

Big Hole River - Schindler Reach **Stream Restoration, Channel Relocation, & Fish Habitat Enhancement**



Location: Upper Big Hole Valley, Montana

Client: Private Client, NRCS, MTFWP, & USFWS Partnership

Key Project Elements:

- ❖ Geomorphic Assessment
- ❖ Hydraulic Analysis & Hydrologic Assessment
- ❖ Sediment Transport Analysis
- ❖ Natural Channel Design
- ❖ Channel and Fish Habitat Enhancement Design
- ❖ Bioengineered Bank Stabilization

Project Description:

RE, LLC team members designed and oversaw implementation of a restoration project on approximately 4,250 feet of the Schindler Reach of the upper Big Hole River. In addition to restoring aquatic habitat the project design provided for continued delivery of water rights and access to existing head gates, and allowed for suitable fish passage and future screening efforts. The project also included reactivation of nearly one-half mile of abandoned channel meanders.



Historic straightening of the channel had resulted in a steep channel gradient and high width to depth ratios, limiting the mobilization and conveyance of the river's coarse bed load (gravels and cobbles). Consequently, there has been a reach-wide trend of channel aggradation. Historic and recent impacts, coupled with nearly a decade of below normal snow pack and drought conditions, had contributed greatly to the geomorphic degradation of this reach of the upper Big Hole River.



This successful project re-established a stable plan form more consistent with historic channel patterns; a longitudinal profile with riffle / pool morphology; and channel cross-

section geometry with a lower width / depth ratio necessary to increase sediment transport continuity. This effort included actively narrowing the channel, constructed point bar development, bar and bank revegetation up to the lower limits of perennial vegetation with woody species salvaged on site, and the reactivation of abandoned (remnant) channel segments.