

STREAM RESTORATION

FREMONT PASS RIPARIAN CORRIDOR RESTORATION PROJECT

Conducted by: Colorado Mountain College Natural Resource Management Institute

On the Web:

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Project Partners: Bureau of Land Management, U.S. Forest Service, Colorado Department of Transportation, Climax Molybdenum Corporation, Lake County Commissioners and County Departments, Trout Unlimited, and Frontier Environmental Services.

Contract Period: 2000-2004

NPS Funding: \$68,000

Matching Funds: \$58,120

The Fremont Pass Riparian Corridor Restoration Project stopped erosion of sediments and road base from an abandoned roadway from entering the Arkansas headwaters. Through an NPS grant, best management practices were identified and applied to correct the drainage from Highway 91 in Lake County. Colorado Mountain College Natural Resource Management Institute (CMC NRMI) with the partnership of the Bureau of Land Management (BLM) provided the mechanism to complete the deconstruction and implement monitoring associated with the project.



The abandoned road parallels Highway 91 for approximately two miles along the headwaters of the Arkansas River downstream from the Climax Mine. Without maintenance, the banks between Highway 91 and the old highway eroded due to excessive snow loads, runoff, and a steep gradient. The resulting sediment had plugged culverts, rerouting water that was eroding the old road base. Additionally, the asphalt also was breaking up and eroding. The undrained runoff was further eating away the hill toe-slopes creating areas of mass waste between Highway 91 and the old highway, in some cases stressing hillsides supporting the new Highway 91.

Since the project area was located very near the top of a priority watershed within the Upper Arkansas River drainage basin, it was imperative to keep bedload from entering the Arkansas River to minimize impacts to water quality and fisheries habitat.

Also, eroded bedload material was being transported into downstream meadows, which are unconfined. The deposition was forming large bars at the top of the meadows.

The introduction of sediments created instability in what was a very stable wet meadow/ willow complex. Failure to stop sediment/road base fill material from entering the stream would have resulted in massive bank erosion downstream, which has been a persistent problem in other parts of the river below Leadville.

CMC NRMI conducted public meetings, acted as the liaison for all active parties, as well as construction activities, re-vegetation and sediment fence installation, and monitoring, which took place pre- and post-construction. Frontier Environmental Services completed the design/build engineered remedy for the project, including contouring of the old roadbed, the construction of the sedimentation basins and associated outfalls, as well as amendment of the old Highway outfalls.

Best management practices developed to reduce the nonpoint source water pollution affecting the watershed include:

- Rerouting of run-on/runoff hydrology around plugged culverts to separate road-water interaction
- Tilling in old road base with underlying material to create a water permeable layer thus sheet flow is eliminated
- Ripping/seeding roadway, mulch and seeding eroding cut banks
- Developing parking at locations to stop traffic and installing gates to limit vehicle traffic within the project foot print
- Controlling water sources from the new Highway which caused erosion above the old Highway
- Contouring terrain within the old Highway footprint where necessary to alleviate erosion
- Construction of sedimentation basins with metered releases
- Enhancement of functional existing culvert systems was completed.

Monitoring, continued revegetation and project maintenance will continue. Students from Colorado Mountain College Natural Resource Management classes will collect the field data, complete electronic data entry and continue to revise the monitoring methods and results documentation that NRMI began.

In addition to support from the NPS program, the project would not have been possible without support from Lake County. While initial involvement was limited to coordination and approval of the old road closure, personnel, equipment and labor from the County Road and Bridge department was contributed as the project progressed. Many services also were provided by the Colorado Department of Transportation. Trout Unlimited as a partner in this effort, obtained rock contributed by the Climax Molybdenum Corporation, installed a gate at the south end of the project area and created nearby access parking.