

# **Office of Surface Mining Reclamation and Enforcement**

**Annual Evaluation Summary Report**

**for the**

**Regulatory**

**Program**

**Administered by the State**

**of**

**COLORADO**

**for**

**Evaluation Year 2000**

**(October 1, 1999, through September 30, 2000)**

December 2000

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## **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 implementation of, and provide Federal funding for State regulatory programs that have been approved by OSM as meeting the minimum standards specified by SMCRA. This report contains summary information regarding the Colorado program and the effectiveness of the Colorado program in meeting the applicable purposes of SMCRA as specified in section 102. The Colorado Department of Natural Resources, Division Of Minerals and Geology (DMG) is the regulatory authority for the State of Colorado. This year's report covers the period October 1, 1999 through September 30, 2000. Detailed background information and comprehensive reports for the program elements evaluated during the period are available for review and copying at the OSM Denver Field Office.

The following is a list of acronyms used in this report:

AML	Abandoned mine lands
BLM	U.S. Department of the Interior, Bureau of Land Management
CIRCES	Colorado Integrated Reclamation Cost Estimating System
CRP	Conservation Reserve Program
DMG	Colorado Division of Minerals and Geology
DOW	Colorado Division of Wildlife
FTE	Full-Time Equivalents
GPRA	Government Performance Results Act
MSHA	U.S. Department of Labor, Mine Safety and Health Administration
OSM	U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement
SMCRA	Surface Mining Control and Reclamation Act of 1977
WRCC	OSM, Western Regional Coordinating Center

## **II. Overview of the Colorado Coal Mining Industry**

Coal bearing regions within the State cover approximately 29,600 square miles, which is 28.4 percent of the total area of Colorado. Coal reserves vary from lignite to anthracite. More than 70 percent is bituminous, 23 percent is subbituminous, 5 percent is lignite, and less than 1 percent is anthracite. The demonstrated coal reserve base is about 17.08 billion tons, or 3.5 percent of the national reserve base. Of this reserve base, an unmineable fraction exists consisting of coal rendered not mineable because it is in or near alluvial valley floors, national

parks, historic and archaeological sites, and under towns or properties where surface impacts are a concern. These restrictions are imposed by Section 522 of SMCRA. Some 8.8 million acres of coal rights in the State are owned by the Federal Government; on about 72 percent of this land, the Federal Government controls both the coal and surface rights. All Federal coal is leased by the U.S. Bureau of Land Management (BLM). BLM estimates that approximately 4.2 billion tons of reserve base are under Federal ownership. Recoverable coal reserves held under Federal lease are estimated to be approximately 1.9 billion tons (of which 540 million tons are surface mineable). On average, 96 percent of Colorado's coal production is obtained from mines on Federal lands. OSM supports the Colorado coal program through an annual grant that provides for 79% of the programs costs.

Commercial coal production first began in 1861, while surface mining for coal began in the early 1950's. Underground production tonnage was first recorded in 1864. Generally, production climbed between 1875 and 1920. The 1 million tons per year milestone was reached in 1888, and the 5 million tons mark was attained by the end of the century. By 1910, production was at 10 million tons annually, and it remained steady until affected by the Depression. Production returned to 5 million tons per year through the mid-1930's. World War II increased production to 8 million tons per year. Following the war, the change to diesel fuel for locomotives and oil for electric production severely reduced the demand for coal, and production ranges remained at 2 to 4 million tons per year through 1963, increased to 8 million tons in 1976, then climbed rapidly to 19.3 million tons in 1981. Coal production declined somewhat through 1988, then climbed back to 19.3 million tons in 1992. During 1999, Colorado produced 30.03 million tons of coal.

Colorado continues to lead the world in record longwall production. The Twentymile Mine continues to hold the record with over one million tons mined in a month.

Surface and underground mines employ less than 2000 people. Employment peaked in the early 1980's with 4700 people producing coal. Currently 22 surface mines, 32 underground mines, 1 surface/underground mine, and 2 facilities are regulated under the approved State program by DMG. Nine underground mines and five surface mines were producing coal at the end of the evaluation period. Permitted mine acreage per minesite ranged from 20 to 22,580 acres.

Differences in elevation create many climatic zones. Local annual precipitation can average less than 8 inches in some areas in extreme western Colorado and can average in excess of 30 inches in certain mountainous areas. Generally, precipitation rates are low at most mine sites, making revegetation difficult. This problem can be overcome with careful species selection. The growing season can be up to 169 days in length at some sites, but is usually much less, especially in the mountainous regions of the western half of the State.

### **III. Overview of the Public Participation Opportunities in the Oversight Process and the State Program**

#### **MINED LAND RECLAMATION BOARD MEETINGS**

The Mined Land Reclamation Board held two of its monthly meetings away from its regular Denver meeting site and they also toured mines in the State. Meetings were held in Colorado Springs and Glenwood Springs. Holding the meetings in the vicinity of the mining operations encourages public participation by making the DMG and the Board more available to the public, and 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.

#### **JOINT DMG/OSM PUBLIC MEETINGS**

DMG and OSM conducted two public meetings for the purposes of receiving comments and suggestions for oversight of the Colorado program. The meetings were held in coal mining regions in Durango and Steamboat Springs. Notice of the meetings was announced on public radio throughout the state and on local stations in the vicinity of the meetings. The public was encouraged to submit written comments if unable to attend the meetings. In addition, approximately 130 letters were sent to environmental groups, the coal industry, and consultants with notification of the meetings.

#### **EDUCATION AND COMMUNITY OUTREACH**

DMG Coal program staff and OSM participated in the Year 2000 Coal Conference, held in Craig in June. The Associated Governments of Northwest Colorado sponsored the conference.

Representatives from DMG and OSM's Western Regional Coordinating Center, including the Regional Director, jointly toured several of the mines in northwest Colorado. Environmental issues particular to the northwestern mines were discussed and innovative reclamation techniques were viewed.

OSM hosted an electronic permitting workshop in July. A representative from DMG presented a paper on the DMG permitting database. Representatives from several western states and mining operations participated and exchanged ideas.

At OSM's Hydrology Forum in September, a DMG staff hydrologist presented a technical paper on coal spoils leachate. Representatives of OSM, western state agencies, industry, private citizens and contractors participated in the forum.

DMG works closely with local citizen groups and schools at the Coal Basin Mines. DMG participated in a public meeting with the Redstone Community Association and the Crystal Valley Environmental Protection Association to inform citizens of the reclamation success, recent progress and future reclamation plans for the Coal Basin Mines. A tour of the mine was also given to these groups and all local citizens in September. Many school and volunteer groups have assisted with reclamation projects at the site including Aspen Middle School and Redlands Middle School. Yampa Mountain High School in Glenwood and Carbondale High School used the site for environmental studies and as part of their river watch program.

The Colorado AML Program hosted the National Association of AML Programs in Steamboat Springs in September. Several representatives from the coal program assisted by moderating technical sessions and guiding field tours to local coal mining operations.

DMG staff also made presentations to local university and school classes and professional organizations. These occurred at the Colorado State University, Powell Middle School and Women in Mining. Presentations focused on the regulatory program and associated reclamation issues.

Representatives of the Division also participated and spoke at several statewide and national conferences including: the Mine Safety Awareness Campaign Meeting with MSHA representatives, the Interstate Mining Compact Commission Meeting, I-Card, the Society of Mining Engineers Annual meeting, the International Conference on Acid Mine Drainage and the San Juan Mountains Alpine Research Collaborative Workshop in Durango.

DMG has developed a public information display that includes photographs, charts, handouts, and other information on Division activities and coal mining in Colorado. The DMG display was used in other outreach efforts throughout the State including the Mine Waste Symposium, the High Altitude Revegetation Workshop, Mine Safety Fair, Earth Day at the Denver Zoo, and AA Taste of Colorado-Education Exhibit. The display was also used by the Education Foundation of the Colorado Mining Association for a program titled "Total Concept of the Mining Industry" which is presented to school teachers.

## **YOUTH IN NATURAL RESOURCES**

The Colorado Department of Natural Resources manages a program known as Youth in Natural Resources. The mission of this program is to foster an interest in stewardship toward the state's natural resources by providing environmental education and opportunities for summer

employment to Colorado's youth. The Division of Minerals and Geology participated in this program in 2000 by sponsoring one student. In addition to work at the Division, the student was given a tour of active mining operations in Colorado and a power station where she learned how coal is used to generate electricity.

#### INTERNATIONAL INFORMATION AND TECHNOLOGY EXCHANGES

DMG hosted representatives from several countries to exchange ideas regarding reclamation regulation, technology and developmental issues. In February, DMG hosted delegates from Chile and Russia. In April, DMG participated in the Denver International Program by hosting a representative from South Africa. Representatives from France's International Institute for Environment and Development visited Colorado in August. All international guests met with DMG representatives and toured several coal and non-coal operations.

The DMG Director participated in OSM's partnership with the Indonesian Ministry of Energy and Mineral Resources. OSM has provided technical assistance and personnel exchanges which 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 2000, representatives of Indonesia visited Colorado to learn more about our program and the DMG Director visited Indonesia to assist with the Indonesian mining and reclamation program.

## **IV. Major Accomplishments/Issues/Innovations**

### **BOND RELEASE**

After reviewing and approving all requirements for Phase III bond release, the DMG terminated jurisdiction for two surface mines, an underground mine and part of a surface mine in northwest Colorado. These mines were reclaimed to the beneficial post mining land uses of rangeland and wildlife habitat. See Section V., B.

### **2000 EXCELLENCE IN SURFACE COAL MINING RECLAMATION AWARD**

Seneca Coal Company was awarded the 2000 Excellence in Surface Coal Mining Reclamation Award for outstanding reclamation efforts at the Seneca No. II Mine. This award was presented for SCC's substantial progress in their reclamation program on steep terrain and rough conditions. The coal seams dipped at approximately 20-35% that made final contouring and drainage reestablishment challenging. SCC did an excellent job of recontouring the land by blending reconstructed drainage channels and native revegetated areas with the natural surrounding terrain. SCC has developed a successful program of native seed collection for the

establishment of shrubs to enhance the post mining wildlife habitat. Sharp tail grouse have returned to a lek on the reclaimed lands. About 200 cattle graze each year on the reclaimed rangeland. The DMG endorsed Seneca II Mines nomination for the 2000 Excellence in Surface Coal Mining Reclamation Award.

## **RECLAMATION AWARDS**

In an effort to encourage innovative reclamation techniques and to recognize those companies that have exceeded the regulatory requirements for environmental protection, DMG participated in the nomination process for the Colorado Mining Association's Annual Reclamation Awards. DMG recognized reclamation techniques, compliance history, and exemplary methods of ensuring public safety at four mine sites in the state. The companies recognized at an awards luncheon during the Colorado Mining Association's annual conference were Mountain Coal Company, Trapper Mining, Inc., Colorado Yampa Coal Corporation and Oxbow Mining Inc.

## **BOND FORFEITURE SITE RECLAMATION**

As a result of a DMG initiative, the state legislature allocated funds from the Colorado Severance Tax for reclamation and environmental remediation activities on selected coal mine sites where the permits were revoked and where the amount of forfeited bond money was insufficient to stabilize the site. Reclamation activities on these sites began during the 1999 construction season, continued through the 2000 construction season and will be completed no later than June 30, 2001.

## **NATIVE SHRUB ESTABLISHMENT ON RECLAIMED LANDS**

To address the challenge of establishing native shrubs on reclaimed lands, the DMG was allocated funding from the Colorado Severance Tax to research this topic. Initially, researchers from Colorado State University conducted a comprehensive literature review to determine what research has been conducted in the past. A field tour of native shrub establishment at several mines was conducted in June with participants from DMG, OSM, CSU, the Colorado Division of Wildlife and coal mine operators. CSU designed demonstration plots to evaluate several methods and reclamation practices to enhance shrub establishment on three mines in northwest Colorado. These plots were constructed with the cooperation of coal mine operators at the three mines. CSU will monitor the progress of these plots during the next five years.

## **WILDLIFE HABITAT RESTORATION**

For the past several years, the Colorado Division of Wildlife (DOW) has researched sharptail grouse populations in northwest Colorado as part of the species conservation plan. The results of their research were highlighted in DOW's bimonthly magazine, "Colorado Outdoors". Of



particular interest was the documented higher use on reclaimed mine lands compared to Conservation Reserve Program (CRP) lands. DOW attributes the reclaimed land success to the diversity of seed mixes creating desirable habitat for breeding, nesting and brood rearing of the grouse.

## **TRAINING**

DMG staff has participated in many of the training opportunities made available by the OSM. OSM/NTTP classes attended by the DMG were Permitting Hydrology; Blasting and Inspection; Historic and Archaeological Resources and Applied Engineering. DMG also participated in one TIPS class, Introduction to GPS. The Office of Technology Transfer also offered classes the Coal Staff attended.

## **RECLAIMING LANDSCAPES**

Reclaiming Landscapes is the culmination of four summers studying dozens of mined and reclaimed landscapes across Colorado. The DMG helped sponsor the University of Colorado/Denver research through analytical documentation and travel across the state, to document the naturally beautiful and culturally altered western landscapes. This exhibit seeks to gain a further understanding of the cultural phenomenon of Reclaiming as merely a passive, visual operation. Reclamation of western landscapes is presented using a wide array of graphical agents allowing reclamation to be envisioned three ways: through cartography, mapping, and images. DMG was one of several contributors to the project.

## **V. Success in Achieving the Purposes of SMCRA as Measured by the Number of Observed Off-Site Impacts and the Number of Acres Meeting the Performance Standards at the Time of Bond Release**

To further the concept of reporting end results, the findings from performance standard evaluations are being collected for a national perspective in terms of the number and extent of observed off-site impacts and the number of acres that have been mined and reclaimed and which meet the bond release requirements for the various phases of reclamation. Individual topic reports are available in the OSM Denver office which provide additional details on how the following evaluations and measurements were conducted.

## **A. Off-Site Impacts:**

Four inspectable units were observed with impacts that affected land resources off of the area authorized to be disturbed. No off-site impacts to people, water, or structures were observed. Three of the four sites were revoked and forfeited mines. Of the 14 revoked and forfeited inspectable units, 77% were free of off-site impacts. One site was an active mine. Of the 42 inspectable units that are active or inactive, 97.7% were free of off-site impacts. 92.9% of all Colorado inspectable units were free of off-site impacts.

The off-site impact on the active mine was within the permitted area, but off of the disturbed area. Spoil handling procedures on the surface mine resulted in a small amount of spoil spilling off of the area where topsoil had been removed and onto the undisturbed area. This resulted in some topsoil loss. Runoff from the spoil drained to a sedimentation pond. See Section VII for an explanation of off-site impacts observed on bond forfeiture sites.

OSM conducted 23 inspections on active, inactive, and forfeited mines with at least a partial focus on off-site impacts. DMG conducted 217 complete inspections and 408 partial inspections with at least a partial focus on off-site impacts. Off-site damages were observed four times. One of the observations was at an active permitted site and three were at bond forfeiture sites. A State Notice of Violation was issued for the occurrence at the active site. All of the observations were deemed to have a minor impact on land resources. The nature of the violations do not present a discernable pattern. The Colorado program has been successful in deterring off-site impacts from coal mining operations.

## **B. Bond Release:**

After reviewing and approving all requirements for Phase III bond release, the DMG terminated jurisdiction for an underground mine, two large surface mines, and a large part of another surface mine in northwest Colorado. These mines were reclaimed to the beneficial post mining land uses of rangeland/ wildlife habitat and pastureland.

Few permanent program mining operations in Colorado have acreage that has been granted a full Phase III bond liability release. Determining the success of the Colorado program based on this figure is deceptive because these Colorado coal operations tend to be large and long-lived. Some operators have been granted variances from contemporaneous reclamation as allowed by State and Federal regulations. More than half of the mines are underground operations where the surface disturbance will not be reclaimed until final closure of the mine. Also, all of the mines are subject to the 10-year minimum bond liability period. These combined factors result in acreage figures that do not represent the success of reclamation in Colorado. However, initial GPRA figures show that 49% of all acreage disturbed by coal mining has received a Phase I bond release. 70% of the disturbed acreage has been backfilled and graded. 6,181 acres of the 21,612 total disturbed acres (28.6%) in Colorado are in long term facilities or are active mine areas. Colorado leads the western States under WRCC in bond releases.

## **VI. OSM Assistance**

The percentage of program costs for which OSM provides funding is relatively high in Colorado. The majority of mines operate on Federal lands and OSM funds the regulation of these mines through a Federal lands cooperative agreement. OSM provided \$1.63 million to DMG for the evaluation period. This figure represents 79 % of the total program costs.

In 2000, DMG developed an extensive permitting/tracking database that generates electronic reports and correspondence automatically and on demand. The State Geological Survey supports this permitting effort with an electronic coal database system, reports, and GIS coverages. The Colorado Integrated Reclamation Cost Estimating System (CIRCES) Program will be completed in FY2001 allowing permit reviewers to check and calculate reclamation bonds with the help of an automated software system. OSM supported CO's electronic permitting efforts in 2000 by purchasing three large monitors and hard drives to enable DMG staff members to view, store, and retrieve large AutoCAD maps submitted by mining companies as part of their electronic permits.

OSM's Bonding Specialist provided four instances of bonding technical assistance to DMG staff regarding various aspects of reclamation bonding. In particular, the specialist helped resolve a variety of issues relating to reviewing bonds for approval, interpreting regulatory requirements, correcting errors on bonding documents, taking actions when surety companies are removed from U.S. Treasury's list of authorized sureties companies, and taking actions when a surety bond exceeds the surety company's underwriting limitations.

OSM continues to provide a wide variety of technical training opportunities for DMG personnel. DMG representatives have attended courses such as Permitting Hydrology, Blasting and Inspection, Historic and Archaeological Resources, Applied Engineering, and a TIPS Introduction to GPS during the year during the evaluation year. OSM also provided opportunity for DMG personnel to attend OSM sponsored events such as the Electronic Permitting workshop, the Billings Land Reclamation Symposium, the Hydrology and Hydraulics workshop, and the interactive technical forum, Surface Mining Reclamation Approaches to Bond Release: Cumulative Hydrologic Impacts Assessment and Hydrology Topics for the Arid and Semi-Arid West.

OSM, as a partner with DMG, the Forest Service, and Pitkin County, participated in a noxious weed control program and provided personnel to assist DMG in a noxious weed inventory of reference areas at the Coal Basin Mine. The inventory was intended to evaluate the effectiveness of the 1998 and 1999 weed control efforts.

## **VII. General Oversight Topic Reviews**

The OSM and DMG oversight team selected topics to be evaluated and defined the scope of the topic. For purposes of clarity and consistency, definitions and measurements were included in the agreement. Specific mines and a field evaluation schedule were agreed upon.

Oversight of the Colorado regulatory program focused on bond forfeiture sites and temporary cessation to assess off-site impacts. Phase III bond release was evaluated to assess reclamation success. Public availability of bond release documents was evaluated to assess customer service. In addition to these topics, four complete inspections were conducted.

### **A. Off-Site Impacts**

#### **Bond Forfeiture Sites**

Traditionally, OSM in Colorado does not include forfeited sites in its oversight inspection schedule. OSM has concentrated its resources on active or inactive operations in the belief that these sites are where the greatest possibility for environmental degradation exists. As such, OSM had not been on many of the forfeited sites for greater than a decade.

Off-site sedimentation was the only impact observed on the forfeited sites. This was observed on three sites:

The Arness McGriffin mine, a small underground operation, has sediment leaving the disturbed area that is deposited on another forfeited coal mine downslope. The downslope mine has sedimentation ponds in place and the majority of runoff from Arness McGriffin drains to these structures. Revegetation on the downslope forfeited mine has been impacted by the sediments. A noticeable sediment fan exists that does not have as good vegetation as the surrounding area. DMG's reclamation efforts on the Arness McGriffin mine have been stymied by public use. Motorcycle trails are evident on the reclaimed slopes, trash has been dumped, and the site has been used as a shooting range.

The GEC mine is the largest forfeited surface operation in Colorado. Two watersheds have extensive concentrated flow channels in the bottoms. DMG attempted stabilization of one of the channels some years ago by constructing concrete drop structures. The concrete structures have been under- and side cut, which has resulted in failure of the structures. Sediment from the disturbed area was observed in the natural channel below this watershed. The size of the eroded channels on the disturbed area indicates that substantial sediment has left the site, but the impacts were rated as minor. This rating was given because of the relatively minor impacts observed to vegetation, e.g. trees

have not been suffocated from accumulated sediments over trunks and root area, because the natural channel appears to have reached a stable equilibrium with regard to erosion, and because some of the sediment fans have now become vegetated with volunteer vegetation.

The Coal Basin Mine is the largest forfeited underground mine in Colorado. For purposes of representing this mine in Table 4, it was assigned a minor rating. The off-site impacts may be greater than shown in Table 4, but OSM and DMG were unable to define the extent of mining related off-site impacts versus naturally occurring impacts. This mine has the most complex hydrologic regime in Colorado. It is the highest elevation coal mine in the United States, with portals over 10,000 feet in elevation. The basin is layered with Mancos shale. Avalanche chutes are pervasive and intersect the disturbed areas. The watersheds carry large debris flows during high intensity thunderstorms. Backfilling and grading of the Coal Basin Mine is essentially completed. The road system has been deep-ripped to increase moisture infiltration and encourage plant growth. DMG has utilized unique revegetation efforts, such as using native seed and establishing plant micro-ecosystems, in its efforts to establish a diverse, effective plant cover to reduce the off-site impacts from this mine.

DMG has been very successful in the administration of its bond forfeited mining operations. This review focused on off-site impacts, but typically the entire mining operation was observed. A number of the sites had the outward appearance of being able to meet Phase III requirements.

### **Temporary Cessation**

The OSM and DMG oversight team (team) evaluated five mining operations during the evaluation period to determine if off-site impacts were occurring while the operations were in temporary cessation. The five mining operations were identified from OSM's Colorado Mine Name List dated June 8, 1999. One of the operations, a coal loadout facility, was reactivated during the evaluation period, and the team decided to proceed with the off-site impacts evaluation as the operation had been in temporary cessation since November 3, 1997.

The team found that all five permittees had submitted to DMG the written notice of intention to temporarily cease operations as required by Colorado Rule 4.30.1 (1) & (2). One notification submitted did not contain all the information required by the above rule, and DMG promptly requested all required information. The five mine site evaluations identified several site conditions requiring routine maintenance, but no off-site impacts were noted.

DMG is implementing the temporary cessation provisions of its approved program. The team recommends that DMG develop a formal process for periodically reviewing the permittee's notice of intention to temporarily cease operations. This review will occur at each permit

renewal (5 years) at a minimum, and will also occur at permit midterm (2.5 years) if the required permit midterm review identifies necessary changes in permit requirements and/or site conditions which impact the existing temporary cessation notification requirements. Each review will result in written adequacy findings by DMG and will be sent to the permittee requesting additional, revised, or updated information as necessary.

## **B. Reclamation Success**

### **Phase III Bond Release**

DMG and OSM reviewed a sample of five Phase III bond release decisions. It was found that DMG is successfully implementing its approved program with regard to Phase III bond releases.

OSM found that the mines evaluated for this review met the requirements for Phase III bond release. In one instance, a peculiar wording of a DMG regulation confused the applicability of certain permanent facilities to the approved postmining land use. DMG has formally proposed a revision to the regulation to eliminate any future confusion. For all proposed releases, revegetation success data were reviewed by OSM revegetation specialists and found to meet the requirements of the program. DMG is properly evaluating factors necessary under the current program to approve Phase III bond release.

## **C. Customer Service**

### **Public Notice of Phase III Bond Release Applications**

Public notifications were reviewed for the four Phase III bond release applications which received joint inspections during the evaluation period. In all cases, the required newspaper notices had been published by the operator and by DMG, and written notifications had been mailed to all parties as required. All the bond release applications evaluated for this special focus topic were in compliance with the approved Colorado program. The Team determined that the public and interested parties are being notified of proposed bond release inspections and decisions.

#### **D. Complete Oversight Inspections**

Four complete oversight inspections were conducted jointly with DMG in Colorado during the oversight year. The inspections were conducted on operations that were not subject to a review under one of the topics listed above and had not been subject to an oversight inspection during the preceding year. While the inspections were conducted as complete inspections, critical attention was paid to the conditions that were reviewed under the special focus topics.

Diversity in such categories as operational status, type of operation, geography, and size was considered in selecting the mine sites. No Ten-Day Notices or Federal enforcement actions were taken as a result of these inspections. The operations were found to be in compliance with the performance standards and permit requirements.

**Appendix A:**  
**Tabular Summary of Core Data to Characterize the**  
**Colorado Program**



**TABLE 1**

<b>COAL PRODUCTION (Millions of short tons)</b>			
<b>Period</b>	<b>Surface mines</b>	<b>Underground mines</b>	<b>Total</b>
Coal production <sup>A</sup> for entire State:			
Annual Period			
1997	9,614,900	16,497,734	26,112,634
1998	9,945,525	18,974,728	28,920,253
1999	9,502,993	20,522,672	30,025,665
	29,063,418	55,995,134	85,058,552

<sup>A</sup> Coal production as reported in this table is the gross tonnage which includes coal that is sold, used or transferred as reported to OSM by each mining company on form OSM-1 line 8(a). Gross tonnage does not provide for a moisture reduction. OSM verifies tonnage reported through routine auditing of mining companies. This production may vary from that reported by States or other sources due to varying methods of determining and reporting coal production.

**TABLE 2**

**INSPECTABLE UNITS  
As of September 30, 2000**

Coal mines and related facilities	Number and status of permits								Insp. Unit <sup>D</sup>	Permitted acreage <sup>A</sup> (hundreds of acres)		
	Active or temporarily inactive		Inactive		Abandoned		Totals			IP	PP	Total
	IP	PP	Phase II bond release		IP	PP	IP	PP				
			IP	PP						IP	PP	
<b>STATE and PRIVATE LANDS</b>												
<b>REGULATORY AUTHORITY: STATE</b>												
Surface mines	0	4	0	5	0	4	0	13	13	0	252.4	252.4
Underground mines	0	3	0	4	0	7	0	14	14	0	122.7	122.7
Other facilities	0	2	0	0	0	0	0	2	2	0	1.9	1.9
<b>Totals</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>29</b>	<b>29</b>	<b>0</b>	<b>377</b>	<b>377</b>
<b>FEDERAL LANDS</b>												
<b>REGULATORY AUTHORITY: STATE</b>												
Surface mines	0	5	0	4	0	0	0	9	9	0	402.8	403
Underground mines	0	9	0	6	0	3	0	18	18	0	1015.0	1,015
Other facilities	0	0	0	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>27</b>	<b>27</b>	<b>0</b>	<b>1,418</b>	<b>1,418</b>
<b>ALL LANDS<sup>B</sup></b>												
Surface mines	0	9	0	9	0	4	0	22	22	0	655	655
Underground mines	0	12	0	10	0	10	0	32	32	0	1,138	1,138
Other facilities	0	2	0	0	0	0	0	2	2	0	2	2
<b>Totals</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>56</b>	<b>56</b>	<b>0</b>	<b>1,795</b>	<b>1,795</b>
<b>Number of permits per inspectable unit (excluding exploration sites)</b>										<u>1</u>		
<b>Number of acres per inspectable unit (excluding exploration sites)</b>										<u>3205</u>		
Number of exploration permits on State and private lands:					<u>0</u>	On Federal lands:					<u>0</u>	<sup>C</sup>
Number of exploration notices on State and private lands:					<u>2</u>	On Federal lands:					<u>1</u>	<sup>C</sup>

**IP:** Initial regulatory program sites.

**PP:** Permanent regulatory program sites.

<sup>A</sup> A unit is located on more than one type of land, includes only the acreage located on the indicated type of land.

<sup>B</sup> Numbers of units may not equal the sum of the three preceding categories because a single inspectable unit may include lands in more than one of the preceding categories.

<sup>C</sup> Includes only exploration activities regulated by the State pursuant to a cooperative agreement with OSM or by OSM pursuant to a Federal program. Excludes exploration regulated by the Bureau of Land Management.

<sup>D</sup> An inspectable unit includes multiple permits that have been grouped together as one unit for inspection frequency purposes by some State program.

**TABLE 3**

**STATE PERMITTING ACTIVITY  
As of September 30, 2000**

Type of application	Surface mines			Underground mines			Other facilities			Totals		
	App. Rec.	Issued	Acres	App. Rec.	Issued	Acres <sup>A</sup>	App. Rec.	Issued	Acres	App. Rec.	Issued	Acres
New permits	0	0	0	0	0	0	0	0	0	0	0	0
Renewals	4	0	8,095	0	7	62,000	0	0	0	4	7	70,095
Permit Revisions	0	3	1,892	0	3	4,528	0	0	0	0	6	6,420
Transfers, sales and assignments of permit rights	0	0		1	1		0	0		1	1	
Small operator assistance	0	0		0	0		0	0		0	0	
Exploration permits	0	0		0	0		0	0		0	0	
Exploration notices <sup>B</sup>		6			0			0			6	
Revisions (exclusive of incidental boundary revisions)		30			53			1			84	
Incidental boundary revisions		3	79		4	680		0	0		7	759
Totals	4	42	10,066	1	68	67,208	0	1	0	5	111	77,274

OPTIONAL - Number of midterm permit reviews completed that are not reported as revisions

2

<sup>A</sup> Includes only the number of acres of proposed surface disturbance.

<sup>B</sup> State approval not required. Involves removal of less than 250 tons of coal and does not affect lands designated unsuitable for mining.

**TABLE 4**

<b>OFF-SITE IMPACTS</b>														
<b>DEGREE OF IMPACT</b>		<b>RESOURCES AFFECTED</b>												<b>Total</b>
		<b>People</b>			<b>Land</b>			<b>Water</b>			<b>Structures</b>			
		minor	moderate	major	minor	moderate	major	minor	moderate	major	minor	moderate	major	
TYPE OF IMPACT	Blasting													
	Land Stability													
	Hydrology													
	Encroachment				1									1
	Other													
	Total	0	0	0	1	0	0	0	0	0	0	0	0	0
Total number of inspectable units: 43														
Inspectable units free of off-site impacts: 42														
<b>OFF-SITE IMPACTS ON BOND FORFEITURE SITES</b>														
<b>DEGREE OF IMPACT</b>		<b>RESOURCES AFFECTED</b>												<b>Total</b>
		<b>People</b>			<b>Land</b>			<b>Water</b>			<b>Structures</b>			
		minor	moderate	major	minor	moderate	major	minor	moderate	major	minor	moderate	major	
TYPE OF IMPACT	Blasting													
	Land Stability													
	Hydrology				3									3
	Encroachment													
	Other													
	Total	0	0	0	3	0	0	0	0	0	0	0	0	0

Total number of inspectable units: 13 Inspectable units free of off-site impacts: 10	
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**TABLE 5**

<b>ANNUAL STATE MINING AND RECLAMATION RESULTS</b>		
<b>Bond release phase</b>	<b>Applicable performance standard</b>	<b>Acreage released during this evaluation period</b>
Phase I	! Approximate original contour restored ! Topsoil or approved alternative replaced	258
Phase II	! Surface stability ! Establishment of vegetation	912
Phase III	! Post-mining land use/productivity restored ! Successful permanent vegetation ! Groundwater recharge, quality and quantity restored ! Surface water quality and quantity restored	1063
	<b>Bonded Acreage Status<sup>A</sup></b>	<b>Acres</b>
	Total number of bonded acres at end of last review period (September 30, 1999) <sup>B</sup>	23,647
	Total number of bonded acres during this evaluation year	22,329
	Number of acres bonded during this evaluation year that are considered remining, if available	0
	Number of acres where bond was forfeited during this evaluation year (also report this acreage on Table 7)	0
<p><sup>A</sup> Bonded acreage is considered to approximate and represent the number of acres disturbed by surface coal mining and reclamation operations. <sup>B</sup></p> <p>Bonded acres in this category are those that have not received a Phase III or other final bond release (State maintains jurisdiction).</p>		

**TABLE 7****STATE BOND FORFEITURE ACTIVITY****(Permanent Program Permits)**

	<b>Number of Sites</b>	<b>Dollars</b>	<b>Disturbed Acres</b>
Bonds forfeited as of September 30, 1999 <sup>A</sup>	13	\$4,677,813	1206
Bonds forfeited during EY 2000	0	0	0
Forfeited bonds collected as September 30, 1999 <sup>A</sup>	13	\$4,677,813	0
Forfeited bonds collected during EY 2000	0	0	0
Forfeiture sites reclaimed during EY 2000	2	\$195,024 <sup>B</sup>	344.6
Forfeiture sites repermited during EY 2000	0		0
Forfeiture sites unreclaimed as of September 30, 2000	0		0
Excess reclamation costs recovered from permittee	0	0	
Excess forfeiture proceeds returned to permittee	0	0	

<sup>A</sup> Includes data only for those forfeiture sites not fully reclaimed as of this date.

<sup>B</sup> Cost of reclamation, excluding general administrative expenses.

**TABLE 8**

<b>STATE STAFFING</b> <b>(Full-time equivalents at end of evaluation year)</b>	
<b>Function</b>	<b>EY 2000</b>
<b>Regulatory Program</b>	
Permit review .....	19.60
Inspection.....	
Other (administrative, fiscal, personnel, etc.).....	6.40
<b>SUB-TOTAL</b>	<b>26.00</b>
<b>AML Program</b>	
<b>TOTAL</b>	<b>26.00</b>

DMG Title V personnel conduct inspections and permit reviews. Approximately 50% of their time is spent in each category.



**TABLE 9**

**FUNDS GRANTED TO [STATE] BY OSM**

(Millions of dollars)

**EY 2000**

<b>Type of Grant</b>	<b>Federal Funds Awarded</b>	<b>Federal Funding as a Percentage of Total Program Costs</b>
Administration and enforcement	\$1,640,906	79%
Small operator assistance	0	
<b>Totals</b>	\$1,640,906	