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ABANDONED MINES

Information on the Number of Hardrock Mines, Cost of Cleanup, and Value of Financial Assurances

Statement of Anu K. Mittal, Director Natural Resources and Environment Team





Highlights of GAO-11-834T, a testimony before the Subcommittee on Energy and Mineral Resources, Committee on Natural Resources, House of Representatives

Why GAO Did This Study

The General Mining Act of 1872 helped foster the development of the West by giving individuals exclusive rights to mine gold, silver, copper, and other hardrock minerals on federal land. However, miners often abandoned mines, leaving behind structures, safety hazards, and contaminated land and water. Four federal agencies—the Department of the Interior's Bureau of Land Management (BLM) and Office of Surface Mining Reclamation and Enforcement (OSM), the Department of Agriculture's Forest Service, and the Environmental Protection Agency (EPA)—fund the cleanup of some of these hardrock mine sites.

From 2005 through 2009, GAO issued a number of reports and testimonies on various issues related to abandoned and current hardrock mining operations. This testimony summarizes some of the key findings of these reports and testimonies focusing on the (1) number of abandoned hardrock mines, (2) availability of information collected by federal agencies on general mining activities, (3) amount of funding spent by federal agencies on cleanup of abandoned mines, and (4) value of financial assurances for mining operations on federal land managed by BLM. In 2005, GAO recommended that BLM strengthen the management of its financial assurances, which BLM generally implemented. BLM also agreed to take steps to address additional concerns raised by GAO in 2008.

View GAO-11-834T or key components. For more information, contact Anu Mittal at (202) 512-3841 or mittala@gao.gov.

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What GAO Found

GAO's past work has shown that there are no definitive estimates of the number of abandoned hardrock mines on federal and other lands. For example, in 2008 and 2009, GAO reported that BLM and the Forest Service had difficulty determining the number of abandoned hardrock mines on their lands and had no definitive estimates. Similarly, estimates of the number of abandoned hardrock mine sites in the 12 western states and Alaska (where most of the mining takes place) varied widely because there was no generally accepted definition of what constitutes an abandoned hardrock mine site. In 2008, GAO developed a standard definition for abandoned hardrock mining sites and used this definition to determine that there were at least 161,000 abandoned hardrock mine sites in the 12 western states and Alaska, and at least 33,000 of these sites had degraded the environment, by contaminating surface water and groundwater or leaving arsenic-contaminated tailings piles.

In 2008, GAO reported that BLM, the Forest Service, and the U.S. Geological Survey (USGS) either do not routinely collect or do not consistently maintain data on the amount of hardrock minerals being produced on federal land, the amount of hardrock minerals remaining, and the total acreage of federal land withdrawn from hardrock mining operations. According to BLM and Forest Service officials, they do not have the authority to collect information from mine operators on the amount of hardrock minerals produced on federal land or the amount remaining. In contrast, USGS collects extensive data on hardrock mineral production through its mineral industry surveys and reports these data in monthly, quarterly, and annual reports, but the agency does not collect land ownership data that would allow it to determine the amount of hardrock mineral production on federal land. As a result, comprehensive information on hardrock mineral production is generally not available to the public.

From 1997 to 2008, four federal agencies—BLM, the Forest Service, EPA, and OSM—had spent at least a total of \$2.6 billion to reclaim abandoned hardrock mines on federal, state, private, and Indian lands. Of this amount, EPA had spent the most—\$2.2 billion. The amount each agency spent annually varied considerably, and the median amount spent for abandoned hardrock mines on public lands by BLM and the Forest Service was about \$5 million and about \$21 million, respectively. EPA spent substantially more—a median of about \$221 million annually—to clean up abandoned mines that were generally on nonfederal land. OSM provided grants with an annual median value of about \$18 million to states and Indian tribes through its program for hardrock mine cleanups.

One factor that contributes to costs for reclamation of federal lands disturbed by mining operations is inadequate financial assurances required by BLM. Since 2005, GAO has reported several times that operators of hardrock mines on BLM lands have not provided financial assurances sufficient to cover estimated reclamation costs in the event that operators fail to perform the required reclamation. Most recently, in 2008, GAO reported that the financial assurances that were provided for 52 operations were about \$61 million less than needed to fully cover estimated reclamation costs, which could leave the taxpayer with the bill for reclamation, if the operator fails to do so.

Chairman Lamborn, Ranking Member Holt, and Members of the Subcommittee

We are pleased to be here today to participate in this hearing on abandoned mines. As you know, the General Mining Act of 1872 encouraged the development of the West by allowing individuals to stake claims and obtain exclusive rights to the gold, silver, copper, and other valuable hardrock mineral deposits on land belonging to the United States. Since then, thousands of operators have extracted billions of dollars worth of hardrock minerals from land managed by the Department of the Interior's Bureau of Land Management (BLM) and the Department of Agriculture's Forest Service—the two principal agencies responsible for federal lands open for hardrock mining.1 BLM issued regulations in 1981 requiring all operators of these mines to reclaim the land when their operations cease, but some did not and abandoned these mines. As a result, thousands of acres of federal land that were disturbed for exploration, mining, and mineral processing now pose serious environmental and physical safety hazards. Environmental hazards include toxic or acidic water that contaminates soil and groundwater and physical safety hazards include concealed shafts, unstable or decayed mine structures, or explosives. Cleanup costs for these abandoned mines vary by type and size of the operation. For example, the cost of plugging holes is usually minimal, but reclamation costs for large mining operations can be in the tens of millions of dollars.

From 2005 through 2009, we issued several products on various issues related to abandoned hardrock mines as well as current hardrock mining operations on federal land that are relevant to the issue being discussed at today's hearing.² These products included information on the number

¹An operator is a person who conducts operations in connection with exploration, mining, and processing hardrock minerals on federal land.

²GAO, Hardrock Mining: Information on Types of State Royalties, Number of Abandoned Mines, and Financial Assurances on BLM Land, GAO-09-429T (Washington, D.C.: Feb. 26, 2009); GAO, Hardrock Mining: Information on State Royalties and Trends in Mineral Import and Exports, GAO-08-849R (Washington, D.C.: July 21, 2008); GAO, Hardrock Mining: Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land, GAO-08-574T (Washington, D.C.: Mar. 12, 2008); GAO, Environmental Liabilities: Hardrock Mining Cleanup Obligations, GAO-06-884T (Washington, D.C.: June 14, 2006); and GAO, Hardrock Mining: BLM Needs to Better Manage Financial Assurances to Guarantee Coverage of Reclamation Costs, GAO-05-377 (Washington, D.C.: June 20, 2005).

of abandoned hardrock mines, the availability of information collected by the federal agencies on mining operations on federal land, the amount of funding that federal agencies have spent to cleanup abandoned mine sites, and the value of financial assurances that federal agencies collect from operators to cover the cost of reclamation in the event that an operator does not reclaim the land. My testimony today will summarize the key findings of these products. More information on our scope and methodology is available in each published product.

The work presented in these products was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provided a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Historically, the mining of hardrock minerals, such as gold, lead, copper, silver, and uranium, was an economic incentive for exploring and settling the American West. However, when the ore was depleted, miners often left behind a legacy of abandoned mines, structures, safety hazards, and contaminated land and water. Even in more recent times, after cleanup became mandatory, many parties responsible for hardrock mining sites have been liquidated through bankruptcy or otherwise dissolved. Under these circumstances, some hardrock mining companies have left it to the taxpayer to pay for cleanup of the mining sites.

Four federal agencies—the Department of Agriculture's Forest Service, the Environmental Protection Agency (EPA), and the Department of the Interior's BLM and Office of Surface Mining Reclamation and Enforcement (OSM)—fund the cleanup and reclamation of some of these abandoned hardrock mine sites. BLM's and the Forest Service's Abandoned Mine Lands programs focus on the safety of their land by addressing physical and environmental hazards. EPA's funding, under its Superfund Program, among other things, focuses on the cleanup and long-term health effects of air, ground, or water pollution caused by abandoned hardrock mine sites, and is generally for mines on nonfederal land. OSM, under amendments to the Surface Mining Control and

Reclamation Act of 1977, can provide grants to fund the cleanup and reclamation of certain hardrock mining sites.³

BLM and the Forest Service are responsible for managing more than 450 million acres of public land in their care, including land disturbed and abandoned by past hardrock mining activities. BLM manages about 258 million acres in 12 western states, and Alaska.4 The Forest Service manages about 193 million acres across the nation. In 1997, BLM and the Forest Service each launched a national Abandoned Mine Lands Program to remedy the physical and environmental hazards at thousands of abandoned hardrock mines on the federal land they manage. According to a September 2007 report by these two agencies, they had inventoried thousands of abandoned sites and, at many of them, had taken actions to cleanup hazardous substances and mitigate safety hazards. 5 BLM and the Forest Service are also responsible for managing and overseeing current hardrock operations on their land, including the mining operators' reclamation of the land disturbed by hardrock mining. Reclamation can vary by location, but it generally involves such activities as regrading and reshaping the disturbed land to conform with adjacent land forms and to minimize erosion, removing or stabilizing buildings and other structures to reduce safety risks, removing mining roads to prevent damage from future traffic, and establishing self-sustaining vegetation. One of the agencies' key responsibilities is to ensure that adequate financial assurances, based on sound reclamation plans and cost estimates, are in place to guarantee reclamation costs. 6 If a mining operator fails to complete required reclamation, BLM or the Forest Service can take steps to obtain funds from the financial assurance provider to complete the reclamation.

BLM requires financial assurances for both notice-level hardrock mining operations—those disturbing 5 acres of land or less—and plan-level hardrock mining operations—those disturbing over 5 acres of land and

³Pub. L. No. 95-87, as amended by Pub L. No. 101-508, Title VI, § 6010(2), Nov. 5, 1990.

⁴These states include Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming.

⁵BLM and Forest Service, *Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines* (September 2007).

⁶43 C.F.R. part 3809 and 36 C.F.R. part 228, subpart A.

those in certain designated areas, such as the national wild and scenic rivers system. For hardrock operations on Forest Service land, agency regulations require reclamation of sites after operations cease. According to a Forest Service official, if the proposed hardrock operation is likely to cause a significant disturbance, the Forest Service requires financial assurances. Both agencies allow several types of financial assurances to guarantee estimated reclamation costs for hardrock operations on their land. According to regulations and agency officials, BLM and the Forest Service allow cash, letters of credit, certificates of deposit or savings accounts, and negotiable U.S. securities and bonds in a trust account. BLM also allows surety bonds, state bond pools, trust funds, and property.

EPA administers the Superfund Program, which was established under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to address the threats that contaminated waste sites, including those on nonfederal land, pose to human health and the environment. The act also requires that the parties statutorily responsible for pollution bear the cost of cleaning up contaminated sites, including abandoned hardrock mining operations. Some contaminated hardrock mine sites have been listed on Superfund's National Priorities List—EPA's list of seriously contaminated sites. Typically, these sites are expensive to cleanup and the cleanup can take many years. For example, in 2004, EPA's Office of Inspector General determined there were 63 hardrock mining sites on the National Priorities List that would cost up to \$7.8 billion to cleanup, \$2.4 billion of which was expected to be borne by taxpayers rather than the parties responsible for the contamination.

Regarding financial assurances, EPA has statutory authority under the Superfund program to require businesses handling hazardous substances on nonfederal land to provide financial assurances and is taking steps to do so.⁹ In 2006, we testified that without the mandated financial assurances, significant gaps in EPA's environmental financial

⁷42 USC §§ 9601-9675.

⁸EPA, Office of Inspector General, *Nationwide Identification of Hardrock Mining Sites*, 2004-P-00005 (Washington, D.C., Mar. 31, 2004).

⁹42 U.S.C. § 9608(b); 74 Fed. Reg. 37213 (July 28, 2009).

assurance coverage exist, thereby increasing the risk that taxpayers will eventually have to assume financial responsibility for cleanup costs.¹⁰

OSM's Abandoned Mine Land Program primarily focuses on cleaning up abandoned coal mine sites. However, OSM, under amendments to the Surface Mining Control and Reclamation Act of 1977, can provide grants to fund the cleanup and reclamation of certain hardrock mining sites either (1) after a state certifies that it has cleaned up its abandoned coal mine sites and the Secretary of the Interior approves the certification or (2) at the request of a state or Indian tribe to address problems that could endanger life and property, constitute a hazard to the public and safety, or degrade the environment, and the Secretary of the Interior grants the request. In 2008, we reported that OSM had provided more than \$3 billion to cleanup dangerous abandoned mine sites. ¹¹ Its Abandoned Mine Land Program had eliminated safety and environmental hazards on 314,108 acres since 1977, including all high-priority coal problems and noncoal problems in 27 states and on the land of three Indian tribes. ¹²

Accurate Information on the Number of Abandoned Hardrock Mine Sites Was Not Available

In 2008 and 2009, we reported that BLM and the Forest Service have had difficulty determining the number of abandoned hardrock mines on their land and have no definitive estimates on the number of such sites.

Moreover, we reported that other estimates that had been developed about the number of abandoned hardrock mine sites on federal, state, and private land in the 12 western states and Alaska (where most of the mining takes place) varied widely and did not provide an accurate assessment of the number of abandoned mines in these states. For example, federal agency estimates included abandoned nonhardrock mines such as coal mines, and included a large number of sites on land with "undetermined" ownership, which may not all be on federal land. Similarly, we reviewed six studies conducted between 1998 and 2008 that estimated the number of abandoned hardrock mine sites in the 12 western states and Alaska, regardless of the type of land they were

¹⁰GAO-06-884T.

¹¹GAO-08-574T.

¹²U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, 2006 Report to the President and Congress (Washington, D.C.: Oct. 1, 2006).

¹³GAO-08-574T and GAO-09-429T.

located on.¹⁴ However, we found that the estimates in these studies varied widely in part because there was no generally accepted definition for what constitutes an abandoned hardrock mine site and because different states define these sites differently.

In 2008, we developed a standard definition of an abandoned hardrock mining site and used this definition to determine how many such sites potentially existed on federal, state and private land in the 12 western states and Alaska. Based on our survey of these states, we determined that there were at least 161,000 abandoned hardrock mine sites in these states, and at least 33,000 of these sites had degraded the environment, by, for example, contaminating surface water and groundwater or leaving arsenic-contaminated tailings piles. We also determined that these 161,000 sites had at least 332,000 features that may pose physical safety hazards, such as open shafts or unstable or decayed mine structures.¹⁵

Federal Agencies Collect Limited Information on Mining Operations on Federal Land

In 2008, we reported that BLM, the Forest Service, and the U.S. Geological Survey (USGS) either do not routinely collect or do not consistently maintain data on the amount of hardrock minerals being produced on federal land, the amount of hardrock minerals remaining, and the total acreage of federal land withdrawn from hardrock mining operations. According to officials with BLM and the Forest Service, they do not have the authority to collect information from mine operators on the amount of hardrock minerals produced on federal land, or the amount remaining. In April 2011, we reported on this issue again and found that this information is not being collected. In contrast, USGS collects extensive data on hardrock mineral production through its mineral

¹⁴The six studies are (1) Western Governors' Association and National Mining Association, *Cleaning up Abandoned Mines: A Western Partnership* (1998); (2) Interstate Mining Compact Commission, *State NonCoal AML Inventory* (2001); (3) Interstate Mining Compact Commission, *NonCoal Minerals Survey and Report* (expected issuance Spring 2008); (4) Mineral Policy Center, *Cleaning Up Western Watersheds* (2003); (5) Earthworks fact sheets on hardrock mining from Earthworks Web site last visited on March 4, 2008 (www.earthworksaction.org/resources.cfm); and (6) EPA, *Reference Notebook* (September 2004).

¹⁵GAO-08-574T.

¹⁶GAO-08-429R.

¹⁷GAO, Federal Land Management: Availability and Potential Reliability of Selected Data Elements at Five Agencies, GAO-11-377 (Washington, D.C.: Apr. 20, 2011).

industry surveys and reports these data in monthly, quarterly, and annual reports, but mine operators' participation in these surveys is voluntary, and USGS does not collect land ownership data that would allow it to determine the amount of hardrock mineral production on federal land. As a result, we found that it is not possible to determine hardrock mineral production on federal land from the USGS data. In addition, although USGS does publish the total amount of hardrock mineral production by mineral type, it is prohibited by law from reporting individual mine production and other company proprietary data unless the mine operator authorizes release of that information. In some cases, mine operators that respond to these surveys report consolidated data that covers production from several mines. Therefore, information on hardrock mineral production for every mine is not available to the public.

Some hardrock mineral production data are available from state sources and through financial reports filed with the Securities and Exchange Commission. However, these data may not always provide the level of detail necessary to determine the amount of mineral production on federal land. BLM also does not centrally maintain data on the amount of federal land withdrawn from hardrock mining operations. BLM documents land withdrawn from hardrock mining operations on its master title plats detailed paper maps maintained at BLM's state offices. These maps contain land survey information on federal land, including ownership information, land use descriptions, and land status descriptions. BLM's annual publication, Public Land Statistics, does report the total number of acres withdrawn each year, but these data do not account for instances in which multiple withdrawals may have overlapping boundaries, which can result in double-counting the number of acres withdrawn. Furthermore, the reason for withdrawing the land is not always indicated, making it difficult to determine whether it was withdrawn from mining or from other purposes.

Federal Agencies Have Spent Billions of Dollars to Cleanup Abandoned Hardrock Mining Sites

In March 2008, we reported that over a 10 year period, four federal agencies—BLM, the Forest Service, EPA, and OSM— had spent at least a total of \$2.6 billion to reclaim abandoned hardrock mines on federal, state, private, and Indian land. Of this amount, EPA had spent the most—\$2.2 billion. 18 The amount each agency spent annually varied

¹⁸GAO-08-574T.

considerably, and the median amount spent for abandoned hardrock mines on public land by BLM and the Forest Service was about \$5 million and about \$21 million, respectively. EPA spent substantially more—a median of about \$221 million annually—to cleanup abandoned mines that were generally on nonfederal land. Further, OSM provided grants with an annual median value of about \$18 million to states and Indian tribes through its program for hardrock mine cleanups.¹⁹

Financial Assurances
Provided by Operators of
Current Mines on BLM
Land May Be Inadequate to
Cover Estimated
Reclamation Costs

As we have reported, contributing to the costs incurred by the federal government to reclaim land disturbed by mining operations are inadequate financial assurances required by BLM for current hardrock mining operations. Since 2005, we have reported several times that operators of hardrock mines on BLM land have provided inadequate financial assurances to cover estimated reclamation costs in the event that they fail to perform the required reclamation. Specifically, in June 2005 we reported that some current hardrock operations on BLM land did not have financial assurances, and some had no or outdated reclamation plans and/or cost estimates on which the financial assurances were based.20 At that time we concluded that BLM did not have an effective process and critical management information needed for ensuring that adequate financial assurances are actually in place, as required by federal regulations and BLM guidance. We made recommendations to strengthen BLM's management of financial assurances for hardrock operations on its land, which the agency generally implemented.

However, when we again looked at this issue in 2008, we found that although BLM had taken actions to strengthen its processes, the financial assurances that it had in place as of November 2007 were still inadequate to cover estimated reclamation costs. ²¹ Specifically, as of November 2007, hardrock mining operators had provided financial assurances valued at approximately \$982 million to guarantee the reclamation costs for 1,463 hardrock mining operations on BLM land in 11 western states, according to BLM's Bond Review Report. BLM's report indicated that 52 of the 1,463 hardrock mining operations had inadequate

¹⁹In total, OSM has provided more than \$3 billion under its Abandoned Mine Land Program, which primarily focuses on cleaning up abandoned coal mine sites.

²⁰GAO-05-377.

²¹GAO-08-574T.

financial assurances—about \$28 million less than needed to fully cover estimated reclamation costs. However, our review of BLM's assessment process found that BLM had inaccurately estimated the shortfall, and that in fact the financial assurances for these 52 operations should be more accurately reported as about \$61 million less than needed to fully cover estimated reclamation costs.

In addition, we found that BLM's approach for determining the adequacy of financial assurances is not useful because it does not clearly lay out the extent to which financial assurances are inadequate. For example, in California, BLM reported that, statewide, the financial assurances in place were \$1.5 million greater than required, suggesting reclamation costs are being more than fully covered. However, according to our analysis of only those California operations with inadequate financial assurances, the financial assurances in place were nearly \$440,000 less than needed to fully cover reclamations costs for those operations. Having adequate financial assurances to pay reclamation costs for BLM land disturbed by hardrock operations is critical to ensuring that the land is reclaimed if operators fail to complete reclamation as required. When operators with inadequate financial assurances fail to reclaim BLM land disturbed by their hardrock operations, BLM is left with public land that requires tens of millions of dollars to reclaim and poses risks to the environment and public health and safety.

In conclusion, Mr. Chairman, while it is critical to develop innovative approaches to cleanup abandoned mines, our work also demonstrates the importance of federal agency's having accurate information on the number of abandoned hardrock mines to know the extent of the problem and adequate financial assurances to prevent future abandoned hardrock mines requiring taxpayer money to cleanup.

Chairman Lamborn, Ranking Member Holt, and Members of the Subcommittee, this concludes my prepared statement. I would be happy to respond to any questions that you might have.

Contact and Staff Acknowledgments

Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. For further information about this testimony, please contact Anu K. Mittal, Director, Natural Resources and Environment team, (202) 512-3841 or mittala@gao.gov. Key contributors to this testimony were Andrea Wamstad Brown and Casey L. Brown.

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