

## Miner's Gulch Stream and Riparian Restoration Project

**State(s):** Montana

**Managing Agency/Organization:** Lower Clark Fork Watershed Group

**Type of Organization:** Nonprofit Organization

**Project Status:** Underway

**Project type:** WNTI Project

**Project action(s):** Riparian or Instream Habitat Restoration, Monitoring, Outreach/Education

**Trout species benefitted:** Bull Trout, Westslope Cutthroat Trout

**Population:** Vermilion River watershed (tributary to the Lower Clark Fork River)

### Project summary:

The project's purpose is to restore a degraded segment of stream and floodplain to improve and protect native fish habitat in the Vermilion River. The project site, Miner's Gulch, is a 1,600-foot zone of degraded stream channel, bank and floodplain located in a high priority reach for restoration in the Vermilion watershed, due to its importance to native Bull Trout and Westslope Cutthroat Trout. Tasks will include re-shaping of the stream channel, installation of in-stream wood and rock structures, reconstruction of floodplain surface, and an aggressive riparian planting program to re-establish native trees and shrubs in the floodplain. Public outreach activities and monitoring of fish abundance, physical habitat, sediment and vegetation will be key project tasks. Using an upstream-to-downstream approach, restoration of the site must occur before any further restoration in the watershed can take place.

### Problem the Project Addresses:

Species Recovery: The Vermilion River is the primary spawning stronghold for ESA listed "threatened" Bull Trout in the Lower Clark Fork River, below its confluence with the Flathead. The reach in which the proposed project is located typically supports some of the highest number of Bull Trout redds and juvenile Bull Trout densities in the Vermilion River. A strong population of Westslope Cutthroat Trout also inhabits the area of the project site. The U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), Montana Fish, Wildlife & Parks (MFWP), Avista Corporation (Avista), and other partners involved in Lower Clark Fork water resources management view the project as critical to the long-term viability of both species in this priority watershed and the overall Lower Clark Fork system. The project meets multiple WNTI and NFHP objectives, including: implementation of specific actions known to contribute to the improvement of native trout populations in the best strongholds; securing and enhancing watershed conditions in high-value watersheds; implementation of local and regional recommendations for western native trout habitat restoration and enhancement; and increasing public awareness and encouraging partnerships that benefit western native trout.

Problem to be Addressed: Historic land uses (placer mining, timber harvest, riparian vegetation removal and roads/road construction) have altered stream flows, channel stability, fish habitat and riparian plant communities in the Vermilion drainage. A 2007 watershed assessment conducted by the USFS identified River Reach 6 as the highest restoration priority, where deteriorating streambanks, limited in-channel energy dissipation and a non-functioning floodplain have caused frequent channel migration, an over-widened channel, decreased woody debris accumulation, reduction in pool frequency and lack of sustainable riparian vegetation. The first priority for restoration in this reach was Chapel Slide, where restoration was completed in 2012 and post-restoration monitoring indicates improved channel stability, success with riparian plantings and increased Bull Trout spawning use.

The proposed project will address problems at the next downstream site, Miners Gulch. This area of the Vermilion is extremely pool-limited and lacks adequate in-stream and floodplain large woody debris. Recruitment of large woody debris has been greatly reduced by the unstable, migrating channel that has removed all but a few trees in the riparian area. Instability related to the lack of a functioning riparian area, deteriorating banks and limited in-stream energy dissipation has subjected the Miners Gulch site to frequent channel migration, over-widening channel conditions, decreased wood retention, and lack of sustainable vegetative cover. Removal of riparian vegetation and destabilization of streambanks are most responsible for current conditions. Existing condition topographic surveys have verified these factors and the need for restoration.

### Objectives:

1. By stabilizing 1,600 feet of unstable bank that is in constant flux and improving floodplain function and health, the Miners Gulch project will benefit native fish and other aquatic resources within the restoration zone and three miles of river downstream of the site.
2. The project will result in a 14% reduction to sediment (currently 207 tons/year from the Miners Gulch site) in Reach 6.
3. Installing in-stream wood and rock structures (log/boulder and debris jams) will increase the number of pools (from the existing 0 pools per mile to 75 per mile) and the amount of in-channel and floodplain woody debris (from 25 to 200 pieces per mile), which will improve fish spawning and rearing habitat.
4. The project will re-establish a healthy plant community in 11 acres of floodplain by employing an aggressive planting program on 2,260 linear feet of stream bank. (Currently, the vast percentage of the site's riparian area is generally devoid of finer substrate and viable riparian vegetation—with 3 viable mature trees with deep binding roots per acre.)

The project supports all four goals of the WNTI Strategic Plan by (1) restoring western native trout populations (in this case, Bull Trout and Westslope Cutthroat Trout) and measuring success; (2) restoring habitat that has been impacted by human activities; (3) utilizing a collaborative approach to implement a high priority project; and (4) implementing an effective outreach program to increase public awareness about native trout.

**Partners:**

- Lower Clark Fork Watershed Group
- U. S. Forest Service
- Montana Fish, Wildlife & Parks
- Avista Corporation
- Green Mountain Conservation District

**Project Monitoring:**

Prior to on-the-ground work, a baseline of data on physical habitat, sediment, flows and fish populations will have been established through monitoring efforts by MFWP and Avista (baseline fish abundance and fish habitat data), and the USFS (baseline physical data used in project design and on-going sediment, flow and temperature data). Post-restoration monitoring of fish abundance and fish habitat will be conducted by MFWP, Avista and the U.S. Forest Service through Bull Trout redd surveys, electrofishing, and snorkeling. Following construction and before the first run-off event, vertical and lateral channel stability of the restored reach will be measured through 8 permanent cross sections and a permanent longitudinal profile. The cross sections will provide gauging points for long-term stability within the different habitat types (riffles, runs, pools and glides). Photo monitoring at permanent points will be conducted as cross sections and profiles are re-surveyed over time. Monitoring of riparian plantings will take place through a series of photo-points to visually assess success of plant growth and vigor measured each year by height, cover and rate of survival. Field observations will gauge how well vegetation is providing stream bank strength, affecting sediment load reduction and shade. Following restoration activities, partners will review monitoring results to assess the success of the project. The project specific monitoring plan, referenced above, outlines monitoring data needs and criteria for measuring quantitative results. Because the project is located on the Kootenai National Forest, the U.S. Forest Service will be responsible for long-term maintenance and monitoring.

**Funding Source(s):** National Fish Habitat Action Plan

**Project cost:** \$20,000.00

**Start Date:** 07/01/2016 **Completion Date:** 12/31/2017

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