issues: A 175-foot push-up dam of river substrate, concrete slab, and other materials was constructed by the water user every year across the entire width of the river to turn the water into the canal. When installed each year, the push-dam created a full fish passage barrier because the only water downstream was through the dam itself.
Actions: Phase 1 - diversion rebuilt and about 2,000 feet of the Bear River channel realigned. Logs and brush were installed on about 700 feet of two upper meander bends with the creation of deep pools. Rock riffles and boulders were installed on the cross over river lengths between the meander bends. The push-up dam was breached and most of the material from the dam was used to create new riverbank and the new canal approach on river left. The large rock cross vane was installed at the upstream end of the canal approach. A series of pools and riffles were created downstream of the new point of diversion to gradually step down the river and provide fish passage. Phase 2 continued downriver of phase 1 and added 2,200 feet of riverine restoration bringing the total restoration to 4,200 feet.

Before

Looking upstream at the Booth Diversion push-up dam on the Bear River during September 2016. The 175-foot full span dam had only water flow through the dam moving downstream at this time.

Looking across the Booth Diversion push-up dam on the Bear River during September 2016.

Looking upriver at the new riverbank built on the right side of photo.

Title: S.P. Ditch Diversion (originally called Bear River Restoration Phase 1, Upper Bear Diversion)

Status: Construction completed April 2019

Open Rivers Fund: $50,000 (construction)

Total Direct Cost: $440,000

Other funders/partners: U.S. Fish and Wildlife Service, Wyoming Game and Fish, Wyoming Wildlife and Natural Resource Trust, Wyoming Dept of Environmental Quality, private landowner (in kind fence valued at $12,000).

Resource issues: S.P. Ditch Diversion in the center of the project area; it is about 1.5 river miles up to the next push-up dam named John Sims. An agricultural diversion push-up rock dam impedes river flow, fish passage, and contributes to degradation of the channel. Project goals were to create a stable, naturally-functioning channel in balance with current sediment supply and hydrology.

Actions: Altogether, the project involved work on four different private landowners' property. One irrigation diversion push-up dam was replaced with a rock cross-vane to promote fish passage. Sixteen instream rock structures were installed throughout the project area: 2 cross-vanes, 1 constructed riffle structure, 6 cross-channel j-hooks, and 7 barbs. Eight rock sills were constructed across newly abandoned channels that are now part of the floodplain. Realignment and reshaping to promote natural channel stability restored 4,100 feet of the Bear River. Instream structures were installed to promote channel stability and provide fish habitat. 1.9 miles opened, and about 100 acres of riparian habitat restored. Demonstration project for the Uinta Conservation District to demonstrate engineering and economic feasibility of Bear River restoration.

Project site in July 2018.

24+00, downstream, old point of diversion push-up dam, March 2018 (before)

Project site in August 2019.

23+50, downstream, old point of diversion location (after)

Title: Almy Ditch

Status: In Progress.

Open Rivers Fund: $10,000 (engineering/design plans); $112,543 (construction)

Total Direct Cost: $382,543

Other funders/partners: U.S. Fish and Wildlife Service, Wyoming Dept of Environmental Quality Wyoming Game and Fish Habitat Trust Fund, Wyoming Wildlife and Natural Resources Trust.

Resource issues: There are a total of four diversions (Morris Brothers Ditch, Almy Ditch, John Sims Ditch, Sims Creek Slew diversion) that constitute "Phase 2" of the project called Upper Bear River Restoration. In Phase 1 (2018), the SP Ditch push up dam was replaced with a rock cross vane and 16 rock structures installed instream. Phase 2 (2019, 2021) objectives are to remove additional push up diversion dams and replace them with cross vane structures. Almy Diversion is an irrigation push up dam that is a partial fish barrier depending on flows and season. Removal will open up 1.91 miles of Bear River up to the next diversion that has not been previously addressed, which is the John Sims Ditch, and will be accompanied by 1,950 feet of river restoration.

Actions: Remove and replace agricultural diversion push up dams with cross vane structures and open 1.91 miles of stream and restore 1,950 feet riverbank and channel.

2021 Update: The bid tour for the removal of the diversion and construction of the rock cross vane was conducted in April 2021. Bids were higher than expected, the lowest bid for construction on Almy Ditch came in $55,000 higher than expected. As a result, WNTI requested an amendment to the 2021 RLF grant and moved $25,000 for design work on Lewis/Homer and $25,000 for design work on Evanston Dam and use it instead for Almy Ditch construction. In addition, we asked to use the $12,543 in our 2019 no cost extension for Evanston Dam construction and use it instead for construction of Almy Ditch. On June 15, the requested amendment was approved. We anticipate construction to be completed in late 2021 or early 2022.

Western Native Trout Initiative Bear River projects tour – August 2021