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Office of Inspector General

Audit Report

Abandoned Mine Lands in the Department of the Interior

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RESULTS IN BRIEF

We are gravely concerned that the Department of the Interior (DOI or Department) has put the public's health and safety at risk by not addressing hazards posed by abandoned mines on federal lands. Mines located primarily in the western states of California, Arizona, and Nevada have dangerously dilapidated structures, serious environmental hazards, and gaping cavities – some capable of swallowing an entire vehicle.

During our audit, we identified serious environmental and safety hazards where members of the public had been killed, injured, or exposed to dangerous environmental contaminants. A number of adults and children have fallen to their deaths over the past several decades due to hazards associated with abandoned mines. The potential for more deaths and injuries is ominous. Growth of the population and use of off-road vehicles in the West will increase the likelihood of additional deaths or injuries.

We focused our audit of abandoned mines on Bureau of Land Management (BLM) and National Park Service (NPS) lands because the majority of abandoned mines are located there. We visited approximately 45 areas with abandoned mines from March 2007 through April 2008 and talked to over 75 employees from 13 BLM offices and 5 national parks.

At several BLM sites we visited, we found dangerous levels of environmental contaminants, such as arsenic, lead, and mercury – easily accessible to visitors and local residents, often without their knowledge. We also found instances of trespassing at abandoned BLM mine sites, including residential and commercial development on the land.

Vehicle being hoisted from a mine shaft on BLM land. (BLM Photo)

Even more disturbing, we found that BLM supervisors told staff to ignore these problems, and employees were criticized or received threats of retaliation for identifying contaminated sites. One employee stated that adding sites to an inventory list and declaring them unsafe was more detrimental to BLM because doing so acknowledged a hazard and a potential liability.

While BLM has the clear majority of abandoned mine sites on DOI lands, we found that it has an ineffective program to address them. BLM's abandoned mines program has long been undermined, neglected, and marginalized by poor management practices and insufficient staffing and resources.

We found that NPS has mitigated many of its high-risk, easily accessible abandoned mine sites; however, there are hundreds, if not thousands, of sites that still need to be addressed. At one park, the abandoned mine inventory includes over 600 sites, and NPS officials have inspected less than half of the sites on the 1.4 million acres comprising the park. While NPS has a more effective program, current funding for NPS' abandoned mines program is inadequate to address these hazards, and NPS has failed to develop a credible estimate of the total cost of mitigation.

We believe that working in consort, BLM and NPS would make greater strides toward a solution for abandoned mines than doing so independently. The agencies should explore opportunities to share resources, expertise, and best practices to improve their programs.

While the expense of cleaning up abandoned mine sites is a concern, with figures estimated in the billions, we believe simple precautions can easily be taken at the most dangerous sites, including posting warning signs and building fences. At environmentally contaminated sites, staff can reduce air and water-borne contamination through dust control with sprinklers and temporary covers.

The overall solution for cleaning up abandoned mines is not simple. It calls for a complex and concerted effort on the part of the Department, including the immediate mitigation of known hazardous sites, a calculated effort to identify and inventory unknown sites, a methodical design to address abandoned mines comprehensively, and a strategy to secure the necessary funding for this costly endeavor.

Warning sign that could be used as a minimum precaution at abandoned mine sites. (OIG Photo)

The findings from this audit paint a picture of compelling urgency, which should trigger a swift call to action by both the Department and Congress. We are providing recommendations designed to help develop a comprehensive solution to this multi-faceted problem, not of DOI's making, but now, certainly, in the Department's realm of responsibility.

BACKGROUND

Since the 1850s, mining of hard rock minerals such as gold, silver, copper, and lead has been an important part of the economy of the Western United States. Congress passed the General Mining Law of 1872, which established a process to allow individuals to explore, claim, and mine public lands containing mineral deposits. The General Mining Law required little mitigation of physical and environmental hazards created by mining activities. In 1976, Congress passed the Federal Land Policy Management Act that enhanced federal management of mining activity and its safety and environmental effects. However, historical mining activity left hundreds of thousands of unmitigated abandoned mine sites.

Within DOI, the majority of abandoned mine sites are located on lands managed by BLM, primarily in Arizona, Nevada, and California. Typically, no mining operations have been conducted at these sites for many years, although valid mining claims may still exist. The vast majority of abandoned mine sites on NPS lands are located in the California desert area of the Pacific West Region. The California desert area, specifically Death Valley National Park, Mojave National Preserve, and Joshua Tree National Park, contains most of the mine hazards on NPS land.

Many abandoned mine sites present an immediate danger of physical injury or death due to open vertical shafts and horizontal adits (entrances to a mine) and mill sites with deteriorating buildings and equipment. Dangers include deadly gases and asphyxiation, collapsing mine walls, explosive and toxic chemicals, and rotting structures. Physical hazards require the least funding to fix or mitigate and the least expertise to identify and evaluate. Mitigation can range from temporary measures including fencing and signs to more costly permanent measures, including steel and concrete covers. The only permanent mitigation action is to fill in shafts and adits and demolish or remove buildings and structures.

Some sites also present long-term dangers to people from exposure to piles of waste rock or mine tailings (mine waste) containing hazardous materials such as arsenic, lead, and mercury. These sites can cost hundreds of millions of dollars to remediate and require extensive expertise to identify, evaluate, and mitigate. Potential sites must be sampled to identify hazardous contamination. Mitigation can include temporary measures such as reducing air and water-borne contamination through dust control with sprinklers and temporary covers. Other temporary measures that can be taken to protect the public at these sites include installing fencing and signs and taking appropriate steps to notify the public of the dangers. Permanent mitigation can include reprocessing of mine tailings to treat contaminants, removal of materials to safer locations, or onsite disposal in a properly designed facility. Clean-up of all significant sites with environmental hazards will cost billions of dollars.

DETAILS OF AUDIT

We visited approximately 45 areas with abandoned mines from March 2007 through April 2008 and talked to over 75 employees from 13 BLM offices and 5 national parks. We also reviewed hundreds of pages of related documents and traveled through California, Arizona, and Nevada for site visits and interviews. Our objective was to determine if BLM and NPS were effectively protecting the public from physical safety and environmental hazards at abandoned hard rock mine sites located on federal lands. The results of our audit are chronicled below.

Injuries and Deaths

Comprehensive records of abandoned mine accidents are not maintained by DOI or its bureaus. However, physical safety hazards continue to result in visitor injuries and deaths. The U.S. Mine Safety and Health Administration identified 33 abandoned mine fatalities between 1999 and 2007 on all public and private lands in the Western United States. We performed a limited search of accident records and found that between 2004 and 2007, at least 12 people were killed in accidents at abandoned mines. We also visited six abandoned mine sites on BLM and NPS land where 7 deaths had occurred since 1984.

Vandalized mitigation measure at the Keane Wonder Mine where a visitor died. (OIG Photo)

At the Keane Wonder Mine in Death Valley National Park, CA, a visitor fell 30 feet down a mine shaft in 1984 and died of massive head injuries. We found that NPS' visitor literature advertised the abandoned site and NPS had signs directing visitors to the area, which had a visitor parking lot. We also found that other mine openings in Death Valley National Park were easily accessible by visitors using park roads and trails. After the death at Keane Wonder, NPS did install a steel net across the opening, but during our visit, we noticed that the net had been vandalized and other nearby openings had no fences or signs.

In 1991, a visitor to the Goat Basin Mine, Barstow Field Office, CA, bypassed a fence around an open mine shaft and attempted to lower himself into the shaft using chains attached to the bumper of his truck. The chains slipped and he fell 200 feet to his death. This type of site is commonly called an "ant trap" because it has steeply sloping sides that prevent escape if a person begins to slide into the shaft. After the accident, BLM did install a barbed wire fence around the shaft; however, during our site visit, we saw only remnants of the fence and no warning signs. This site was not on BLM's abandoned mine inventory and was not effectively mitigated. According to a BLM official, there are many such openings in the area but BLM has not inventoried these sites and has no plans to mitigate the hazards. After our site visit, we made recommendations to BLM about the safety concerns at the Goat Basin Mine, and BLM took immediate action and erected a fence around the opening.

Open mine shaft at the Goat Basin Mine where a visitor died. (OIG Photo)

In 1996, at the American Flat Mill near Virginia City, NV, a teenager died while climbing stairs on his all-terrain vehicle inside the structure. This extremely dangerous, dilapidated structure, which was built in the 1920s, is easily accessible with few fences and is a popular hang-out site for teens. While not documented, a BLM official told us that many other serious injuries have occurred at the site requiring flight-for-life helicopter rescues. BLM has not permanently mitigated the site because of concerns about the mill's "historical value."

American Flat Mill where teen died riding an all-terrain vehicle. (OIG Photo)

We found that in Virginia City, NV, a local high school teacher and a friend were killed in 1996 after entering the New Savage Mine. The men ignored a large "Keep Out-Bad Air" warning sign at the mine entrance, bypassed a fence, and were asphyxiated. The site was subsequently more permanently fenced and closed. The New Savage Mine is one of hundreds of mines near Virginia City.

In 1999, near Beatty, NV, a young girl was killed after she fell into an open mine shaft while attending a BLM-authorized cross-country race. During the race, she wandered away from her family and fell into the mine. During our site visit, BLM staff told us that race organizers, not

BLM, were responsible for safety during the race. To expedite the mine closure, local residents back-filled the hole after the accident.

Site near Beatty, NV, where a young girl fell to her death in an open shaft. (OIG Photo)

More recently, in 2007, near BLM's Windy Point Recreation Area, Kingman, AZ, a young girl was killed after falling into an open abandoned mine. The girl and her sister were riding an all-terrain vehicle, ran off a trail, and fell into a 125-foot mine shaft. The sister was seriously injured and spent the night in the mine before being rescued. The shaft is on a small privately owned parcel surrounded by BLM property. BLM maintains a nearby campground and a road leading to the area where the death occurred. A barbed-wire fence, provided by BLM, and warning signs were erected around the abandoned mine shaft shortly after the accident.

BLM stated that "in light of the hundreds of millions of acres of public lands for which BLM is responsible, some accidents will inevitably take place." While this may be true, it does not relieve BLM from responsibility for taking reasonable steps to prevent injury or death from abandoned mine hazards, especially those hazards that are already known by BLM.

Observations and Hazards on BLM Land

During our site visits to abandoned mines on BLM lands, we observed alarming examples of dangerous mines that continue to pose a threat to the public and the environment. We have highlighted the most distressing examples below.

Rand Mining District

Off-road vehicle trail on contaminated tailings in Randsburg, CA. (BLM Photo)

In March and May 2007, we visited the Rand Mining District near Ridgecrest, CA, because soil samples taken by BLM in 2006 identified dangerous levels of arsenic contamination thousands of times higher than Environmental Protection Agency (EPA)-recognized safe levels. BLM had known about this potential contamination for decades but had never taken samples to assess the danger to the public. We confirmed these serious environmental hazards and also found numerous physical safety hazards. These hazards were endangering the residents of Randsburg and Red Mountain as well as thousands of off-road vehicle recreationalists who routinely visit the area. BLM estimates that costs to mitigate environmental and safety hazards in the District could exceed $170 million. Due to the potential risks to the public, we issued Flash Report No. C-IN-BLM-0012-2007, "Environmental, Health and Safety Issues at Bureau of Land Management, Ridgecrest Field Office, Rand Mining District, CA."

We found that arsenic contamination in the District is widespread in over 3,000 acres of mine tailings and 500,000 tons of additional mining-related waste rock. The area's dry climate and winds have routinely exposed residents to arsenic-laden dust. Contaminated tailings have also migrated onto residential properties in Red Mountain. Near Randsburg, a BLM-authorized trail crossed a 60-acre highly contaminated mine tailings dam and was used seasonally by thousands off-road riders as recently as April 2007.

The District includes about 480 open mine shafts and unstable mining structures. Many of the mine shafts are located in and around residential areas or near existing roads and trails. Some mine shafts are extremely dangerous due to their depth and location, and we found no fences or warning signs. A local BLM official told us that temporary mitigation measures could be delayed for up to a year while wildlife and archeological surveys are conducted.

Open shaft near road in Red Mountain, CA. (OIG Photo)

In response to our Flash Report, BLM reported that several safety hazards had been fenced and posted with warning signs. The off-road vehicle route on the tailings dam was closed and an alternative route was constructed. BLM also began a formal process to assess health risks to the public from environmental contamination at the site. Periodic public meetings are being conducted to inform residents of BLM's progress in mitigating site hazards. We are encouraged by the steps being taken as a result of our Flash Report to address hazards in the Rand Mining District. However, the disturbing fact remains that hazards in the District were suspected or known to BLM for many years before anything was done to evaluate and mitigate them.

American Flat Mill

In July 2007, we visited the American Flat Mill site, located near the town of Virginia City, NV, where a teenager died climbing the stairs on his all-terrain vehicle. The mill is a large, two-story, dilapidated concrete structure where ore was processed in the 1920s using cyanide. The site is an extremely dangerous physical safety hazard. It is easily accessible, with few fences, and is a popular "party" hangout for local teens. Most of the structure has no outside walls and there are large holes in the floors that could easily result in a serious injury or death.

Dilapidated mill building at American Flat Mill. (OIG Photo)

An adjacent mill site was demolished in 2006 after a visitor sustained a serious injury due to a fall. The potentially responsible party performed and paid for the demolition work. Concerning the site, a BLM official said, "This is a matter of physical safety. The buildings are a public

nuisance and have to be dismantled. There's no reason for this to remain a potentially dangerous site."

To the contrary, in 2006, another BLM official was quoted in the *Reno Gazette-Journal* saying, "Nothing is going to be disturbed at the older [remaining] site. People in the area have a strong connection to it and it's staying just as it is."

Despite the death at the remaining mill and a history of serious site accidents, BLM has not taken effective mitigation actions to protect the public. BLM provided various reasons for inaction, including the site's historical nature, local opposition to demolishing the structure, a lack of funding to perform demolition, and difficulty in restricting site access.

Longstanding hazardous conditions and excessive delays in mitigation at the American Flat Mill site present serious and unacceptable risks to the public health and safety.

Kingman

We visited the Kingman, AZ, BLM field office and adjacent areas in September 2007 after two sisters drove their all-terrain vehicle into a mineshaft over Labor Day weekend and one was killed. The mineshaft was on a small, privately-owned sliver of land within BLM's Windy Point Recreation Area. We visited the area because the mineshaft was reported to be easily accessible and the media reported thousands of unmitigated mineshafts in the vicinity.

Dangerous mine shaft next to BLM-maintained road near Kingman, AZ. This shaft was a short distance from a similar hazard where a young girl died in September 2007. (OIG Photo)

We saw no signs or warnings of abandoned mines on our drive through Windy Point. We identified a campground near the mine shaft and a road leading to the site. Nearby, we observed two 100- to 200-foot deep shafts on the side of the road that could easily have resulted in additional deaths or injuries to hikers or people using all-terrain vehicles, motorcycles, or mountain bikes. One shaft was partially fenced while the other was not.

After our visit, a BLM official told us the shaft where the young girl was killed had since been fenced using materials provided by BLM, and warning signs had been erected.

At another mine northeast of Kingman, the COD Mine, we found physical and potential environmental hazards. The private land owner who lived directly below the mine believed his well water was contaminated by the COD Mine. BLM contacted the mine claimant, who owned the mineral rights, several times in 2005 to notify him of site conditions, including abandoned

vehicles, theft, and vandalism, especially in dangerous areas of the property. In 2007, the claimant tack-welded a steel plate over an 800-foot deep mine shaft. BLM inspected the site in September 2007 and noted the reclamation (i.e. tack welding) had been completed. However, during our site visit, the plate had been removed. This is a potentially life-threatening situation because unknown individuals have been descending into the shaft from a dilapidated wooden ladder.

Open mine shaft at the Goat Basin Mine were a visitor died. (OIG Photo)

Barstow

In August 2007, we visited the Goat Basin Mine near Twentynine Palms, CA, on land administered by BLM's Barstow Field Office. Three visitors have died in abandoned mines within the jurisdiction of this office since 1976.

The Goat Basin Mine is identified on BLM maps, and a road leads visitors to the site. The opening at the mine is extremely dangerous and there was evidence that visitors were passing within feet of the opening on off-road vehicles. The edges of the opening have eroded, creating an "ant trap;" once a visitor goes over the edge, there is no way to stop falling into the hole.

Open shaft near Barstow. (OIG Photo)

Little had been done to mitigate the known hazards even where visitors had been killed. According to BLM, the area surrounding Barstow has many similar hazardous mine openings that are easily accessible. After we notified BLM of our observations, BLM informed us that it provided temporary mitigation of the physical safety hazards with the installation of fencing and warning signs at each of the sites.

Caselton Tailings

Acidic pond at Caselton Tailings site (OIG Photo)

In August and September 2007, we visited the Caselton Tailings site. The site covers about 90 acres and is located in southeast Nevada about 6 miles north of the town of Panaca. The site is easily accessible from State Highway 320 and contains about 3 million cubic yards of mine tailings, or mine waste, from a nearby abandoned mill. The tailings contain potentially dangerous levels of heavy metals including arsenic, lead, and manganese.

Visible mine tailings have migrated down the surface of Caselton Wash (a seasonal waterway that flows only during rains) toward Meadow Valley Wash to within about 3 miles of the town of Panaca and local water wells. An engineering evaluation conducted on the Caselton tailings stated that a catastrophic release of tailings could "severely and intensively impact water quality in Meadow

Valley Wash." BLM has indicated to us that the risk of groundwater contamination is very small; however, BLM has never sampled ground water at the wells downstream of the tailings.

The site includes nine ponds constructed to contain water on the tailings. BLM noted that the pond water is acidic and contaminated and poses "a severe health threat to humans if they consume it…and it may cause injury or death to wildlife." The water is acidic enough to seriously burn human skin on contact. There were off-road vehicle tracks on the tailings, and a local resident told us the site was routinely used by off-road vehicle riders. The site also contains a dilapidated operations area where a previous claimant left potentially dangerous abandoned buildings, hazardous waste, and piles of drums and other debris. BLM installed some fencing and a temporary cover over the tailings and constructed a diversion channel to minimize erosion. However, the site is still easily accessible with only two small "No Trespassing" signs posted. A BLM official also noted that the tailings cover needed to be replaced in the near future.

Over the last decade, BLM, with recent assistance from the DOI Office of the Solicitor, has negotiated without success with two parties interested in reprocessing the tailings. Reprocessing can help to reduce environmental contamination, and negotiations could provide additional resources to further mitigate the site. BLM has stated that it has made an informed decision that continuing with these negotiations is justified and in the best interests of the government and the general public. Having a third party perform the work would significantly reduce the cost to the government, currently estimated to be between $8 and $14 million if done unilaterally by BLM. Where practical, we support these efforts. However, public safety must be the first priority and we are concerned that the public has not been adequately protected from these environmental hazards for over a decade while these negotiations have taken place.

Observations and Hazards on NPS Land

During our site visits to abandoned mines on NPS lands, we observed examples of dangerous mines as well as mitigated sites where NPS took action to protect the public. We have highlighted examples below.

Death Valley National Park

Young boy exiting a mine adit with a collapsing roof in Death Valley National Park. (OIG Photo)

In March and May 2007, we visited Death Valley National Park, CA, where a visitor died in 1984 after falling down a mine shaft at the Keane Wonder Mine. The park has numerous historical mines within its boundaries and encourages site visitation by advertising on maps and maintaining roads and trails leading to the sites. Two of the sites we visited, the Keane Wonder Mine and the Greenwater

Mining District, contain extremely dangerous mine openings. At the Keane Wonder Mine, we observed a family exploring the dangerous openings, and at one point we witnessed the family's toddler exiting a collapsing mine opening. Subsequent to our site visit, NPS found elevated levels of lead and mercury and stated that it was closing the site.

We noted three open mine shafts at the Greenwater Mining District. Two of the shafts were well fenced; however, the third was easily accessible and posed a danger to park visitors. This shaft was several hundred feet deep and within close proximity to an area where visitors had been camping. A fence around this mine shaft was dilapidated and was not effective in keeping visitors away from the "ant-trap"-like opening.

Visitors camp near this mine opening in the Greenwater Mining District. (OIG Photo)

We visited other abandoned mine land sites within Death Valley where NPS mitigated hazards. Many mine openings have been temporarily sealed with steel netting, while others have more permanent closures in the form of steel gates. We also observed extensive stabilization work that has been performed at the Skidoo Mill site, as well as several signs posted in the area, warning the public to stay off the structure.

Grand Canyon National Park

In August 2007, we visited two abandoned mine sites located along hiking trails in the Grand Canyon National Park, AZ. The first site we visited was the Grandview Mine, which was located several miles into the canyon. Although it took over 3 hours to hike into this area, the trail is still popular and is used by visitors. Both the trail and the Grandview Mine are well marked on NPS maps. The Grandview Mine has a series of adits (horizontal mine entrances) connected by shafts. We found no signs in the area to warn visitors of the dangers at the mine, and all mine entrances were open to visitors.

In addition to the physical safety hazards we found at the Grandview Mine, there has been concern about visitor safety due to high levels of radiation that have been recorded at the site. Past assessments at the site have shown extremely high levels of radiation; however, during our site visit, NPS measured radiation at all of the mine openings and all readings showed low levels of radiation. We were told that the low levels may have been the result of recent weather patterns in the area and increased air movement in the adits.

The other site we visited was the Orphan Mine located on the popular South Rim Trail. This easily accessible site has both high levels of radiation and significant physical hazards; however, NPS has erected a fence around the site, posted signs warning of the environmental hazards, and diverted the trail further away than originally constructed. We see this as a successful temporary mitigation of the site.

Mojave National Preserve

In April 2008, we visited several dangerous abandoned mine sites within the Mojave National Preserve. Although several dangerous shafts in the area had been covered or fences had been installed, there were still many dangerous mine openings easily accessible to the public.

Dangerous mine shaft at the Johnny Shaft site. (OIG Photo)

At two sites, we found mine shafts on roads that were large enough to easily swallow entire vehicles. In both cases, there were no fences or signs warning the public of the danger. At the Gold Cycle site in the preserve, a ladder going into the mine provided easy access to the mine shaft. At the Johnny Shaft site, we observed that the road led directly to a mine with a 400-ft deep shaft.

At the Oro Fino site in the preserve, NPS personnel pointed out what they considered one of the most dangerous mine hazards in the preserve. The entrance to the mine was collapsing, the roof was caving in, and dangerous shafts inside the mine created the risk of people falling. There was also a dilapidated ladder in an open mine shaft at this site. There was vehicle access near the opening, and there were no signs warning the public of the dangers or fencing to prevent access.

BLM Abandoned Mine Lands Program

Field Office Management

Overall, we found that BLM's abandoned mine lands program has long been neglected, undermined, and marginalized by poor management practices. As a result, public health and safety have been seriously compromised. The program is decentralized, giving operational control and authority to field office managers. BLM has a national abandoned mine lands program coordinator who has developed many policies and procedures for implementing an effective program; however, this coordinator is rendered ineffective, as field office management and staff often ignore the guidance. We also noted many examples of serious unmitigated abandoned mine hazards that were tolerated because program managers discouraged identifying and mitigating these hazards. Specifically, we found the following:

- Employees were discouraged from identifying abandoned mine sites. An employee was told by a field office manager not to identify abandoned mine sites as it got in the way of other land management activities. Another employee stated that putting sites on an inventory was more detrimental to BLM than leaving them off because listing them acknowledged a hazard and therefore created a potential liability.

- Employees were criticized or received threats of retaliation for site identification. An employee who told DOI officials that there were thousands of dangerous abandoned mines within the employee's jurisdiction was subsequently criticized for making such a

statement. Several other employees told us management made threats against their careers for raising these issues.

- A BLM Field Office Manager stated that management had never asked him to take samples of potentially contaminated sites.

- Employees did not use warning signs and fences because they considered them ineffective or costly to maintain.

- A BLM official opined that fencing a site was an acknowledgement that BLM knew about the site; and therefore if someone was subsequently injured at the site, BLM could face increased liability.

- BLM management did not allow an employee to formally contact a claimant about dangerous physical hazards at a claim site.

- Employees did not identify and report residential and commercial trespassing at dangerous BLM abandoned mine sites.

BLM is in the process of developing and implementing several new program management initiatives that may enhance the effectiveness of the abandoned mine lands program. These include the Fix a Shaft Today (FAST) program, National Mine Land Inventory prototype, abandoned mine land distance learning program, and a project management handbook. We are encouraged by these efforts.

Staffing

Mitigating BLM abandoned mine sites and making them safe for the public is often neglected because the job is a collateral duty for field office personnel, and there are conflicts with the BLM surface management program responsible for regulating operating mines.

Collateral Duty

According to BLM records, 107 field office employees in California, Nevada, and Arizona charged time to the abandoned mine lands program in 2007. Because the abandoned mine lands program is a collateral duty for most employees, the total time charged to the program for labor accounted for only about 9 full-time employees. We found that many of these employees have never performed simple duties such as posting warning signs and fences, let alone identifying abandoned mine sites.

Conflicting Objectives

Many abandoned mine land field staff are funded primarily by the surface management program. This program is responsible for implementing surface management regulations 43 CFR 3809 concerning minerals exploration and mine operations. This includes approval of proposed mining operations, reclamation, bonding, and inspection and enforcement activities. Some BLM surface

management personnel (with collateral abandoned mine land duties) were reluctant to mitigate sites because of potential conflicts with mine claimants and operators who may oppose such mitigation. Mitigating abandoned mines may restrict a claimant's ability to mine minerals that are accessible from abandoned mine openings or located in mine waste piles.

Program Budget and Funding

BLM does not have a dedicated line item identified in its budget for the abandoned mine lands program, and the program's funding needs receive little visibility. As a result, the program is not a priority and has not been allocated sufficient resources to mitigate dangerous abandoned mine sites.

BLM's abandoned mine lands program has been chronically and drastically under-funded. In its abandoned mine lands strategic plan, BLM identified funding needs of about $130 million through fiscal year (FY) 2013 for high-priority sites. Even the identified needs are drastically under-estimated. We found that clean-up of environmental hazards in California's Rand Mining District alone will cost over $170 million, and total costs to mitigate abandoned mine sites bureau-wide could ultimately be billions of dollars. Currently, BLM's abandoned mine lands program receives less than $10 million in annual funding from various sources including appropriations for soil, water and air; hazard management; and resource restoration. Significant progress to permanently address physical safety and environmental hazards at BLM abandoned mine sites will not be achieved unless substantial additional resources are made available.

Even with its current funding, however, BLM should be more effective in protecting the public. BLM could better use existing funds to identify and evaluate abandoned mine sites, post warning signs, and install fences.

Site Trespass

Residents and businesses in trespass in Red Mountain, CA, near mine tailings. (BLM Photo)

Historical trespass on BLM land is known to exist at many locations throughout the West, according to a BLM official. This trespassing includes commercial activities and residential development on abandoned mine sites on federal land. Two of the abandoned mine sites we visited had residential and commercial development in areas with safety and potential environmental hazards. This residential and commercial trespass hinders BLM's efforts to mitigate sites because of the regulatory and legal delays associated with evicting trespassers and physically removing homes and commercial facilities.

Rand Mining District

In California's Ridgecrest Field Office, the Rand Mining District towns of Red Mountain and Randsburg had residential trespass issues. BLM allowed residents to purchase titles to their properties in 1984 and 1997. In Randsburg, land titles were conveyed with clauses requiring the purchasers to indemnify (hold harmless) the government against residents' exposure to hazardous materials from mining and other activities. Such indemnification was required even though the appraiser noted that hazardous wastes were "very likely" present in the area due, in part, to many old mines. BLM officials did not take steps to assess the validity of the appraiser's concern. In addition, BLM environmental assessments performed prior to the conveyances were inadequate in that they did not assess the levels of arsenic contamination.

Virginia City, NV

We found recent residential and commercial development at abandoned mine sites in Virginia City, NV, identified as public land. Virginia City has a population of about 1,100 people and is a major tourist attraction in the area. BLM acknowledged that ownership of the land for most of Virginia City is in dispute and has been since about 1860. A 1991 letter from BLM NV State Director to a U.S. Senator identified land title issues in Virginia City and possible options for resolution. However, the issue remains unresolved.

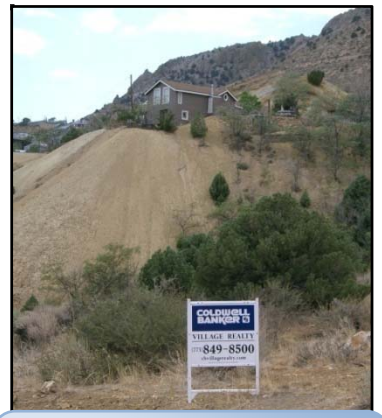
We found commercial enterprises, including an operation that offered tours of a mill, recently built homes, and undeveloped residential lots offered for sale. The tour site included a large and dangerously dilapidated mill building and a mine adit where two residents exploring the mine in 1996 were killed by suffocation. The adit has been gated since that incident. Until BLM resolves the title disputes in Virginia City, trespass may continue on public lands that include abandoned mine sites with safety hazards and potential environmental contamination.

BLM aerial photo of Virginia City, NV, showing public land highlighted in yellow.

Long-established residential areas in trespass.

Abandoned mine site with more recent commercial and residential development in trespass.

Based on the existence of the Rand Mining District and Virginia City sites, it is very possible that other similar sites exist on public lands where safety or environmental hazards may endanger people in trespass. In these cases, there is an increased risk of injury or death due to safety hazards and environmental contamination. DOI's efforts to mitigate these sites will be more complicated because DOI has allowed this trespassing to continue for decades.



Lot for sale in trespass in Virginia City, NV. (OIG Photo)

Site Inventory

BLM's national abandoned mine land inventory is in poor condition. BLM has a national inventory of about 12,000 abandoned mine sites included in its Abandoned Mine Module. The inventory must include data necessary for budget justification and project monitoring, tracking, and management at the national level. We found that BLM's inventory was incomplete, inaccurate, and inconsistent. For example, much of the data in the inventory was derived from the U.S. Bureau of Mines over 10 years ago and was never validated by field surveys.

In addition, BLM field office abandoned mine staff are not identifying or entering known, high-priority abandoned mine sites into the inventory database. For California, the inventory lists only about 400 abandoned mine sites on public land while BLM estimates the California Desert District alone has as many as 20,000 sites. We also found that many BLM field office staff keep local lists of dangerous abandoned mine sites that are not being entered in the inventory database.

Further, BLM developed an abandoned mine strategic plan that contains a list of approximately 200 projects identified by the state offices for short-term funding; however, this list includes abandoned mine sites that are not in the inventory database. We found that the strategic plan includes more comprehensive site information than that in the inventory, and the data in the plan is more useful than the inventory for short-term planning and project management.

BLM staff also do not enter complete or consistent site data into the database needed to locate, evaluate, monitor, and track abandoned mine hazards. When mitigation is performed at abandoned mine sites, the data is often not entered.

Finally, we found that BLM's abandoned mine lands program does not identify, inventory, and mitigate hazards at sites abandoned after 1980. BLM's abandoned mine handbook defines abandoned mine sites as those abandoned prior to the implementation of the surface management regulations on January 1, 1981. This definition may unduly limit site identification in that all dangerous abandoned mine sites requiring mitigation may not be identified.

While a credible inventory of the most dangerous abandoned mine sites is needed to manage the BLM abandoned mine lands program, a comprehensive inventory of all abandoned mine sites may not be obtainable. Many of the existing sites are currently so remote or of minimum danger

that they might not justify mitigation at any abandoned mine funding level. Given the limited funds available, it is much more important that the inventory include current and credible information that is needed for program management of significant sites.

NPS Abandoned Mine Lands Program

During our audit, we found fewer problems within NPS' abandoned mine lands program. We attribute this to several factors, including the following:

- Significantly fewer abandoned mine land sites (thousands compared to hundreds of thousands).
- Few contaminated sites near populated areas.
- Greater control over visitor access and restricted use of off-road vehicles.
- A culture within NPS that does not hinder site identification and mitigation.

We found that Death Valley, Grand Canyon, Joshua Tree, and Lake Mead had mitigated many of their high priority abandoned mine sites that posed the largest risks to visitors because they were easily accessible. In many cases, these parks had taken steps to permanently seal mine openings and stabilize mine structures. In other cases, they had taken temporary measures to install fencing and signs to protect and warn the public of mine hazards. Although these four parks had made progress in addressing their high-risk sites, there are hundreds of mine sites that still need to be addressed. The parks indicated that lack of funding prevented them from addressing the dangers at these other sites.

We found that the Mojave National Preserve had done little to mitigate abandoned mine hazards. Mojave was established in 1994 when approximately 1.4 million acres were transferred from BLM to NPS. At the time, the abandoned mine lands inventory included over 600 sites. These sites required field verification. Mojave staff has inspected, evaluated, and prioritized 274 sites; has continued to develop and refine an extensive and detailed targeted inventory of its most dangerous sites; and has pursued project funding from the Pacific Region. However, since Mojave was created, it has received little or no funding for site mitigation.

Program Funding

According to NPS, current funding is inadequate to address known abandoned mine issues within parks, and the process of "budget erosion" – no fund increases coupled with rising costs – has limited funds available for abandoned mine site mitigation. However, NPS does not have a good estimate of the total costs necessary to mitigate abandoned mine hazards. In 1995, NPS developed an estimate of unfunded abandoned mine land projects. This estimate totaled $165 million with immediate high risk needs of approximately $43 million. We found that NPS had not updated this estimate and did not have a current estimate of funding needed to address abandoned mine hazards. At the conclusion of our audit in April 2008, NPS updated this estimate to $233 million with $60 million for immediate high risk needs. However, this estimate simply adjusted the 1995 aggregate estimate for inflation to derive costs in 2008 dollars. This calculation did not consider any changes in conditions that occurred since 1995 and did not

reflect any updated inventory and risk information that could impact mitigation costs. NPS stated that it is creating a new, more detailed and accurate database of abandoned mine sites that will better identify specific mine features and proposed mitigation costs.

NPS' abandoned mine lands program is funded as part of the broader NPS Disturbed Land Restoration Program, which restores lands that have been affected by development or agriculture back to the unimpaired natural conditions. These funds can be used to address restoration activities resulting from camping, farming, grazing, timber harvest, or abandoned facilities such as buildings, roads, dams, and mines. Since 2000, specific abandoned mines funding within NPS has been inconsistent, ranging from a high of approximately $650,000 in FY 2001 to a low of $121,000 in FY 2003. These funding issues have prevented needed mitigation of abandoned mine hazards in Mojave and delayed mitigation of many hazards at the other four parks we visited.

In 2008, Congress appropriated approximately $2 million to address abandoned mine hazards in California; $600,000 was allocated to Mojave. Mojave has developed a plan to use these funds to mitigate high priority sites.

BLM AND NPS BEST PRACTICES

Dedicated Abandoned Mine Land Staff

We found that the BLM Arizona State Office had responded aggressively to address the issues identified in OIG Flash Report No. C-IN-BLM-0013-2005, "Public Safety Issues at Saginaw Hill Property," issued in March 2005. The office hired an abandoned mine lands program lead with significant experience in large environmental projects and a full-time abandoned mine lands coordinator with an environmental background who was assigned to the Phoenix District Office. This coordinator has responsibilities for abandoned mines and hazardous materials in the 10 field offices included in the Gila and Phoenix districts. BLM Arizona State Office officials stated that this approach was more effective than using collateral staff.

Targeted Environmental Site Inventory

The BLM California State Office implemented a multidisciplinary team approach in the California Desert District to identify and assess sites with serious environmental contamination. The team uses experts from BLM offices including the California State Office, the National Operations Center, and other agencies including the U.S. Geological Survey. The team is targeting sites in areas where residential and commercial development is occurring or is likely to occur in the near future. To date, the team has conducted site visits to one of the District's five field offices and has identified eleven sites with significant actual or suspected environmental contamination.

Partnerships with Other Organizations

BLM initiated the Nevada Abandoned Mine Land Environmental Taskforce in March 1999 to address environmental hazards associated with abandoned and inactive mines in Nevada. The taskforce includes 13 federal and state agencies that work together to (1) foster regulatory cooperation, (2) identify priority sites for cleanup, and (3) provide administrative oversight for funded projects. The taskforce allows several agencies to leverage their funding cooperatively to mitigate abandoned mine hazards.

In September 2007, a joint BLM and U.S. Forest Service report was issued titled, "Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines." The report addresses collaborative progress made in protecting and remediating three western watersheds and other environmental and physical safety hazards. Additionally, the report addresses future planned efforts to enhance site inventories, leverage resources, and share technological innovations. We believe this collaborative effort is another example of successful partnerships being utilized by BLM.

The Desert Manager's Group (http://www.dmg.gov) is a regional interagency partnership among federal, state, and local entities that manage California's 20-million-acre desert region. The desert region includes three national parks, 72 wilderness areas, and six military bases and has a large portion of the abandoned mine sites that are located in the Southwest. The Desert Manager's Group has recently kicked off a 5-year effort to form partnerships to leverage funding and mitigate the highest priority abandoned mine sites in the California Desert Region.

In 2006, the Desert Manager's Group began developing the list of abandoned mine sites in the desert region, identifying the capabilities of the different agencies within the Desert Manager's Group and prioritizing the mitigation of abandoned mine sites. The Desert Manager's Group's latest 5-Year Plan for FY 2007 through FY 2011 identifies goals to (1) form partnerships to leverage funding, (2) develop a central database of abandoned mine sites within the desert region, and (3) mitigate the highest priority environmental and physical safety sites.

This collaborative effort among agencies such as BLM, NPS, the Department of Defense, and the State of California could provide a benchmark for maximizing efficiency in mitigating abandoned mine sites.

Prefabricated Materials for Mitigation

At Joshua Tree National Park, NPS has the capabilities to mass produce prefabricated mine covers and gates. This enables a large number of sites to be mitigated economically and efficiently. We believe this approach is a good model that could be expanded within NPS and adopted by BLM.

NPS personnel from Joshua Tree National Park installing a prefabricated cover at Lake Mead. (OIG Photo)

Utilizing Volunteers to Address Abandoned Mine Issues

We learned that volunteers assist NPS and BLM in identifying and inventorying abandoned mine sites. For example, at Joshua Tree National Park, a retired sheriff helps locate and map abandoned mine sites within the park.

In Nevada, BLM is supported by the state's Division of Minerals, which uses college students to identify and inventory abandoned mine features. BLM has also developed a grassroots effort to mitigate physical hazards using volunteer labor and donated fuel, heavy equipment, and materials.

We believe using volunteers can be beneficial if they are properly trained and supervised.

Site Closures

In August 2006, BLM closed several environmentally contaminated abandoned mine land sites in California to protect the public. These closures included public lands at the Pond, Poore, Gold Run, Poison Lake, Davis, and Longfellow sites located in the California counties of Amador, Placer, Nevada, and Tuolumne. The closure included "all forms of entry by the public, including mineral access," and facilitated environmental remediation actions. We believe site closures could be used more often to protect the public.

CONCLUSION

As it stands, public safety is at risk because physical and environmental hazards at abandoned mine lands have been ignored by DOI for decades. Abandoned mine lands programs in DOI are in need of a firm commitment to protect the public, sustained funding, and dedicated staff.

RECOMMENDATIONS

This report makes 8 recommendations that, if implemented, should help the bureaus address these long-standing issues.

We recommend that the BLM Director do the following:

1. Issue a clear policy statement that:

    - Supports the abandoned mine lands program and its goals.
    - Forbids retaliation against employees for identifying or reporting abandoned mine sites.
    - Requires field-office management and staff to comply with all abandoned mine lands policies and procedures.

2. Employ experienced, trained, full-time staff dedicated to the abandoned mine lands program at the state- and field-office levels in California, Arizona, and Nevada and other states where appropriate.

3. Establish a specific line item in the budget for the abandoned mine lands program and request funding to accomplish project goals identified in the abandoned mine strategic plan.

4. Identify and resolve trespassing on abandoned mine sites and assess and mitigate hazards associated with these sites.

5. Validate existing inventory data and develop procedures for ongoing data collection to ensure that data in the inventory is complete, accurate, and consistent.

We recommend that the NPS Director do the following:

6. Request adequate funding to support program goals and to mitigate sites identified by the abandoned mine lands program.

We recommend that the BLM Director and NPS Director do the following:

7. Implement immediate temporary or permanent measures to mitigate known dangerous sites, including those identified in Appendix A of this report.

8. Explore and exploit opportunities for sharing resources, expertise, and best practices between the agencies to strengthen their abandoned mine lands programs.

Appendix A - OIG SITE VISITS - California

Rand Mining District (Red Mountain, Randsburg)

- Environmental contamination
- Safety hazards due to deteriorating structures and open shafts
- Inadequate fencing and signs
- Claimant negotiations could impact mitigation
- Land conveyances could present liability

Ruth Mine

- Open adit
- Deteriorating structures
- Inadequate signs
- Recent trespass in residence
- Erosion of tailings into streambed

El Paso Mountains

- Safety hazards due to "Adopt a cabin" program where active claim and many open shafts/adits exist adjacent to cabins used by visitors

Rademacher Hills

- Open adits and shafts
- Inadequate fencing and signs

Folsom Area (You Bet Mine, Upper You Bet Sluice Tunnel, Boston Tunnel, Starr Pit, Green Creek, Davis Stamp Mill, Kenebec Shaft, and the South Yuba River Campground)

- Open shaft near campground
- Inadequate fencing and signs

Appendix A - OIG SITE VISITS – California (cont.)

Barstow - Coolgardie

- Open shafts
- Minimal fencing
- No signs

Barstow - Goat Basin

- Death at one site, not fenced, not on inventory
- Two deaths at another site a short distance away
- A fence had been put up around the hole many years ago, but remnants remained when we visited
- A new fence was erected as a result of our Notice of Proposed Findings and Recommendations.
- Other dangerous openings in the area that were not mitigated and not on the inventory
- This site had a death and should have been a high priority, but it was not even on the inventory

Darwin

- Safety hazards due to deteriorating mill
- Inadequate sampling to assess environmental hazards

Spangler

- Open adits and shafts
- Inadequate fencing and signs
- Public invited to off-road vehicle events

Death Valley National Park

- Death at one site (Keane Wonder)
- Open adits and shafts
- Public invited to visit site
- Inadequate fencing and signs

Rosamond Area (Tropico, Cactus and Golden Queen mines)

- Environmental contamination of BLM land
- Growing urban interface near contaminated sites

Appendix A- OIG SITE VISITS – California (cont.)

Joshua Tree National Park

- Open shaft, compromised adits. The most dangerous site we saw. Was difficult to get to but does receive visitors.
- The high priority sites we visited are scheduled to be mitigated in 2008.
- A Park-wide environmental inspection of inactive historical mill sites was performed with no significant findings.

Mojave National Preserve

- Open shafts near roads
- Few fences or warning signs

Appendix A - OIG SITE VISITS – Nevada

Virginia City

- Two deaths in adit
- Safety hazards at mill tour business
- Inadequate sampling to assess environmental hazards
- New commercial and residential trespass

American Flat

- Death in mill building
- Safety hazards due to deteriorating structure
- Unrestricted access
- Inadequate warning signs

Caselton

- Inadequate groundwater sampling to assess environmental hazards
- Unrestricted access
- Inadequate warning signs
- Claimant dump site
- Claimant negotiations may hinder mitigation

Spruce Mountain

- Deteriorating structures
- Open adit

Tuscarora

- Safety hazards due to illegal dumping

Appendix A - OIG SITE VISITS – Nevada (cont.)

Tonopah

- Death in open shaft
- Lack of responsibility for abandoned mine lands assumed by local office. Local office stated that it was not its responsibility and that a race organizer was responsible for the accident.
- Local residents backfilled the mine shaft after the accident.

Lake Mead National Recreation Area

- Death at one site, but site was backfilled many years ago.
- LMNRA does not have a complete inventory.
- There have been many sites that have been mitigated.
- Teamed up with Joshua Tree to mitigate sites.

Cherry Creek

- Lack of recognition that King Midas mill may be on BLM land.

Ward

- Accessible adits

Appendix A (cont.) - OIG SITE VISITS - Arizona

Kingman Area (Windy Point Recreation Area, Antler Mine, Boriana Mine, COD Mine, Thumb Mine)

- Death on patented land near BLM road
- Open shafts
- Dangerous physical hazards on patented land
- Inadequate fencing and signs
- Inadequate sampling to assess potential environmental hazards (Boriana)
- Inadequate funding to mitigate known environmental projects (Antler)
- Lack of communication between district and field
- Lack of coordination between field and state

Wickenburg

- Unrestricted access
- Inadequate fencing and signs

Octave

- Inadequate sampling to assess environmental hazards

Vulture

- Inadequate fencing and signs

Quartzsite

- Safety hazards due to deteriorating structures
- Inadequate sampling to assess environmental hazards

Grand Canyon National Park

- Safety hazards due to accessible mine with high radon levels
- Two sites visited
- For the Orphan Mine, the trail was diverted around the contaminated areas. The site was fenced and signs were posted. However, visitors could still get in through a hole in the fence.
- The other site (Grandview) had no fencing or warning signs but was relatively difficult to get to. However, hikers in the area are using the mine features as shelter.

Appendix B - Objective, Scope, Methodology, and Internal Controls

Audit Objective:

To determine if the Department of the Interior and its bureaus are effectively protecting the public from physical safety and environmental hazards at abandoned hardrock mine sites located on federal lands.

Audit Scope:

Our audit focused on abandoned hardrock mine lands on federal property in the Western United States. We concentrated on lands in California, Nevada, and Arizona, three states with a significant mining legacy that receive no funds collected for reclamation of abandoned mines under the Surface Mining Control and Reclamation Act. This Act primarily supports reclamation of abandoned coal mines. In addition, population growth and wider recreational use of federal land in these states are increasing the risks from abandoned mine hazards. After reviewing abandoned mine issues and inventories for NPS, BLM, the U.S. Fish and Wildlife Service, and the Bureau of Indian Affairs, we limited our field work to lands managed by NPS and BLM. We also evaluated departmental programs and efforts to deal with abandoned mine lands.

Audit Methodology:

We conducted our audit between March 2007 and April 2008. To accomplish the audit objective, we:

- Conducted the audit in accordance with Government Auditing Standards issued by the Comptroller of the United States.
- Included tests of records and other audit procedures that were considered necessary.
- Gained an understanding of applicable laws and regulations and the Department's and bureaus' abandoned mine lands programs.
- Conducted a limited review of data to identify accidents resulting in fatalities or injuries at abandoned mine lands sites.
- Reviewed Department, bureau, and other systems used to report accidents at abandoned mine lands sites resulting in fatalities or injuries.
- Analyzed management processes for identifying, reporting, prioritizing, and mitigating physical safety and environmental hazards at abandoned mine lands sites.
- Interviewed departmental and bureau officials at the headquarters, regional, and field office levels.
- Visited selected bureau offices to review records and abandoned mine lands sites to assess the nature of safety and environmental hazards. We selected sites based on knowledge gained from bureau officials, prior accident locations, and priority of hazards as identified in bureau plans or by bureau officials.
- Identified best practices within bureaus and from outside entities for mitigation of abandoned mine lands hazards.

Appendix B (cont.) - Objective, Scope, Methodology, and Internal Controls

Internal Controls:

As part of the audit, we performed an evaluation of the Department and its bureaus' systems of internal controls related to the identification, prioritization, and mitigation of abandoned mine lands hazards. We did not assess the bureaus' internal controls applicable to financial reporting.

This evaluation of internal controls was conducted at departmental and bureau offices to the extent we considered necessary to accomplish the audit objective. We concluded that the BLM abandoned mine lands program lacks adequate internal controls to identify, prioritize, and mitigate abandoned mine hazards. These deficiencies are discussed in the "Results of Audit" section of the report. NPS generally had adequate internal controls.

We reviewed the Department of the Interior's Performance and Accountability Reports (PAR) for fiscal years 2006 and 2007 and noted that no material weaknesses were reported related to abandoned hard rock mines. Some Government Performance and Results Act goals in the 2007 Performance and Accountability Report did relate to the possible effects of abandoned hard rock mines (e.g., number of visitor injuries and fatalities, percent of physical and chemical hazards mitigated to protect public health and safety, and percent of contaminated sites remediated to protect watersheds) but were not specifically related to such sites. As reported in the PAR, all of these goals were met in 2007.

Our recommendations, if implemented, should improve the internal controls in the areas with identified weaknesses.

Appendix C - Related Reports

OIG Flash Report No C-IN-BML-0012-2007

Environmental and Safety Issues at Bureau of Land Management Ridgecrest Field Office, Rand Mining District, September 2007.

The OIG noted hazardous conditions at abandoned mine sites in California's Rand Mining District that required immediate action to protect the health and safety of the public and employees. Levels of arsenic thousands of times higher than safe levels were found in tailings piles located near residential properties. The cost of environmental site mitigation could exceed $170 million.

OIG Flash Report No. C-IN-BLM-0013-2005

Public Safety Issues at Saginaw Hill Property, Bureau of Land Management, March 2005.

The OIG found that BLM had not identified the abandoned hard rock mine safety hazards and environmental contaminants present at the Saginaw Hill property in Arizona. In addition, BLM had not taken appropriate measures to mitigate or remediate the hazards or limit public access to the hazards at this site.

GAO Report No. 05-377

Hardrock Mining: BLM Needs to Better Manage Financial Assurances to Guarantee Coverage of Reclamation Costs, June 2005.

The report concluded that the financial assurances may not fully cover all future reclamation costs as 48 hard rock operations on BLM land had not been fully and adequately reclaimed by operators. The report also found that BLM's LR2000, the system designated to manage BLM's financial assurances, was inadequate.

Appendix C (cont.) - Related Reports

GAO Report 96-30

Information on Efforts to Inventory Abandoned Hard Rock Mines, February 1996.

The report identified no definitive inventory available to identify the number of abandoned hard rock mines located on federal lands. Four major federal land-managing agencies, the BLM, NPS, the U.S. Fish and Wildlife Service, and the U.S. Forest Service were in various stages of inventorying the mine sites on the lands they manage; however, because the methodologies and assumptions used to develop their inventories differ, their results could not be meaningfully compared or combined. As a result, neither the number of sites identified, the physical/environmental hazards reported, nor the cost of remediation associated with each hazard could be presented as a consistent total for abandoned mine lands on federal property. Therefore, the potential harms and damage caused from abandoned mine lands, on federal property, remained difficult to assess and quantify.

OIG Report No. 92-I-636

Hardrock Mining Site Reclamation, Bureau of Land Management, March 1992.

The OIG identified that BLM had not implemented procedures for ensuring that abandoned hard rock mining sites on BLM managed lands were being reclaimed. BLM also failed to develop a comprehensive inventory of hard rock mining sites that required timely reclamation, and BLM was not fully aware of hazards and dangerous conditions at some abandoned mining sites.

Appendix D- Abbreviations

BLM…… Bureau of Land Management
CFR……. Code of Federal Regulations
Department and DOI…… Department of the Interior
FY…… Fiscal Year
NPS……. National Park Service
OIG……. Office of Inspector General

Appendix E- OIG Analysis of BLM's Response to Draft Report

BLM Response	OIG Analysis
Recommendations BLM stated that it accepted all of the recommendations and would work diligently to implement them.	We are encouraged that BLM is committed to implementing the recommendations provided in our report. However, BLM did not provide the detailed information requested on actions taken or planned to implement the recommendations, including target dates and the names of officials responsible for their implementation.
Conclusions Concerning Overall AML Program BLM was concerned with the "broad assertion" made in the draft audit report that BLM has an ineffective abandoned mine lands program and that the program has been undermined, neglected and marginalized. BLM felt that the audit focused on some "mega-AML" sites and hazardous materials sites that had not been addressed as quickly as BLM would have liked because the resources needed to address them exceed available funding. BLM agreed with the conclusion, however, that the program has been underfunded. BLM stated that it did not agree with our conclusion that the abandoned mine lands program has put the public's health and safety at risk. BLM stated that it has undertaken temporary or interim measures to mitigate health and safety hazards while seeking additional funding to complete the needed remediation. BLM discussed several new initiatives that it is pursuing at the national level including the Fix a Shaft Today (FAST) program, National Mine Land Inventory prototype, Inventory Project Change Board, AML Distance Learning and the Project Management Handbook.	After considering BLM's comments, we stand by our conclusions concerning the abandoned mine lands program. While we agree that BLM has taken steps to address some hazards within its budget constraints, we are concerned about the large number of unmitigated sites that still exist and pose risk to the public. Even more disturbing, we found that BLM supervisors told staff to ignore these problems, and employees were criticized or received threats of retaliation for identifying contaminated sites. We continue to conclude that BLM has put the public's health and safety at risk, based on our site visits to about 40 abandoned mine sites in California, Nevada and Arizona. These visits included large contaminated mine sites as well as areas with numerous physical safety hazards. The Rand Mining District is just one example. In this district, residents and off-road vehicle recreationalists were routinely exposed to high levels of arsenic and the district is littered with open mine shafts and other physical hazards that had not been mitigated. We are encouraged by the new initiatives that BLM is pursuing. Most of these initiatives were new and not fully implemented at the time of our audit.
Injuries and Deaths BLM took exception to our statement that "comprehensive records of abandoned mine accidents are not maintained," stating that BLM is not always notified immediately when a death or injury takes place on public land. BLM stated that when notified, it responds by verifying the location of the incident and assessing the site for emergency	We stand by our conclusion concerning the lack of records on abandoned mine accidents. BLM was unable to provide us with data on such accidents. While we agree that BLM will not be able to prevent all accidents, this fact does not relieve BLM from responsibility for taking reasonable steps to prevent injury or death from abandoned mine hazards, especially those hazards that

BLM Response	OIG Analysis
action. BLM also expressed concern that our including examples of abandoned mine accidents inappropriately suggested that BLM failed to address physical safety hazards on public lands. BLM insisted that it has an active program to identify and address such hazards. Finally, BLM stated that some accidents will inevitably take place in light of the hundreds of millions of acres of lands for which BLM is responsible.	are already known by BLM to exist. During our site visits, we observed numerous physical hazards that BLM had failed to implement even the most basic precautions, such as fences and signs.
Observations and Hazards on BLM Land BLM provided additional information regarding actions that it has taken at four sites included in our report: • Rand Mining District: Provided additional details on work that has been accomplished, including actions taken as a result of our Flash Report, "Environmental, Health and Safety Issues at Bureau of Land Management, Ridgecrest Field Office, Rand Mining District, CA." • American Flat Mill: Clarified facts surrounding the demolition of one structure and reiterated the strong local resistance to the demolition of the remaining structure. • Barstow: Described actions taken to address hazards that OIG notified BLM of during the audit. • Caselton Tailings. Clarified facts surrounding the expenditures for constructing a diversion channel and concerning the negotiations for reprocessing of the tailings piles. BLM asserted that the negotiations were in the best interest of the government and the public. Having a third party perform the work would significantly reduce the cost to the government, currently estimated to be between $8 -14 million if done unilaterally by BLM. BLM stated that it had removed all hazardous materials and resolved all chemical and physical safety issues at the "dilapidated operations area." Additionally, BLM stated that its scientists concluded that the risk of groundwater contamination was very small.	We made changes to the report to address the clarifications provided by BLM and to provide information on additional actions taken by BLM to address hazards. Where practical, we support efforts to negotiate with third parties to participate in the mitigation of abandoned mine sites. However, public safety must be the first priority and we are concerned that the public has not been adequately protected from the environmental hazards associated with the Caselton tailings for over a decade while these negotiations have taken place. Concerning the operations area at the Caselton tailings, we observed unlabeled barrels of unknown materials that had been abandoned and remained on the property. We also noted numerous physical safety hazards. An engineering evaluation conducted on the Caselton tailings stated that a catastrophic release of tailings could "severely and intensively impact water quality in Meadow Valley Wash." BLM has indicated to us that the risk of groundwater contamination is very small; however, BLM has never sampled groundwater at the wells downstream of the tailings.

BLM Response	OIG Analysis
Field Office Management BLM acknowledged that, as with almost all BLM programs, the abandoned mine lands program has been decentralized to the field office level. Accordingly, the success or failure of the program rests in a large part on the efforts of the Field Office and Field Office Manager. BLM reasoned that because there are well over 12,000 abandoned mine sites in the inventory database, then the vast majority of program managers and staff must be reporting abandoned mine sites. BLM expressed concern that our observations at specific sites were not representative of BLM's program as a whole and that some of the statements we quoted were taken out of context or misinterpreted. BLM stated that threats and intimidation of its employees will not be condoned or tolerated and when it is made aware of these allegations, it will act to investigate and address the matter.	We agree that given the decentralization, the success of the program rests with the field offices. We concluded that many field offices are not succeeding based on our interviews of approximately 65 BLM employees and questionnaire responses from almost all remaining BLM employees with significant abandoned mine lands responsibilities in California, Arizona, and Nevada. These states have more abandoned mine sites than the other western states combined. Our audit highlighted many examples of serious unmitigated abandoned mine hazards that were tolerated because program managers discouraged identifying and mitigating these hazards. We disagree with BLM's assertion that program managers and staff must be reporting sites since there are over 12,000 abandoned mine sites in the inventory. We found that many of the sites listed in the database were obtained from old Bureau of Mines data that was never verified by site visits. We found that many abandoned mine lands site coordinators had never used the database to enter or modify site information.
Staffing BLM acknowledged that staff are assigned abandoned mine lands as a collateral duty and that they have multiple and sometimes conflicting goals and objectives. BLM stated that it understood our concern that it use dedicated, full-time staff to deal with abandoned mines and that it would follow through on the staffing recommendations made in the report.	Employing experienced, trained, full-time staff dedicated to the abandoned mine lands program should improve performance and minimize the conflicting goals and objectives.
Program Budget and Funding BLM acknowledged that current funding sources, even in the aggregate, are insufficient to address the "mega-AML" sites identified in the report. BLM stated that it will follow through on the recommendations regarding program budgeting. The response provided additional details on the multiple sources of funding that are used for abandoned mines, including funds appropriated for: • Soil, Water, and Air • Hazard Management and Resource Restoration • Central Hazardous Materials Fund • Natural Resource Damage Assessment and Restoration • Southern Nevada Public Land Management Act	Establishing a specific line item in the budget for the abandoned mine lands program and requesting funding to accomplish project goals identified in the abandoned mine strategic plan should strengthen the program. We revised the report to identify the various sources of funding that were used for the abandoned mine lands program.

BLM Response	OIG Analysis
Site Trespass BLM stated that the occupancy and commercial trespass on BLM lands is a law enforcement and land and realty issue that cannot be resolved by the abandoned mine lands program. BLM acknowledged that the land for most of the town of Virginia City, Nevada, is under dispute. BLM stated that survey work was not done in areas we visited in Virginia City and it is not known whether trespass is occurring.	Our report discusses the issues associated with occupancy and commercial trespass on BLM lands that have abandoned mines and the added risks associated with that trespass. We agree that the trespass issues are outside the control of the abandoned mine lands program. Our recommendations are addressed to the Director, BLM who also has oversight of the BLM law enforcement and land realty programs. Concerning Virginia City, we amended the report to emphasize the disputed ownership of the land and the fact that BLM has not determined where trespassing is occurring.
Site Inventory BLM acknowledged that the inventory system is a known problem and that populating the database has not been a priority of the field office staff. Many field offices have their own lists of sites or "cuff records."	A credible inventory of the most dangerous abandoned mine sites is needed to manage the BLM abandoned mine lands program and to support funding requests to mitigate the hazards.
Best Practices BLM provided additional information concerning several of the best practices that we noted in our report.	Despite the problems that we noted in our audit, we did find best practices that BLM should consider for wider implementation.
Appendix A BLM clarified information concerning several sites included in Appendix A to the report. In some cases, BLM noted that the identified hazards were actually on private lands.	We evaluated the information and made changes to the Appendix as we saw necessary. The sites described in the Appendix were all on public land according to BLM field office personnel.

Appendix F- OIG Analysis of NPS' Response to Draft Report

NPS Response	OIG Analysis
Findings and Recommendations NPS stated that it accepted the findings and recommendations in the report. While NPS has mitigated many of its high-risk, easily accessible abandoned mine sites, it agrees that a substantial workload remains to address hazards and reclamation issues associated with abandoned mines in parks.	We are encouraged that NPS is committed to implementing the recommendations provided in our report. However, NPS did not provide the detailed information requested on actions taken or planned to implement the recommendations, including target dates and the names of officials responsible for their implementation.
Observations and Hazards on NPS Land NPS generally agreed with our observations at the parks we visited. However, the response provided additional information concerning the abandoned mine programs at the parks and additional actions that the parks have taken to address the hazards that we observed.	We considered the additional information provided and made revisions to the report where we considered necessary.
Program Funding NPS disagreed with our conclusion that it did not have a current estimate of the total costs needed to mitigate its abandoned mine hazards. It stated that it performed a detailed analysis in February 2005 which reported estimated total costs of $165 million with immediate needs of $43 million. NPS referred to an April 2008 estimate as a current estimate that quotes total needs of $233 million with immediate needs of $60 million.	We were aware of the 1995 estimate, however, we found during our audit that NPS had not updated this estimate or reestimated the costs since 1995. In April 2008, near the completion of our audit, NPS prepared the new estimate. However, this estimate simply adjusted the 1995 aggregate estimate for inflation to derive costs in 2008 dollars. This calculation did not consider any changes in conditions that occurred since 1995 and did not reflect any updated inventory and risk information that could impact mitigation costs. Because this estimate does not reflect the current inventory of abandoned mine hazards, we do not consider it to be a credible estimate of NPS' needs. NPS stated that it is creating a new, more detailed and accurate database of abandoned mine sites that will better identify specific mine features and proposed mitigation costs.
Other Comments NPS comments included a number of clarifications concerning its abandoned mine program as well as recommended report wording changes. Additionally, the response provided more detailed information concerning its program for our consideration.	We considered the additional information provided and made revisions to the report where we considered necessary.

Appendix G – Status of Recommendation

Recommendations	Status	Action Required
1 through 5	Unresolved BLM concurred, additional information needed	BLM should provide additional information on actions taken or planned, including target dates and titles of officials responsible for implementation.
6	Unresolved NPS concurred, additional information needed	NPS should provide information on actions taken or planned, including target dates and titles of officials responsible for implementation.
7 through 8	Unresolved BLM concurred, additional information needed NPS concurred, additional information needed	BLM and NPS should provide additional information on actions taken or planned, including target dates and titles of officials responsible for implementation.

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