Committee on Natural Resources

Subcommittee on Energy and Mineral Resources Legislative Hearing on H.R. 699-Hardrock Mining and Reclamation Act of 2009

U.S. House of Representatives
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On this 26th day of February 2009, I James T. Reynolds, a member of the Coalition of National Park Service Retirees, former superintendent of Death Valley National Park, and recently retired, 2 January 2009, am here to testify before the Subcommittee on Energy and Mineral Resources Legislative Hearing on H.R. 699, the Hardrock Mining and Reclamation Act of 2009.

Good Morning Mr. Chairman, members of the committee, and others. I am honored to share information to add value that will be most beneficial to the Committee who will draft a final bill that will reform the governance of hardrock mining on public lands, as carried out under the Mining Law of 1872.

The Death Valley Region is recognized for its rich natural and cultural diversity. Native people have inhabited this region for thousands of years, and their descendents continue to live and call this area home. In the mid to late 1800's, native peoples were pushed out of the area by mining companies and the federal government. The remnants of this history still exist today. This human history is enveloped by beautiful extremes, craggy soaring peaks, deep chasms, golden sand dunes, a variety of unusual wildlife and uncommon plants, and a myriad of other hidden treasures to experience.

The mining industry helped to establish Death Valley as a national monument. Due to the mining activities, a monument was established rather than a national park. Horace Albright, head of the National Park Service, drew boundaries for what he wanted President Herbert Hoover to declare an American treasure. Hoover eventually designated Death Valley as a National Monument, an act that became official on February 11, 1933. It took over six decades for the Monument's status to be upgraded to National Park status in 1994, California Desert Protection Act.

Its significance is identified in the park's enabling legislation and general management plan which states that the park "has an extensive and well-preserved mining history representing over 100 years of mining technology." Death Valley is a little unusual because some of the earlier national parks were established with the assistance of the railroad industry, artist, painters and photographers.

The California Desert Protection Act, 1994 also describes how Death Valley (DEVA) will be protected and how it will mandate the preservation of historical and cultural values of the California desert associated with ancient Indian cultures, patterns of western exploration and settlement, and sites exemplifying the mining, ranching and railroading history of the Old West.

Many of these mines have important and irreplaceable historic mining artifacts, buildings and other cultural resources on site that are being looted or deteriorating at an alarming pace. Using discretionary operating funds or occasional project funds can not begin to deal with the issue effectively and responsibly.

Current topographic maps indicate that there are approximately 3,500+ known mine features within the park, though there may be over 10,000. Certain mining districts/sites are visited frequently by park visitors. Many of the shafts are several hundred feet deep - the safety concern for the unwary visitor is real. The staff of Death Valley and other NPS areas tries to address the significant safety hazards and the preservation of habitat for rare bat species associated with selected mine sites.

The National Park Service also educates visitors that mining and abandoned mineral lands are often part of the park scene. Mining interpretive displays and presentations are part of the program at several parks. In other parks, special regional events such as discoveries and local gold rushes are commemorated. Visitor centers often have books on mining history and folklore. Educators have recognized that parks make excellent classrooms that bring this rich mining history alive and programs are developed for selected mining districts and sites. Mining-related topics are used to enhance school curricula in history, geography, science, and even art. Some national parks and state agencies offer school outreach programs, including abandoned mineral lands safety information for children.

Many parks boast rich mining histories and are active in preserving and even reconstructing mining-related historic structures and landscapes. Three park units were established with the specific purpose of preserving the American mining heritage: Klondike Gold Rush National Historical Park , Yukon-Charley Rivers National Preserve, and Keewanaw National Historical Park. The first two of these parks commemorate the Alaskan gold rush of 1898, and the latter, established in 1992, celebrates the internationally significant copper mines in the upper Michigan peninsula. Evidence of earlier mining can also be viewed in the National Park System. Alibates Flint Quarries National Monument in Texas and Wupatki National Monument in Arizona preserve the remains of prehistoric extraction sites, and Pipestone National Monument in Minnesota protects the pipestone (red mudstone) quarries of the Yankton Sioux.

In 1849, gold was discovered in California and a rush began into the state. It is estimated that 80,000 people came to California looking for gold. As gold, silver, borax, and other minerals were discovered in Death Valley and many other areas, even miners who feared

these areas, returned to look for the gold and silver potential they had seen during their nightmarish ordeal.

Beatty, Nevada, northeast of Death Valley National Park, is a good example of a modern town that went through a "boom and bust" period (Barrick Bullfrog Mining Site), over a decade ago, and may again go through something similar if a new mining company receives a permit to extract precious minerals from public or private land in the area. . Many citizens may resist the mining activities that may cause some impacts. However, many will welcome the new jobs despite the consequences.

Death Valley includes many remains of towns that went through "boom and bust" periods during the late 1800's and the early 1900's. The following descriptions describe Death Valley's rich mining history, and it also describes the results of mining activities on the surrounding areas.

Now a ghost town, the **Keane Wonder Mine** (1906) was one of the most successful gold mines in Death Valley. Miners were following a rich vein of ore that was deposited in fractures in the metamorphic rock. Tunnels were excavated, side tunnels were added, always removing as much ore as possible. Eventually the mine became a series of chambers supported by pillars. So much material was removed that the entire mountain slope above became unstable and started to collapse. Besides the obvious danger of entering a crumbling mine, just being on the surface above or near the mine has become a safety hazard (Toxic Waste).

To extract the gold from the ore, cyanide and other toxic chemicals were used at the mill site. Not far from the visitor parking area are the remains of tanks used in the cyanide process and fine tailings that remained after processing. Preliminary testing has shown elevated levels of lead and mercury in these tailings. Erosion is constantly exposing this material and wind blows the dust around.

The historic structures of Keane Wonder Mill and tramway are suffering from rot, rust, and decay. These structures are in danger of collapse and need to be stabilized.

Until the site can be made safer—while also preserving the historic features of the site and protecting those areas used by wildlife—the National Park Service has decided to close this popular ghost town and surrounding area to public access.

Ballarat came into being in 1897 with many gold strikes in the Panamint Mountains. The Radcliffe mine alone produced 15,000 tons of gold ore from 1898-1903. The town was named after a famous Australian gold camp and was home to 400 people in 1898. Several legendary Death Valley figures lived in town. Ballarat is now privately owned and contains the ruins of several adobe buildings. The town site is located off the Panamint Valley road west of Death Valley proper.

Chloride City became a town in 1905 when the Bullfrog strike brought people into the area to re-work old mining claims. It became a ghost town the following year. There are numerous adits and dumps in the area and one grave of a James McKay, of whom nothing is known. In addition, there are remains of 3 stamp mills. It is located off a four wheel drive road 3.5 miles east of Hell's Gate or off the dirt road 7 miles further east at the Park boundary.

Greenwater was built around a copper strike made in 1905. Water had to be hauled into the town and was sold for $15 a barrel. The town grew to a population of 2,000 and was known for its lively magazine, The Death Valley Chuckwalla. By 1909 the mining had collapsed without ever showing a profit and people left for other areas. There are no ruins left in Greenwater, which is located south of Dante's View off the Greenwater Valley gravel road.

Originally the town of **Harrisburg** was to be named Harrisberry after the two men who found the gold that launched it in 1905. Shorty Harris later took credit for the strike and changed the name of the town to Harrisburg after himself. Nevertheless, Pete Aguereberry, one of the original strike finders, spent 40 years working his claims in the Eureka gold mine. Harrisburg was a tent city that grew to support a population of 300. Today nothing remains of the town but Pete's home and mine which are located to the right two miles down the dirt road to Aguereberry Point.

Copper and lead claims had been filed in the **Leadfield** area as early as 1905 but it wasn't until 1926 that the area was heavily mined. In February of that year, Charles C. Julian, a flamboyant California promoter, became president of the town's leading mining company, the Western Lead Mines. Julian's promotions were responsible for bringing great numbers of people into the area and in April, 1926 the town was laid out with 1749 lots.

The financial downfall of Charles Julian and the playing out of lead in one of the main mines, led to the end of the town. The area is scattered with mines, dumps, tunnels and prospect holes. There are remains of wood and tin buildings, a dugout and cement foundations of the mill. The town is located on the Titus Canyon road. This is a one way high clearance unpaved road that sometimes requires 4-wheel drive.

Panamint City was called the toughest, rawest, most hard-boiled little hellhole that ever passed for a civilized town. Its founders were outlaws who, while hiding from the law in the Panamint Mountains, found silver in Surprise Canyon and gave up their life of crime. In 1874 the town was at the height of its boom with a population of 2,000 citizens. By the fall of 1875 the boom was over, and in 1876 a flash flood destroyed most of the town. The chimney of the smelter is the most prominent remnant of the town's heyday. The site of Panamint City is accessible via a 5 mile hike from Chris Wicht's Camp, which is located 6 miles northeast of the ghost town of Ballarat. Mining in the area continued on a sporadic basis up until recent times. The ruins of old Panamint City were added to Death Valley National Park in October of 1994.

Rhyolite, the "Queen City", was the largest town in the Death Valley area with a population of 5,000-10,000 people. During its heyday, from 1905-1911, it contained 2 churches, 50 saloons, 18 stores, 2 undertakers, 19 lodging houses, 8 doctors, 2 dentists, a stock exchange and an opera. The town contains numerous ruins including the Bottle House, Senator W.A. Clark's train depot, remains of a 3-story bank building, and the jail. It is on BLM land and is accessible by passenger car. Rhyolite is located 4 miles west of Beatty and 35 miles from the Death Valley Furnace Creek Visitor Center.

Skidoo was founded in 1906 when two prospectors, on their way to the Harrisburg strike, found gold. The town reached a population of 700 and became famous as the site of the only hanging to take place in Death Valley. It occurred when Hootch Simpson, a saloon owner who had fallen on hard times, tried to rob the bank, was foiled in the attempt, and later went back and killed the owner of the store in which the bank was located. During the night the townspeople hanged Hootch. According to legend, he was hanged twice. The second hanging was to accommodate news photographers who missed the first hanging. No one was ever arrested for the hanging. Skidoo is located off the Wildrose road on an unpaved high-clearance road not recommended for automobiles.

One of the most well known but short lived mines was the **Harmony Borax Works**, which was active from 1883-1888. This mine was made famous not for its ore deposits, but by the 20 Mule Team Wagons and the ad campaigns for the Death Valley Days radio and television programs. To help the public become familiar with the desert area, in late 1930 the Borax Company began airing its radio show, ***Death Valley Days***. The program remained on the air for 14 years. The show's run did not end there. It ultimately became a popular TV program, which was televised for an additional 16 years, 1952 to 1968 – an impressive run by virtually any standard. And the program's most famous host, **Ronald Reagan**, introduced it until he was elected governor of California.

On May 10, 1872, Congress passed a law that encouraged people to go West, locate hardrock minerals and stake mining claims on federal lands, and remove treasure troves of gold, silver, copper, and platinum from the public domain – for free. The General Mining Law of 1872, or the "experiment," as some of our predecessors named it, has endured for more than one and a third centuries – a total of 137 years. Today, we can resoundingly assert that the experiment has lasted long enough.

To Support current National Park Services (NPS) and Department of the Interior (DOI) goals to reduce Comprehensive Environmental Response Compensation and Liability Act (CERCLA) liability at park facilities, Phase I Environmental Site Assessments (ESAs) must be conducted to determine whether or not any hazardous waste sites or contamination exists. To facilitate this process we seek assistance in conducting a Phase I ESA consistent with requirements set forth under 40 CFR 312 (the All Appropriate Inquiry (AAI) standard), and requirements in the current American Society for Testing and Materials (ASTM), which is ASTM 1527-05.

The Phase I ESA is also completed to determine if a site is safe for visitors. The Phase I ESA includes an analysis of current and historical conditions at the site with respect to site contaminants and potential for CERCLA liability. The goal of the site assessment is to identify potential liabilities under CERCLA before mitigation activities or transactions take place so that costs can be incorporated into land transactions or clean-up. These measures are required so that individual park facilities do not end up bearing the brunt of the cost of CERCLA clean-up. Phase I ESAs must be conducted by an Environmental Professional (EP) as described under the AAI standard.

An interagency agreement (IA) exist between the NPS and BLM that defines the responsibilities of the Bureau of Land Management (BLM), Department of the Interior, and the National Park Service (NPS), Department of the Interior, in the administration of the Mining Law of 1872, as amended, on lands in the National Park System.

The BLM is responsible for developing and promulgating the regulations and policies to be followed in the administration of the mining laws pertaining to location, annual maintenance, and patenting of mining claims. The BLM regulations that provide for proper location, maintenance, and patenting of mining claims are the definitive executive branch position on such matters. The BLM regulations, instruction memoranda, manuals, and handbooks contain the standards and procedures to be used by the BLM and the NPS for examining the validity of mining claims and preparing mineral reports.

The BLM, in conjunction with the Office of the Solicitor (SOL), Department of the Interior, evaluates and interprets the mining law as construed by the Office of Hearings and Appeals, Department of the Interior, and the courts. Such interpretations are the definitive executive branch position on mining law matters. The BLM is responsible for reviewing and approving all mineral reports. The BLM initiates contest actions on behalf of NPS before the Office of Hearings and Appeals (OHA).

The NPS is responsible for ensuring that operations associated with the exercise of valid existing rights on patented and unpatented mining claims in the National Park System are conducted in a manner that preserves and protects park resources and values. The NPS administers these operations in accordance with applicable laws, including the National Park Service's Organic Act (16 U.S.C. §§ 1 et seq.), the Mining in the Parks Act (16 U.S.C. §§ 1901-1912), and NPS implementing regulations (36 C.F.R. Part 6 and Part 9, Subpart A).

The NPS conducts validity examinations on mining claims located in units of the National Park System, including those claims for which a patent application has been filed, to determine if such mining claims are valid and/or all patenting requirements have been met. NPS mineral examiners or NPS-designated representatives will serve as expert witnesses when the government's case is presented before OHA, including those cases where NPS has employed a mineral examiner under a contract.

Procedures for Determining the Validity of Mining Claims: As used in the Interagency Agreement, the terms "validity examination" and "mineral report" refer to examinations and reports prepared for the purpose of either determining mining claim validity or processing mineral patent applications. The NPS has a National Park Service Programmatic Agreement with the California State Historic Preservation Office (SHPO) titled "A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines" (California AML PA). The California AML PA was developed by cultural resources specialists, biologists, and mining engineers for the purpose of creating an agreement that allows for closure of historic mining features for public safety reasons, without irreversibly harming cultural resource and wildlife values. While this document has not yet been approved by the California SHPO, we would like to find out if it would be worthwhile for the Nevada National Parks to develop a similar document.

Determination of Claim Validity: The NPS, or its designated contractors operating under the direction of certified NPS mineral examiners, will conduct validity examinations on mining claims in units of the National Park System, and will prepare mineral reports detailing the findings of validity examinations, making appropriate recommendations to the BLM. The mineral reports will conform to the standards set out in BLM manuals, handbooks, and instruction memoranda. The BLM will review NPS-prepared mineral reports to determine if they meet BLM standards. Reports that meet BLM and NPS standards will be approved. Reports that are inadequate for the recommended action will be returned to the author with an explanation of what steps must be taken to correct the document.

In 2007 the National Park Service and the Bureau of Land Management underwent an audit conducted by the Inspector General for the Department of the Interior. The audit reviewed the management and treatment of abandoned mine lands by these agencies. The Inspector General concluded that the agencies are putting public safety at risk because many physical and environmental hazards have not been addressed for decades. It was noted that at Death Valley National Park, the public was invited to visit sites that had not been adequately mitigated. Specifically mentioned was the Keane Wonder Mine, which was the site of a fatality in 1984. While the auditor was at the mine site, he witnessed a three-year-old child exiting from a collapsing adit while his family explored other openings. Park staff has spoken with visitors at the Keane Wonder site who freely admit that they see the warning signs about mine hazards but disregard them.

Another hazard at the Keane Wonder includes the historic tramway system. Wood members have deteriorated, which, combined with a collapsed tower near the upper terminal, leads to increased strain on the entire tramway. A third issue involves elevated levels of mercury and lead in the tailings left from processing operations. The tailings are very fine and easily become windborne; further testing is needed to determine if the levels of lead and mercury are hazardous to humans or wildlife.

The combination of the physical hazards at the mine, the deterioration of the tramway, and the environmental hazards of the tailings led the park to close the site to public access and non-essential employees in September 2008.

We agree that this is one of the more spectacular hikes within Death Valley National Park and that the site is an excellent example of mining activity in the early 20th century. Our goal is to reopen this site to the public when the human-caused safety issues have been addressed. The Keane Wonder Mine and mill site is being nominated for inclusion in the National Register of Historic Places.

Death Valley National Park has received funding through the Vanishing Treasures program for work on the historic tramway, which will begin in 2009. Funding has also been requested for testing of heavy metals in the tailings; the results will determine if contamination cleanup will be needed. Additional funding has been requested for mitigation of the hazards of the mine openings. The treatments will consider the cultural and natural resource values, and while they will prevent people from entering the mine openings, they will preserve the most significant features of the site and provide for continued use by wildlife, particularly bats.

Abandoned Mineral Lands:

Abandoned mineral lands (known as AML) are one of many types of disturbed lands in the National Park System. AML sites are 1) underground and surface mines, 2) placer and dredge sites, and 3) oil, gas, and geothermal wells. Commodities mined at these sites ranged from soft rocks such as coal and sand/gravel to hard rock minerals such as gold, lead, and copper. Sites can contain waste rock (unprocessed rock), tailings (processed rock), abandoned roads, fuel storage tanks, drainage diversions, buildings such as mills and assay shops, deteriorating structures such as head frames and tramways, and abandoned heavy equipment.

Not surprisingly, the legacy of abandoned mineral lands spans North America. Mining for flint, obsidian, and native copper for tools and weapons, turquoise for jewelry, and clay for pipes began with the arrival of prehistoric peoples. During the 16th century, expectation of mineral wealth drove Coronado's conquistadors beyond the edge of civilization to the heart of an unknown continent. Later, the lure of gold and the prospect of great wealth were responsible for Europeans settling in the western United States. With the beginning of the industrial age, the young nation, hungry for energy, exploited its mineral resources of coal, oil, gas, and uranium, and this too left its mark on the land. Deserted, these sites stand in silent testimony to those who pioneered this country in search of mineral wealth.

An estimated 3,100 abandoned mineral sites can be found in the National Park System, in all 7 regions of the system, and in 45 states. This number translates to 8,400 mined features, 700 oil and gas wells, 1,000 quarries, and 33,000 disturbed acres. Additionally, the National Park Service estimates that 5,000 miles of abandoned access roads exist.

Abandoned mineral lands are lands that were disturbed by mineral extraction -- underground mining, surface mining, dredging, and oil and gas exploration--and then abandoned. Abandoned mineral lands can be underground with numerous mine openings such as adits and shafts or on the surface in the form of strip mines, quarries, open wells, or pits. Abandoned mineral lands are not only the actual mine or well but include access roads and trails, historic buildings such as mills and company towns, tailings and waste rock piles, and abandoned machinery such as ore carts, steam engines, and pump jacks.

Falling down vertical openings is the most common cause of death and injury in abandoned mines. Darkness, loose debris, and false floors can hide vertical openings. Weathered rock at the edge of an opening can break away and slide into the hole under the weight of a person. Unstable adits and structures are common hazards at abandoned mines.

Lethal concentrations of methane, carbon monoxide, carbon dioxide, and hydrogen sulfide can accumulate in underground passages. Pockets of still air with little or no oxygen can be encountered. By the time persons feel ill, they are no longer able to react.

Mines can cave in at any time! The effects of blasting and weathering destabilize once-competent bedrock through time. Support timbers, ladders, cabins, pump jacks, tanks, and other related structures may seem safe but can easily crumble under a person's weight.

Sand and gravel pits make up a significant portion of the abandoned mineral lands in the national park system. Unused or misfired explosives are deadly. Because old explosives become unstable, minimal vibrations from a touch or footfall can trigger an explosion.

Vertical cliffs--also called *highwalls*--from which material was extracted are common features of open pit mines and quarries. These highwalls can be unstable and prone to collapse.

Many abandoned mines become flooded. Shallow water can conceal sharp objects, drop-offs, and other hazards.

Some of the materials that were mined, such as uranium and thorium, are radioactive. Because the effects of radiation exposure are cumulative through a lifetime, any can be harmful or fatal to humans, wildlife, and plants.

Mines were constructed and maintained to be safe only while they were in operation. When the miners departed in search of more lucrative deposits, they often left vertical openings uncovered and removed the water pumping and ventilation systems. Support structures, timbers, and ore pillars were removed or left to rot.

Caves are formed naturally over thousands or even millions of years. Mines, in contrast, are formed in comparatively short periods of time through blasting, a process that fractures and destabilizes the wall and roof rocks. Most underground mines do not have

natural ventilation and consequently can have lethal air traps. Even experienced cavers can die exploring mines. Mine rescues are extremely hazardous. Mine rescue teams, despite their extensive training, are at significant risk every time they enter an abandoned mine. The tragic and unfortunate reality is that most mine rescues turn into body recoveries.

Abandoned mineral lands can have detrimental effects on soils, water, plants, and animals. The extent of the effects in National Park System units is not known. Inventories are incomplete and parks are still evaluating sites.

Water is one of the resources most frequently harmed by abandoned mines and wells. Water is also the main vehicle that carries abandoned mineral land impacts beyond the immediate site. Elevated concentrations of metals and increased amounts of suspended sediment, acidity, petroleum, and brine threaten surface and underground water quality and aquatic habitats. Acid is created as metals oxidize in sulfide ore and waste rock. Acid allows toxic metals to dissolve and wash into streams and lakes. Acid mine drainage occurs at only a few of the abandoned mines in the National Park System. At some of these sites, the water coming out of the mines is so acidic that it can actually burn a person's skin.

Mining metals requires extracting ore from the ground, crushing the ore to the size of sand grains, and removing the desired mineral. Often the excess material--tailings--is deposited on the surface. During storms and snow melts, water flows over and through the tailings. The tailings still contain relatively large amounts of metals such as lead, zinc, copper, and cadmium. The water interacts with the metals and transports them to nearby streams. Some metals, at concentrations as small as a few parts per million, can damage or kill aquatic plants and animals.

Disturbed lands and unprotected slopes are susceptible to erosion. Uncontrolled surface drainage can remove soils and may make large areas unstable. Every year, sediments from mine sites cause significant damage to downstream resources. Although some mine and wells are historically significant, most are eyesores. Piles of trash and debris, open pits, waste rock piles, and access roads blemish the otherwise pristine landscapes of the parks. Surface mines and quarries often have the greatest impacts on scenic vistas. In some cases, hundreds of thousands of cubic yards of material have been removed, making restoration extremely difficult.

Mining often stripped away not only the vegetation but also the topsoil that is needed to reclaim the site when mining operations cease. The area left behind is barren and incapable of supporting plant and animal life. Bare soil continues to erode and is carried away from the site to nearby streams and rivers. Here, the sediment clogs stream channels, reducing fish habitat and interfering with natural flow patterns. Even when these effects seem minor at first glance, they may impair larger ecological communities. Soils and water contaminated with heavy metals or chemicals from mineral processing may be harmful to wildlife. These contaminants can become increasingly concentrated in

animals higher up the food chain in a process called biomagnification. Affected animals could die or become unable to reproduce.

Abandoned mines do not always have negative consequences. They sometimes provide habitat for wildlife including some rare or endangered species. Some woodrats, bats, salamanders, and owls use mines as habitat. In many parks, special mine closures protect critical habitat and correct safety hazards. Some bat species, which are endangered because their native habitats were destroyed, have begun to inhabit abandoned mine openings. When conditions are suitable, bats can use mines for summer roosts, winter hibernation, nurseries for raising young, and a stopover during migration. Of the 43 bat species native to the United States, 29 rely on mines for a portion of their habitats. The continued survival of several bat species may depend on the few mines and remaining caves that meet the habitat needs of these animals.

The mitigation and reduction of hazards from abandoned mineral lands are often complicated and expensive procedures. The National Park Service establishes the priority for mitigation by considering the level of danger and potential for resource damage. Each site is unique. The chosen method for mitigating a hazardous site depends on several things: available materials at the site, the type of rock, the difficulty of reaching the site, and money. Parks use a variety of methods to close hazardous mine openings. Because of limited funding, parks can usually afford only to fence the hazard and post signs, temporary solutions. Other common mine closure techniques include backfilling, blasting, expandable foam, rock and mortar walls, and bat gates. Virtually all mineral activities require access roads. The erosion and visual scars related to abandoned roads impact park resources.

Scars on the land may last thousands of years even if mined areas stabilize and the vegetation recovers. Carefully planned reclamation can restore natural processes and greatly speed site recovery. Reclamation in the National Park System focuses on reestablishing landscapes and environments that mimic the surrounding undisturbed lands. Mine structures such as mills, shops, headframes, and others of historic value are stabilized and preserved. Otherwise, the pre-mine condition is restored wherever possible. Reshaping the surface stabilizes slopes and drainages, waste rock piles, tailings ponds, highwalls, and access roads. This reshaping often requires the use of heavy equipment to contour the land to look and functionlike the surrounding undisturbed lands. The restoration of stream channels also provides for the reintroduction of plants and animals that were lost because of mining. The same type of earthmovers that created the mineral extraction scars are often the best suited to remove them.

Cleanup or treatment of toxic materials prevents further impairment of the environment. Small quantities of mining related materials, such as chemicals or fuels used in mining and milling are completely removed. Large quantities of naturally occurring materials, such as unweathered waste rock that produces acids, may be treated on-site. Applications of lime may provide a buffer to prevent the generation of acids. In more severe cases, limestone drains or artificial wetlands filter heavy metals and reduce acidity.

The goals for revegetation of mine sites in the National Park System are the restoration of native plant populations and patterns. The first consideration is the suitability of the soil for revegetation. In harsh conditions, topsoils, compost, or specific nutrients can be added. Specialized nurseries may be needed to propagate suitable plant materials. Sometimes, revegetation work is focused on establishing pioneering species to allow for natural succession. Time and nature then restore the natural productivity in the site.

The National Park Service closes between 10 and 100 mine openings and plugs 5 abandoned oil and gas wells each year. In 1993, the estimated cost of reclamation of all remaining abandoned mineral land sites in the National Park System was $200 million.

The Death Valley Mine Closure Alliance was formed in 2006 with Rio Tinto Minerals, California Department of Conservation AML program, Bat Conservation International, and Death Valley National Park. The Alliance has surveyed over 200 of an estimated 600 borax mines; identified mines that have significant usage by bats; and are prioritizing closures.

As a final comment; Death Valley estimates there are 6000+ mines within the park, more than any other unit in the National Park Service. Many of these sites have been documented and mitigated in various forms over the last 20 years but many more are left. Most of the mines in Death Valley are historic cultural resources spanning over 100 years of mining, and range in size from mines worked by the "single-blanket" prospector to mines commercially operated by Fortune 500 companies. While many mines are hazards, the safety mitigations should be designed to be sensitive to the cultural significance, interpretive values, and accommodate wildlife uses. This will require a systematic and methodical approach and can be accomplished through a consistently funded program.

I believe the Subcommittee on Energy and Mineral Resources, H.R. 699, the Hardrock Mining and Reclamation Act of 2009, legislation will end the financial and environmental abuses permitted by the 1872 Mining Law – archaic provisions that fly in the face of logic, and are not what taxpayers, sportsmen, conservationists, and western communities want or need.