

**YEAR 2003
ABANDONED MINE LAND RECLAMATION AWARD
NOMINATION**

**AML PROJECT 8-II
SEAN CARROLL AND GOOSE CREEK SPOILS**

Sheridan, Sheridan County, Wyoming

Submitted by

**DEPARTMENT OF ENVIRONMENTAL QUALITY
ABANDONED MINE LAND PROGRAM**

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March 13, 2003

Contracting Agency: BRS, Inc., Riverton, Wyoming
Assistance provided by: Lidstone and Associates, Fort Collins, Colorado (hydrology)
Construction Contractor: M.K. Weeden Construction, Inc., Lewiston, Montana
Construction Contractor: Hart Patrol Service, Upton, Wyoming
Construction Contractor: Lamax Construction, Basin, Wyoming
Seeding Sub-contractor: Jensen Construction, Belle Fourche, South Dakota
Project Construction Date: July 28, 1997 - Oct. 30, 1997 / Sept. 14, 2000 - Oct. 29, 2000
Construction Cost: \$654,347.50

NARRATIVE

AML Project 8-II is located near Sheridan, Wyoming and includes two main phases, the ***Sean Carroll Mine Subsidence Project and Goose Creek Rehabilitation and Stabilization Project***. The Report of Investigation completed in September 1996 included design recommendations for both sites. In 1997 final designs were prepared and construction completed for the Sean Carroll site. Construction was completed on October 20, 1997. The Goose Creek Project required extensive coordination with local land and mineral owners, Wyoming Game and Fish, US Corp. of Engineers, Wyoming Department of Environmental Quality (Land Quality and Water Quality Division), the Wyoming State Historical Preservation Office, and other local, state, and Federal agencies. Construction was completed on October 29, 2000.

The goal of the Sheridan Project was to develop and implement cost-effective designs which would eliminate hazards to public health and safety, and control environmental degradation while being sensitive to landowner concerns, environmental conditions, public concerns and related issues.

The ***Sean Carroll*** site is located approximately 10 miles northwest of Sheridan, Wyoming just south of Interstate 25 and the flood plain of the Tongue River. This site is underlain by the historic Kooi and Old Monarch underground coal mines which were abandoned in 1920 and 1922, respectively.

The ***Goose Creek Spoils*** site is located approximately 8.5 miles north of Sheridan, Wyoming along the boundary of the Padlock Ranch and Big Horn Coal. In the 1950's more than two million cubic yards of coal mine waste was placed into the flood plain of Goose Creek just above the confluence with the Tongue River.

At the ***Sean Carroll*** site, public hazards were related to mine openings and subsidence features associated with underground coal mines (See Photo 1). Extensive subsidence had occurred in these areas and ground conditions were locally unstable. Coal mine fires, ignited by spontaneous combustion, were active in the vicinity at the Monarch and Acme mines as recently as 1979. No mine fires were active during the Sean Carroll Project but reignited in the vicinity of Monarch, Wyoming in 2001. These fires were successfully extinguished by Wyoming AML as part of this overall project in 2001. This occurred in Aug. 2001 and was a result of a range fire which started the coal slack on fire, surrounding the Old Monarch Mine (See Photo 5). This site is located of the AML Project 8-II Phase I area and on the John Buyok and Ramon Legerski properties. AML mobilized equipment to contain the coal slack fire and isolate the fire from the surrounding ranch buildings. A trench was dug around the fire and an encapsulation pit was dug to push the burning slack into and cover to smother (See Photo 6). The Wyoming Abandoned Mine Land Division had men and equipment on site within 24 hours of notification of the danger. As a result of the fast action, the Wyoming Governor sent out a letter of commendation, (a copy is attached).

Subsidence features, which had exposed unmined coal, were susceptible to the ignition of mine fires. In addition, livestock's losses due to the subsidence features had been reported and there was documentation that during previous projects additional subsidence was initiated by heavy equipment endangering equipment and personnel. This surface expression of mine subsidence is expressed over several hundred acres. These sites represented a potential threat to public health and safety, property, livestock, and wildlife. In addition, surface drainage had been impacted by subsidence which caused offsite environmental degradation.

At the ***Goose Creek Spoils*** site, a two million cubic yard mine spoil pile was located in a natural meander path of the stream (See Photo 3). Consequently, bank erosion was threatening the integrity of the spoil pile. If erosion of the spoil pile were allowed, it would cause: (a) direct sediment loading from the pile to Goose Creek; (b) chemical degradation to the waters of Goose Creek and the Tongue River by introduction of carbonaceous and/or other deleterious wastes; and (c) a localized health and safety issue due to mass wasting and slope instability. An additional environmental consequence was the loss of habitats and fisheries.

The *Sean Carroll* project focused on closure of a mine subsidence feature, shafts and adits related to abandoned coal mines. This site contained the following historic mines: Old Monach, Kooi, and Dietz Mines. These mines operated at the turn of the century and were closed in the early 1900's. The mining method was conventional room and pillar and in some but not all areas the pillars were extracted during retreat and closure of the mines. In some cases the mining was less than fifty feet from the surface and mining occurred on three separate levels. Safe entry into the underground mines was not possible and therefore, the exact nature, extent and condition of the underground mine workings were not known. Only those mine voids which were directly related to existing hazardous surface subsidence features and were accessible from the surface were backfilled. The backfilled areas were designed only to close the hole and were not designed to support structural loads. The project did not employ any form of subsurface entry and/or backfilling to stabilize mine voids.

Highlights of Sean Carroll Project:

- Contracted as Time and Materials
- Under Ran Budget 19%
- Reclaimed 52 Acres
- Closed more than 500 subsidence Features
- Restored 2 Miles of Surface Drainage
- Constructed Multiple Retention Ponds Enhancing Habitat and Stabilizing Erosion
- Permitting: COE 404, SEO, NEPA

During construction sufficient suitable material was encountered for topsoil replacement on the entire site to a depth in excess of one foot. In addition, shallow gravel beds were encountered. This material was utilized to plate the permanent access roads which were to remain for surface owners following construction and provided bedding for rip rap structure. Oversize material was placed at specific locations to enhance the erosional stability of the site. Due to the local availability of this material and the fact that these materials required excavation to achieve final grades these advantages were achieved at little or no cost. Excess amounts of these materials were stockpiled at the request of surface owners for their future use.

More than 500 vertical subsidence features and three horizontal adits were closed during the course of this project. Most of the vertical subsidence features were identified. Closure of these features included over excavation and backfill. Exploratory excavation was completed ahead of grading operations to expose unstable conditions. As a result of exploratory excavation, 17 additional unstable subsidence features were discovered and closed. Despite the effort to identify unstable areas prior to grading, on five separate occasions grading operations initiated subsidence. More than 500 underground coal mine related subsidence features were reclaimed in all, including 34 which were very unstable and hazardous.

The project did complete the construction of three surface water impoundments (See Photo 2) permitted by the State Engineer's Office. The engineering purposes of these impoundments were to provide erosion control along approximately one mile of a tributary drainage of the Tongue River which had been adversely impacted by the mine subsidence. Prior to construction the site had no wetland values. Since construction, these impoundments have provided wetland and wildlife enhancement. No Threatened or Endangered species were identified near or within this project. No archeological or cultural features were impacted and wherever possible trees and shrubs were left undisturbed since the revegetation seed mixture was dominantly native grass. A stormwater Permit was also obtained and all conditions were met.

The *Goose Creek Spoils* project focused primarily on improvement of bank stability of Goose Creek near the town of Acme. Channel realignment, due to past mining operations, railroad construction and other man-induced modifications, created geomorphic instability of the lower reaches of Goose Creek causing excessive

bank erosion and excessive sedimentation. Direct sediment loading from Goose Creek Spoil pile resulted in annual sediment loss from the pile and delivery to waters of the creek. This in turn resulted in reduced stream length and sinuosity, elimination of local flood plain terraces, and in some areas, created artificially high channel banks and the environmental degradation of Goose Creek. The scope of this project was limited to four sections (reaches) along Goose Creek. Other benefits resulting from the work have included removal of trash and debris along the banks of the creek (See Photo 4), addition of fish habitats in the creek bed and expansion of wetlands promoting a wildlife habitat in the reclaimed area. The project enhanced wetland, wildlife and habitat values and has been designated by local landowners and the Wyoming Game and Fish as a walk-in recreation area..

Highlights of Goose Creek Project:

- Four Miles of Channel Reconstruction
- Consents and Clearances
 - Big Horn Coal Company
 - Padlock Ranch
 - WDEQ
 - U.S. COE
 - SHPO
 - WY Game and Fish
- Wetland Construction
- Completed in 44 Days
- Site is Now a Recreational Walk-In Area

The original bid price of the ***Sean Carroll*** project was \$219,111.95 but due to the contract being structured with approximately half of the bid items paid on an hourly reimbursable basis and the remainder on a unit reimbursable basis, the completed cost was \$177,691.50, 19% under the bid price. The project was completed in 92 days, ahead of schedule and under budget.

The original bid price of the ***Goose Creek Spoils*** project was \$469,158.50. The project was completed at a cost of \$476,656.00, one and a half percent over the bid price for a difference of \$7497.50. This increase extended the bank protection slightly downstream. This project was finished in 44 days out of the allowable contract time of 90 days.



STATE OF WYOMING
OFFICE OF THE GOVERNOR

JIM GERINGER
GOVERNOR

STATE CAPITOL
CHEYENNE, WY 82002

October 12, 2001

Ernie Robb
Abandoned Mine Lands Division
Department of Environmental Quality
3030 Energy Lane, Suite 200
Casper, WY 82604

Dear Ernie:

Ramon and Norma Legerski, as well as several of their neighbors in the Sheridan and Ranchester area, wrote to me complimenting you for the exceptional assistance you provided to them in containing the coal slack fires near the old mining town of Monarch. They praised you for your quick response in getting S&T Excavating and the Taylor Quarry crew to their location. Your actions prevented further personal injuries, and quite possibly loss of lives. You have my gratitude for your committed service of those in need.

Keep up the good work!

Best regards,

Great response, Ernie!

Jim Geringer
Governor

JG:njg

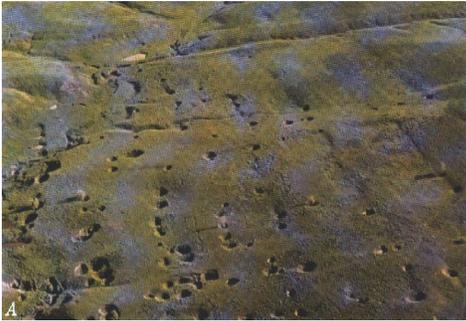
cc: Dennis Hemmer, Director, Department of Environmental Quality

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***AML PROJECT 8 - II
SEAN CARROLL AND GOOSE CREEK SPOILS***



Sean Carroll - Before (Photo 1)
Aerial View of Site



Sean Carroll - After (Photo 2)



Goose Creek Spoils - Before (Photo 3)



Goose Creek Spoils - After (Photo 4)



Sheridan Coal Slack Fire - Before
Sean Carroll Site (Photo 5)



Sheridan Coal Slack Fire - After
Sean Carroll Site (Photo 6)