



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Wyoming

Changing Road Design and Implementing Grazing BMPs Reduce Sediment

Waterbody Improved Runoff from an eroding forest road and from upstream areas of uncontrolled cattle grazing caused heavy siltation of the lower portion of Wyoming's Hunter Creek. When the creek failed to meet its designated use for coldwater game and aquatic life, the Wyoming Department of Environmental Quality (WDEQ) and the U.S. Forest Service (USFS) initiated a management plan to address these pollutant sources. The partners implemented best management practices (BMPs), including establishing a riparian area along the stream, digging a ditch to convey runoff away from the stream and building stream crossings for cattle upstream. As a result, sediment loads diminished, and Hunter Creek now fully supports its designated uses. WDEQ removed Hunter Creek from Wyoming's 2004 303(d) list of impaired waters for sediment.

Problem

Hunter Creek is a small (approximately 1.9 miles long) tributary to Clear Creek, in the Powder River Basin of the Bighorn Mountains of Wyoming. For the purpose of surface water monitoring, WDEQ divides Hunter Creek into upper and lower sections. WDEQ placed the lower section of Hunter Creek on the state's 1998 Clean Water Act (CWA) section 303(d) list because of heavy siltation, which threatened aquatic life by eliminating important streambed habitats. WDEQ identified that the likely sediment sources included the close proximity of an adjacent road and intensive upstream cattle grazing.

Lower Hunter Creek is classified as a Class 2AB waters, which are those known to support game fish. Excess sediment caused the creek to violate the state's narrative standard, which states, "floating and suspended solids attributable to or influenced by the activities of man shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife."

Project Highlights

To address the two primary pollutant sources—sediment from the adjacent road and intensive upstream cattle grazing—WDEQ and the USFS initiated a management plan. To reduce sediment inputs from the road, the partners removed mineral outcrops from along the road's edges, thus allowing the road to be shifted several feet away from the stream (see Figures 1 and 2). Then, they established a riparian buffer zone in the newly created space using both mineral particles and vegetation to separate the stream from the road (Figure 2). Finally, they constructed a new road section that channeled water away from the stream and into a newly dug ditch that terminated in a sediment basin (Figure 3).

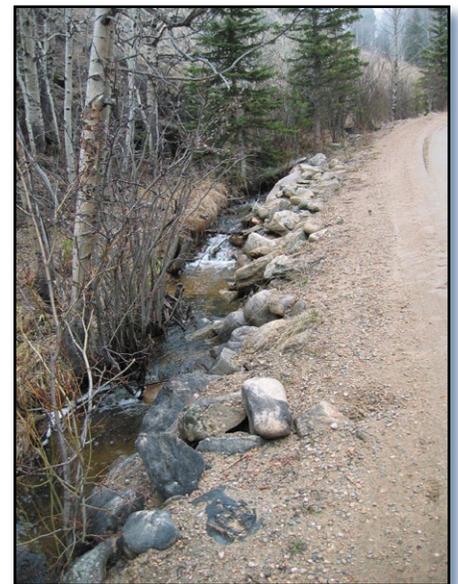


Figure 1. Hunter Creek before the project.

To address the second pollution source (uncontrolled cattle grazing), the team constructed designated cattle stream crossings upstream and began scheduling grazing permits on a rotating basis. The project team expects that these two grazing BMPs will further facilitate the reestablishment of a healthy riparian zone and lessen bank erosion along lower Hunter Creek.

Results

After completing the road construction project in the early summer of 2003, the amount of fine sediment in lower Hunter Creek declined. Before the project, sediment covered approximately 57 percent of the streambed in the study reach; within one year of implementing the BMPs, sediment covered only 38 percent of the streambed. With the reduction in new sediment inputs to this stream, the project team expects that spring runoff from snowmelt will continue to remove preexisting material. WDEQ determined that the road modifications and changes in maintenance have reduced sediment impacts and that lower Hunter Creek now fully supports all its aquatic life uses. Therefore, WDEQ removed lower Hunter Creek from Wyoming's 303(d) list in 2004 for sediment.

Partners and Funding

A total of \$675,000 in annual CWA section 319 performance partnership grants funded Hunter Creek effectiveness monitoring. These funds supported WDEQ 319 grant program staff that worked with the USFS to implement this project.

Figure 2. Photo of the project site taken immediately after WDEQ and USFS realigned the road and established a wider buffer area. A white mesh placed on the new riparian area will help hold the soil until vegetation can become established.



Figure 3. A newly-constructed ditch along the road conveys water away from stream and into a sediment basin.



U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-08-001U
September 2008

For additional information contact:

Jack Smith
Wyoming Department of Environmental Quality
307-673-9337 • jsmith@wyo.gov

U.S. Department of Agriculture, U.S. Forest Service
Bighorn National Forest
307-674-2600