

**NOMINATION
2004 ABANDONED MINED LAND RECLAMATION AWARD**

**COLORADO DEPARTMENT OF NATURAL RESOURCES
COLORADO DIVISION OF MINERALS AND GEOLOGY
COLORADO INACTIVE MINE RECLAMATION PROGRAM**



Robert Wilson, MSC student at Old October site in Mesa County Colorado.

"It may be the only student-facilitated project of its kind in the country."

Dr. Russ Walker, Professor of Environmental Restoration, Mesa State College

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Project Name: Mesa State College/Environmental Restoration Education Project

Nominating
Organization: Loretta Pineda, Program Administrator
Paul Krabacher, Environmental Specialist
Colorado Division of Minerals and Geology,
Colorado Inactive Mine Reclamation Program
1313 Sherman Street, Room 215
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(303) 866-3819

Nomination Submitted March 18, 2005

Project Statistics

Start Date	July 2003
Completion Date	December 2004
Project Cost/Construction Two contractors Red Dog Enterprises and High County Equipment	\$21,585.00
Project Design Monitoring/Maintenance	\$16,700.00 Mesa State College

Dedication

This nomination is dedicated to Dave Bucknam who guided the Colorado Inactive Mine Reclamation Program for 20+ years and was dedicated to training, environmental education and reaching out to partners involved in mined land reclamation. Dave had a tremendous passion for the outdoors and connecting people to their environment. In typical Dave fashion, Dave encouraged Paul Krabacher to develop this project and fulfill not only Paul's role and career in abandoned mine reclamation but to provide training and education to others interested in reclamation and restoring mined lands.

Introduction

The Colorado Division of Minerals and Geology, Colorado Inactive Mine Reclamation Program, is proud to submit the Mesa State College/Environmental Restoration Education Project for the 2004 AML Award.

This project was a cooperative effort with the Environmental Science and Technology Program at Mesa State College. This cooperative effort matches two program missions of educational outreach and reclamation design and project implementation for a substantially reduced cost.

Mesa State College (MSC) in Grand Junction, Colorado (enrollment 6,300 students) is near areas of inactive coal and non-coal mines in western Colorado. MSC graduates ten to fifteen students each year with a B.S. in Environmental Science and Technology. This program (which dates back to 1990) provides students with a solid foundation in the traditional sciences (such as biology, chemistry, and geology), then builds on this foundation in its Environmental Science courses, applying knowledge from the traditional sciences to the study and resolution of environmental problems. The program balances theory with many hours of hands-on, practical field training. Because of this initiative, over the past three years, the program faculty has increased the emphasis on reclamation and restoration in both classroom and field.



MSC Mined Land Topics Classroom

Originated by the Division of Minerals & Geology, the project was set up for students in the Environmental Science and Technology Program at MSC to participate in reclamation of real world abandoned mining sites. Five students were involved in the

project over a two-year period. Their first step was to complete a special topics course in Mined Land Reclamation taught by Paul Krabacher (Colorado Inactive Mine Reclamation Program). These students continued their efforts through independent projects, conducting site inventories, developing reclamation alternatives, and drafting construction specifications. The students conducted mandatory pre-bid meetings and concluded their efforts by overseeing construction. Krabacher and Russ Walker (Professor of Environmental Science and Technology) supervised the students.

The hazard abatement work associated with this project is typical of hundreds of reclamation projects completed by the Colorado Inactive Mine Reclamation Program over the past 25 years, however the unique partnership with Mesa State College and opportunity for young people to learn about abandoned mines and environmental restoration from a reclamation professional and then participate in the actual real-world mine closure work is rare.

The project is also exemplary for several other reasons:

- **Hazards Abated:** Four hazardous mine openings were sealed; three features now provide bat habitat for sensitive species and the historical and natural character of the sites was maintained.
- **Educational Opportunities:** Mesa State College environmental science students had the unique opportunity of participating in a real-world mine reclamation project – from “cradle-to-grave”, from original site inventory work through overseeing the closure of abandoned mines sites and safeguarding 4 mine sites in Western Colorado. Abandoned mines present a clear and present danger to many visitors in western Colorado. The students learned about the hazards and environmental problems associated with abandoned mines and the tasks related to designing specifications.
- “This is an unusual opportunity for our students to take what they've learned in the classroom setting and actually apply it at a real mine site,” said Dr. Russ Walker, professor of environmental restoration. “It may be the only student-facilitated project of its kind in the country.”
- Thanks to the Division of Minerals and Geology, my students were able to work through the step-by-step process associated with mine closures,” said Walker. “They participated in the initial assessment, developed a workable closure procedure and, now, will also be able to see the project's culmination.”
- “This is an awesome training experience because it's a real work situation,” said Robert Wilson, MSC student.
- “I appreciate the opportunity to apply skills learned in my classes. This work has given me extra confidence”, said Danika Urban.
- **Wildlife Enhancement:** At the request of the Colorado Division of Wildlife, the bat habitat was taken into consideration as closure method for the three of the four mine sites and native vegetation was also reintroduced.
- **Public Land Management:** The mine sites are on public lands managed by the Bureau of Land Management's Glenwood Springs and Grand Junction Field Offices. Both offices provided NEPA clearances.

Project Work



Rifle Mine

Two mine sites were chosen for the MSC students, the Rifle Mine Site and the Old October Mine site. Each site contained two hazardous adits. These old uranium mine sites were easily accessible to hikers, hunters and curious visitors.

The Rifle Mine site is located northeast of Rifle Gap Reservoir in Garfield County. The Rifle site included two adits at an approximate elevation of 6,900 feet. The three students, Chad Roberts, Loni Verzuh and Brad Kieding, were eager to learn site techniques and factors that affect construction and possible conflicts. The students were conscientious observers regarding timely and proper procedures and record keeping. The timber replacement as specified was well beyond the minimum requirement as was the revegetation effort. Likewise,

the quality of the grate construction at the lower adit was well above average with the contractor even replacing the tracks to maintain the historic context of the site. Round stock was used for both adit bat bars within the grating. PUF was the chosen alternative for the inside seal as specified.

As project managers the students were extremely conscientious regarding the quality of work performed.



Rifle Mine Site – Pre-bid Meeting, MSC students and Contractors

The Old October site is located southwest of Gateway, Colorado in Mesa County. The Old October site includes one adit at the Old October mine at an elevation of 6,750 and one adit at the Shelby Dean Mine at an elevation of 6,600 feet



Danika Urban, MSC student, Old October Mine Site construction inspection

Robert Wilson was the MSC student at the Shelby Dean site and was impressed by the completed construction in a restrictive space which few contractors would be capable of working in. Extremely large boulders were used for the backfilling material and were placed well within the 15' depth specification. By utilizing the bench material and thereby lowering the elevation of the track hoe, compaction could be performed on the backfill with the track hoe boom into the mine working above the CSP. Mixed soils and rock were finally used to complete the restrictive space fill around the CSP. Backfilling procedures were completed at the same time as the mortared rock work so an exit was planned for the workers by removing two bat bars from the grate for egress.

A welder was brought on site at the conclusion of the backfilling and the bar was welded in place.



Shelby Dean Mine – Bat grate installation and native rock placement.

Conclusion/Future Projects

The Mesa State College project successfully incorporated undergraduate students studying environmental restoration into a real world scenario. It is highly probable that the five MSC students will be directly involved in some aspect of inventory work, bid specifications, and/or project management in the environmental field directly related to reclamation construction.

Through a successful proposal for use of natural resource damage funds from the Uravan Superfund Site, DMG and MSC will continue their partnership for another two years. In this upcoming project, the next generation of MSC students will focus on land reclamation around inactive uranium mines.

The project was deemed a success in that four hazardous mine openings were sealed; three features now provide bat habitat for sensitive species; and five college students are now familiar with the integral components of applying real world reclamation on the ground and, because of their experience, are likely to become involved with mine reclamation in their future careers.

"It may be the only student-facilitated project of its kind in the country." said Dr. Russ Walker, Professor of environmental restoration, Mesa State College



Cover photo – Robert Wilson, MSC student at Old October site in Mesa County Colorado.

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