



OFFICE OF SURFACE MINING  
RECLAMATION AND ENFORCEMENT

Annual Evaluation Summary Report

for the

Regulatory Program

Administered by the State

of

COLORADO

for

Evaluation Year 2004

(July 1, 2003 through June 30, 2004)

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## TABLE OF CONTENTS

- I. Introduction
- II. Overview of the Colorado Coal Mining Industry
- III. Overview of Public Participation in the Colorado Program
  - A. Oversight process
  - B. Colorado program
    - 1. Mined Land Reclamation Board meeting
    - 2. Education and community outreach
    - 3. Information and technology exchanges
- IV. Major Accomplishments / Issues / Innovations
  - A. Accomplishments
    - 1. Final bond releases
    - 2. DMG and Colorado Mining Association reclamation awards
    - 3. Evaluation of permit revocation sites
    - 4. Native shrub establishment on reclaimed lands
    - 5. Training
  - B. Issues
    - 1. Evaluation of bond forfeiture sites
  - C. Innovations
    - 1. Underground mine mapping
- V. Success in Achieving the Purposes of SMCRA

- A. Offsite impacts
  - B. Reclamation success
  - C. Customer service
- VI. OSM Assistance
- VII. General Oversight Topic Evaluations
- A. Coal mine waste piles
  - B. Bond forfeiture and permit revocation sites
  - C. Applicant violator system (AVS) determinations
- Appendix. Tabular Summary of Core Data to Characterize the Colorado Program
- Table 1. Coal production
  - Table 2. Inspectable units
  - Table 3. State permitting activity
  - Table 4. Offsite impacts
  - Table 5. Annual State mining and reclamation results
  - Table 6. Reclamation status of all areas disturbed under the Colorado permanent regulatory program
  - Table 7. State bond forfeiture activity
  - Table 8. Colorado staffing
  - Table 9. Funds granted to Colorado by OSM
  - Table 10. Inspection activity
  - Table 11. Enforcement activity
  - Table 12. Lands unsuitable activity

## I. Introduction

The Surface Mining Control and Reclamation Act of 1977 (SMCRA) created the Office of Surface Mining Reclamation and Enforcement (OSM) in the Department of the Interior. SMCRA provides authority to OSM to oversee the administration of and provide Federal funding for State regulatory programs that have been approved by OSM as meeting the minimum standards of SMCRA. This report contains summary information regarding the Colorado Division of Minerals and Geology (DMG) implementation of the approved Colorado program

During October 2003, the Team sent a letter to 34 mining companies, 11 State agencies, 22 Federal agency offices, and 26 environmental organizations. The Team requested suggestions for topics concerning reclamation success, offsite impacts, and customer service that the Team should evaluate. The Team received one comment in response to this letter from the United States Department of the Interior, Bureau of Land Management (BLM) which acknowledged the Team's successful cooperation with the BLM's Kremmling, CO, field office.

## B. Colorado Program

### 1. Mined Land Reclamation Board Meeting

The Mined Land Reclamation Board held one of its monthly meetings in Leadville, away from its regular Denver meeting site. Holding meetings in the vicinity of the mining operations encourages public participation by making DMG and the Board more available to the public, and it helps DMG and the Board to establish a presence outside of Denver. Mine tours representing various types of mines and technologies help the Board better understand reclamation issues.

### 2. Education and Community Outreach

DMG participated and made a presentation at the Associated Governments of North Colorado's 2004 Coal Conference, which was held in Craig in May 2004. DMG updated the attendees (coal mining companies, interested citizens, local governments, and State and Federal agencies) on various aspects of its program.

DMG made presentations to local university and school classes, professional organizations, Scout troops, and adult education classes. Presentations focused on the regulatory program and associated reclamation issues.

All DMG staff had an opportunity to work in the DMG booth at the Colorado State Fair and help educate visitors about mining and reclamation. Over 645,000 people attended the fair and the DMG booth was a very popular attraction. DMG also sponsored a booth at the Taste of Colorado. This is another popular event that attracts thousands of visitors.

DMG staff met with representatives of a private partnership exploring the feasibility of constructing a new surface coal mine and power plant complex. Various DMG staff met with the partnership and visited the site.

### 3. Information and Technology Exchanges

DMG continued to participate in OSM's partnership with the Indonesian Ministry of Energy and Mineral Resources. OSM has provided technical assistance and personnel exchanges that support the Ministry's objective of improving its regulation of mining operations, upgrading its technical training capacity, and improving its capacity to decentralize its operations to local and provincial levels of government in Indonesia. During 2003, a group of Indonesians visited DMG's offices and toured mines to become acquainted with DMG's permit review and inspection processes.

DMG participates in the OSM steering committees for the National Technical Training Program, the Technical Innovation and Professional Services training program, Western Regional Technology Transfer Team, and the National Technology Transfer Team.

Participation in the Interstate Mining Compact Commission (IMCC) annual meeting, Western Interstate Energy Board / States meeting, the benchmarking workshop on underground mine mapping and the bond forum provided an opportunity for DMG to exchange information with several other states.

DMG is participating in the planning committee for the American Society of Mining and Reclamation 2005 annual meeting that will be held in Breckenridge, Colorado.

DMG staff made significant contributions this year during three electronic permitting workshops conducted by the OSM, Office of Technology Transfer by attending, participating, and sharing their expertise in round table discussions of this important new technology.

## IV. Accomplishments, Issues, and Innovations

### A. Accomplishments

#### 1. Final Bond Releases

DMG fully releases a reclamation performance bond (phase III bond release) when a permittee meets or exceeds all DMG program requirements on the land that it disturbed.

During evaluation year 2004, DMG granted a final bond release for all land disturbed by one underground mine, for 1858 acres at an active surface coal mine and 10 acres of industrial land at a reclaimed surface mine. The total number of sites for which Colorado has approved full and final bond release under its permanent regulatory program is 13.

For further discussion of successful reclamation on permitted mines, see following section V.B.1.

#### 2. DMG and Colorado Mining Association Reclamation Awards

To encourage innovative reclamation techniques and to recognize those companies that have exceeded the regulatory requirements for environmental protection, DMG participated in the award process for DMG's and Colorado Mining Association's Annual Reclamation Awards.

In nominating awards for mines, DMG cited exemplary reclamation techniques, community leadership in environmental educational opportunities and information on mining and reclamation, excellent compliance history, and methods for ensuring public safety. The companies recognized at an awards luncheon during the Colorado Mining Association's annual conference were: Trapper Mining Inc., Bowie Resources Limited, Colowyo Coal Company, Energy Fuels Coal Inc., and Sunland Mining Corporation.

### 3. Evaluation of Permit Revocation Sites

DMG continues to evaluate the reclamation status of the permit revocation sites in an effort to terminate jurisdiction. Three of the sites have been seeded for ten years or longer which serves as the liability time period. DMG conducted the second year of quantitative vegetation sampling on these three sites during the summer of 2003.

### 4. Native Shrub Establishment on Reclaimed Lands

To address the challenge of establishing native shrubs on reclaimed lands, DMG received funding from the Colorado Severance Tax to research this topic. Initially, researchers from Colorado State University (CSU) conducted a comprehensive literature review to determine past research. Working with DMG, the Colorado Division of Wildlife, and several mining companies, CSU designed a field study to evaluate several shrub establishment techniques. The operators of three coal mines installed the test plots during the summer of 2000. CSU monitored the plots in 2001, 2002, and 2003.

### 5. Training

DMG is ensuring that its staff continues to participate in technical training and teaching opportunities. Staff members attended and assisted in the teaching of OSM's Technical Innovation and Professional Services courses covering Engineering Methods and Galena Slope Stability software.

Three staff members attended the following National Technical Training Program (NTTP) courses: Endangered Species Act (1 student), Soils and Revegetation (2 students), and Engineering Principles (1 student).

Five staff members assisted the OSM NTTP program by participating as instructors for the following three NTTP Courses: Applied Engineering, Erosion and Sediment Control, and the Abandoned Mine Lands (AML) Design Workshop.

Two staff members attended the following Technical Innovation and Professional Services courses: SURVCADD.

DMG also participated in the OSM Grant Workshop. Three DMG representatives completed the Applied Geomorphology Course offered by Wildland Hydrology.

B. Issues

1. Evaluation of Bond Forfeiture Sites.

The Team (evaluations and inspections each year are conducted by permanent Colorado Oversight Team members who are accompanied by other DMG and OSM staff on a mine by mine and topic by topic basis) evaluated 1 permit revocation site, and 6 bond forfeiture sites during EY 2004 to determine offsite impacts. This is a two year topic evaluation to conclude June 30, 2005.

Results of the EY 2004 topic evaluation for bond forfeiture and permit revocation sites are found in section VII. Seven of the 14 sites (50 %) were evaluated in the field during EY 2004.

C. Innovations

1. Underground Mine Mapping

DMG received a grant from the Mine Safety and Health Administration to digitize active and historic underground mines maps in a Geographic Information System (GIS) format. With the grant funding, DMG scanned, digitized, and geo-referenced all the mines in the Somerset coal field. In the upcoming months, DMG will link the mine maps with data from the coal permitting database and with data from the historic coal mine database. The GIS maps and data links will be deployed to the internet.

V. Success in Achieving the Purposes of SMCRA

The Team conducted evaluations and inspections to measure the number and extent of offsite impacts, the percentage of inspectable units free of offsite impacts, the number of acres that have been mined and reclaimed and meet the bond release requirements for the various phases of reclamation (reclamation success), and DMG's effectiveness in providing customer service. These evaluations and inspections are highlighted below in this section (section V), and in section VII.

Reports of the oversight evaluations and inspections conducted during EY 2004 are available for review in the OSM Denver Field Division office.

A. Offsite Impacts

An “offsite impact” results from a surface coal mining and reclamation activity or operation that causes a negative effect on resources (people, land, water, structures) outside the area authorized by the permit for conducting mining and reclamation activities.

Table 4 shows the number and type of offsite impacts that the Team documented as having occurred during EY 2004, for both permitted sites and bond forfeiture sites.

#### 1. Permitted Sites

The Team assessed whether offsite impacts had occurred on each of the 37 permitted coal mining operations in Colorado. The Team did so through the following on-the-ground observations: 155 DMG complete inspections; 270 DMG partial inspections, 4 OSM and DMG joint, complete inspections; and Team field evaluations of coal mine waste piles at 2 mines.

The Team documented 3 minor offsite impacts occurring at 2 of the above 37 permitted coal mining operations during EY 2004.

Two of these minor offsite impacts were cited in separate Notices of Violation (NOV) by DMG at the same active surface mining operation, for essentially the same minor impact. Uncontrolled surface water runoff from affected areas caused erosion and sedimentation on unaffected areas that are not approved for disturbance, but which lie within the approved permit boundary. The third minor offsite impact, also cited by DMG in a NOV, was an encroachment impact to a land resource caused by mining unleased Federal coal within the permit area.

All three minor impacts were to a land resource (table 4), resulting in 95 percent of permitted sites being free of offsite impacts (35 of 37 mine sites were free of offsite impacts). By comparison, 100, 98, 94, and 93 percent of the mines were free of offsite impacts in the following evaluation years: EY 2003 (9 month evaluation cycle), EY 2002, EY 2001, and EY 2000.

#### 2. Bond Forfeitures and Revoked Permit Sites

DMG has revoked the permits and forfeited reclamation performance bonds for 13 mines. In lieu of forfeiting a bond on another mine, it revoked the permit and allowed the bank securing the bond to reclaim the site. In previous evaluation years, DMG and the bank respectively conducted reclamation on the 13 bond forfeiture sites and 1 permit revocation site (table 7).

The Team’s initial evaluation of bond forfeiture and permit revocation sites occurred in EY 2000 and that evaluation documented three minor offsite impacts to a land resource due to sedimentation and erosion caused by uncontrolled surface water runoff (table 4). During EY 2004, DMG conducted 40 complete and 49 partial inspections on the 14 sites. The Team initiated a two year topic evaluation beginning in EY 2004 to again determine offsite impacts from the bond forfeiture / permit revocation sites. Seven of the fourteen sites were evaluated in the field during EY 2004. The Team did not observe offsite impacts on the seven sites evaluated other than the same two minor offsite impacts identified during EY 2000.

Two of the seven sites evaluated in EY 2004 had essentially the same minor offsite impact (erosion and sedimentation) identified during the EY 2000 evaluation. The Team also determined that a third bond forfeiture site continues to have the same minor offsite impact identified during the EY 2000 evaluation. As a result, 78 percent of the bond forfeiture and permit revocation sites (11 of 14) were free of offsite impacts during EY 2004.

The Team also found 78 percent of bond forfeiture and permit revocation sites free of offsite impacts during each of the following evaluation years: 2003 (9 month evaluation period), 2002, 2001, and 2000.

The results of this EY 2004 bond forfeiture sites evaluation can be found in section VII.

### 3. Joint, Complete, Oversight Inspections

Each year the Team evaluates offsite impacts and reclamation success on joint, complete, oversight inspections selected by the Team to reflect current Colorado coal mining conditions. Reports detailing the four oversight inspections conducted EY 2004 are available for review in the OSM Denver Field Division office. No offsite impacts were identified during the four complete oversight inspections. Reclamation success at these four mines was also evaluated and documented during each inspection. No problems with reclamation success were noted.

#### B. Reclamation Success

##### 1. Permitted Sites

For the permitted and bonded operations OSM measures reclamation success by tracking the bonded, disturbed acreage that has received bond release from DMG; and by conducting complete oversight inspections and annual topic evaluations.

Table 5 shows the acreage on active, temporarily inactive, or inactive permits where DMG partially released (phases I and II) or totally released (phase III) bonds during EY 2004. For the 20,456 (table 5) bonded acres that had not received phase III bond release at the beginning of EY 2004, DMG granted phase I bond releases on 980 acres, phase II bond releases on 10 acres, and phase III bond releases on 1868 acres (table 5).

DMG has granted phase III bond releases on 6,609 acres (table 6), which is over one-fourth of all acreage disturbed under the Colorado permanent program (6,609 of 21,478 acres). The ratio of DMG's phase III bond release acreage to total disturbed acreage is higher than all other comparable western States.

Each evaluation year the Team compiles reclamation information for all operations that DMG has permitted under the Colorado regulatory program. This reclamation information is derived from annual reclamation reports submitted to DMG by all permitted coal mine operations. The Team uses the reported information to make assessments of the phases in mined land reclamation.

The Team can accurately determine acreage in the following categories: disturbed acreage, acreage backfilled and graded, acreage topsoiled and seeded, and reclaimed acreage with vegetation established for 10 years. Most of this reclaimed acreage would be approved for bond release under one or more of the three phases of bond release in the Colorado program. Several operations have not submitted bond release applications for eligible reclaimed lands.

Table 6 shows the detailed reclamation status of the active, temporarily inactive, and inactive operations; the operations for which DMG released all phase III bonds; the 13 operations for which DMG forfeited the reclamation performance bonds; and one permit revocation site.

Review of data in table 6 indicates that over half (approximately 71%) of all the disturbed acreage on active, temporarily inactive, and inactive operations has been backfilled, graded, topsoiled, and seeded (15,213 of 21,478 acres). The Team believes that most of this reclaimed acreage would meet the phase I and II bond release requirements, and that most of the acreage with vegetation established for ten years would meet the phase III bond release requirements.

OSM concludes that completed reclamation of mined land in Colorado is successful based on the Team's review of the above annual reclamation reports, DMG routine monthly inspections that include evaluations of these reclaimed lands, and both complete oversight inspections and annual topic evaluations completed by the Team.

## 2. Bond Forfeitures and Revoked Permit Sites

During EY 2004 DMG continued to evaluate three bond forfeiture sites. Sites were inspected for off-site sedimentation and reclamation success. One site, reclaimed by the bank holding the bond, has achieved successful reclamation and a bond release application from the bank was submitted. The Division expects to release the bank from liability in EY 2005.

## 3. Coal Mine Waste Piles

The Team evaluated reclamation success during the EY 2004 evaluation of coal mine waste piles. Results of the coal mine waste pile evaluations are found in section VII.

## 4. Joint, Complete, Oversight Inspections

Each year the Team evaluates reclamation success on joint, complete, oversight inspections. Reports detailing the four joint, complete, oversight inspections conducted during EY 2004 are available in the OSM Denver Field Division office.

### C. Customer Service

The Team conducted an evaluation of DMG's Applicant Violator System (AVS) Determinations during EY 2004. For a discussion of this evaluation, see following section VII.

### VI. OSM Assistance

For the 1-year grant period starting January 1, 2004, OSM funded the Colorado program in the amount of \$1.95 million (table 9). Through a Federal lands cooperative agreement, OSM reimburses DMG for permitting, inspection, and other activities that it performs for mines on Federal lands. Because most of the mines in Colorado are on Federal lands (table 2), the percentage of total program costs for which OSM provided funding was 79 percent (table 9). Under its National Technical Training Program, and Technical Innovation and Professional Services Program, OSM offers free of charge technical training courses to State and Tribal employees. As described above in section IV (A) (5), several DMG employees participated in these training opportunities as both students and instructors during EY 2004.

To support DMG's new technologies implementation, this year the OSM Office of Technology Transfer provided funding for modification, update and maintenance of the CIRCES program, the computerized Colorado Integrated Reclamation Cost Estimating System.

In response to requests by DMG staff and DMG's technical library, the OSM technical librarian provided DMG with copies of 127 journal articles, and 2 reference requests.

The Hopi Tribe in Arizona sent two natural resource specialists who toured surface mining operations in the Yampa Valley area near Craig, CO, accompanied by DFD personnel. The tour participants observed a highwall miner being used for secondary coal extraction on a surface mine final pit highwall, mature reclamation areas, and a mine-mouth, coal fired, electrical power generating station.

### VII. Evaluation Topics

Each year the Team selects and evaluates topics to determine whether DMG is effective in preventing or minimizing offsite impacts, ensuring reclamation success, and providing customer service. Following are discussions of the evaluations conducted during EY 2004.

Reports for these evaluation topics are available for review in the OSM DFD office.

#### A. Coal Mine Waste Piles

The Team completed an evaluation of coal mine waste piles during EY 2004 to determine whether offsite impacts are being prevented or minimized, and whether reclamation of the piles is successful. This evaluation was initiated during EY 2003 (five piles were evaluated), and concluded in EY 2004 (two piles were evaluated).

Examples of offsite impacts that could occur include erosion, sedimentation, water pollution, and airborne dust. Examples of unsuccessful reclamation that could occur include failure of revegetation, excessive erosion, failure to meet the approved post mining land use criteria, and landslides or similar land instability.

During EY 2004 the Team visited two coal waste piles on two separate mines. The Team did not observe any instances of offsite impacts that were caused by the two piles.

Both piles were stable; no excessive erosion was noted; and surface water runoff was being controlled as designed and approved in the DMG permit. Both piles were compacted, subsoiled, topsoiled, and seeded as approved in the DMG permit and applicable Colorado program requirements. Vegetation has become well established, and the approved post mining land use for the completely reclaimed coal waste pile is being achieved. The pile is awaiting bond release.

Based on the field evaluations at the two coal waste piles evaluated during EY 2004 and the five waste piles evaluated during EY 2003, OSM finds that DMG is ensuring the successful and timely reclamation of coal mine waste piles, and preventing offsite impacts from coal mine waste pile development on coal mines in Colorado.

#### B. Bond Forfeiture and Permit Revocation Sites

During EY 2004 the Team initiated this two year evaluation topic that will conclude June 30, 2005, to evaluate offsite impacts from bond forfeiture and permit revocation sites. The Team conducted field evaluations on seven (50 percent) of the thirteen bond forfeiture sites, and one permit revocation site in Colorado (A bank holding the bond completed reclamation in lieu of bond forfeiture at one site.) This same topic was initially evaluated by the team in EY 2000. Three minor offsite impacts (primarily due to erosion and sedimentation from uncontrolled surface water runoff) at three separate sites were documented during the EY 2000 evaluation.

The EY 2004 evaluation documented two minor, offsite hydrology impacts to a land resource (table 4). Of the seven sites evaluated during EY 2004, one minor offsite impact was identified at each of two separate sites. The EY 2000 evaluation also identified these same two, minor offsite hydrology impacts, at the same two sites. The erosion and resultant offsite sedimentation are primarily from the same erosional features, and surface water runoff patterns within each site, that were identified as problematic during the EY 2000 evaluation. No additional reclamation work has been completed since EY 2000 on the identified problem areas at the two sites.

OSM finds that DMG's program assists in minimizing the two minor offsite impacts that occur from the seven bond forfeiture sites evaluated during EY 2004. No additional offsite impacts were identified beyond these two minor impacts documented during the EY 2000 bond forfeiture site evaluation.

#### C. Applicant Violator System (AVS) Determinations

During EY 2004 the Team evaluated DMG's applicant violator system (AVS) determinations as a customer service evaluation topic. On March 12, 1991, OSM and Colorado entered into a Memorandum of Understanding (MOU) that establishes the procedures to be followed by Colorado and OSM in implementing the AVS.

OSM reviewed the AVS information for 12 of the 32 permit applications that DMG approved during the time period from October 1, 2001, through June 30, 2003 (EY 2002 and EY 2003). DMG approved applications for 0 new permit applications; 4 permit revisions; 4 transfers, assignments, or sales of rights; and 24 permit renewals.

The Team requested assistance from the OSM AVS Office in Lexington, Kentucky, for this evaluation. The OSM AVS Office generated ad hoc reports from the OSM AVS database for the selected permitting actions.

DMG's response to the OSM AVS Office's analysis of oversight reports for Colorado adequately addresses the identified deficiencies. There are different interpretations of the meaning of some dates (issue date, decision date, actual date, etc.) which apparently accounts for minor problems in the timeliness of data entry into AVS.

There appears to be a different emphasis on reporting current information as opposed to past information by DMG and the OSM AVS Office. The imposition of a Federal court order during the reporting period that blocked all access to the AVS system was a significant factor affecting DMG's ability to update the AVS system in a timely manner. Although some minor reporting problems did occur in the reporting period, often related to the circumstances given above, DMG is consistent in application and properly uses and implements the AVS program.

Both the OSM AVS Office and DMG agree that some additional training for DMG staff would be beneficial. OSM DFD concurs with the recommendation for additional training because it should help in standardizing implementation of the AVS program and clarify interpretations of AVS terminology, while also providing DMG staff with the opportunity to learn about any recent changes and developments in the program. OSM DFD also concurs with OSM AVS Office's recommendation that future evaluations might be expanded to include enforcement actions.

OSM DFD finds that DMG is timely and effective in implementing the 1991 AVS-MOU described above that establishes DMG's AVS operating procedures.

#### Appendix     Tabular Summary of Core Data Characterizing the Colorado Program

The following tables present data pertinent to mining operations and State and Federal regulatory activities within Colorado. They also summarize Colorado funding provided by OSM, and Colorado staffing. Unless otherwise specified, the reporting period for the data contained in all

tables is July 1, 2003, through June 30, 2004 (EY 2004). Additional data used by OSM in its evaluation of Colorado's performance is available for review in the evaluation files maintained by the OSM Denver Field Division office.