

2018

# Nevada Abandoned Mine Lands Physical Hazards Report



Commission on Mineral Resources  
Division of Minerals

April 2019

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**Commission on Mineral Resources**

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## Contents

1. Executive Summary .....	3
2. The Commission on Mineral Resources .....	5
3. Background .....	5
4. Inventory and Securings .....	7
5. Permanent Closure Projects .....	8
6. Intern Program .....	12
7. Public Awareness .....	13
8. Performance Indicators .....	13
9. Summary .....	14
10. Acknowledgements .....	14
Appendix A .....	15
Appendix B .....	17
Appendix C .....	19
Appendix D .....	20



State Contractor, Environmental Protection Services, constructing a wildlife compatible closure in Gold Butte National Monument, Clark County

## 1. Executive Summary

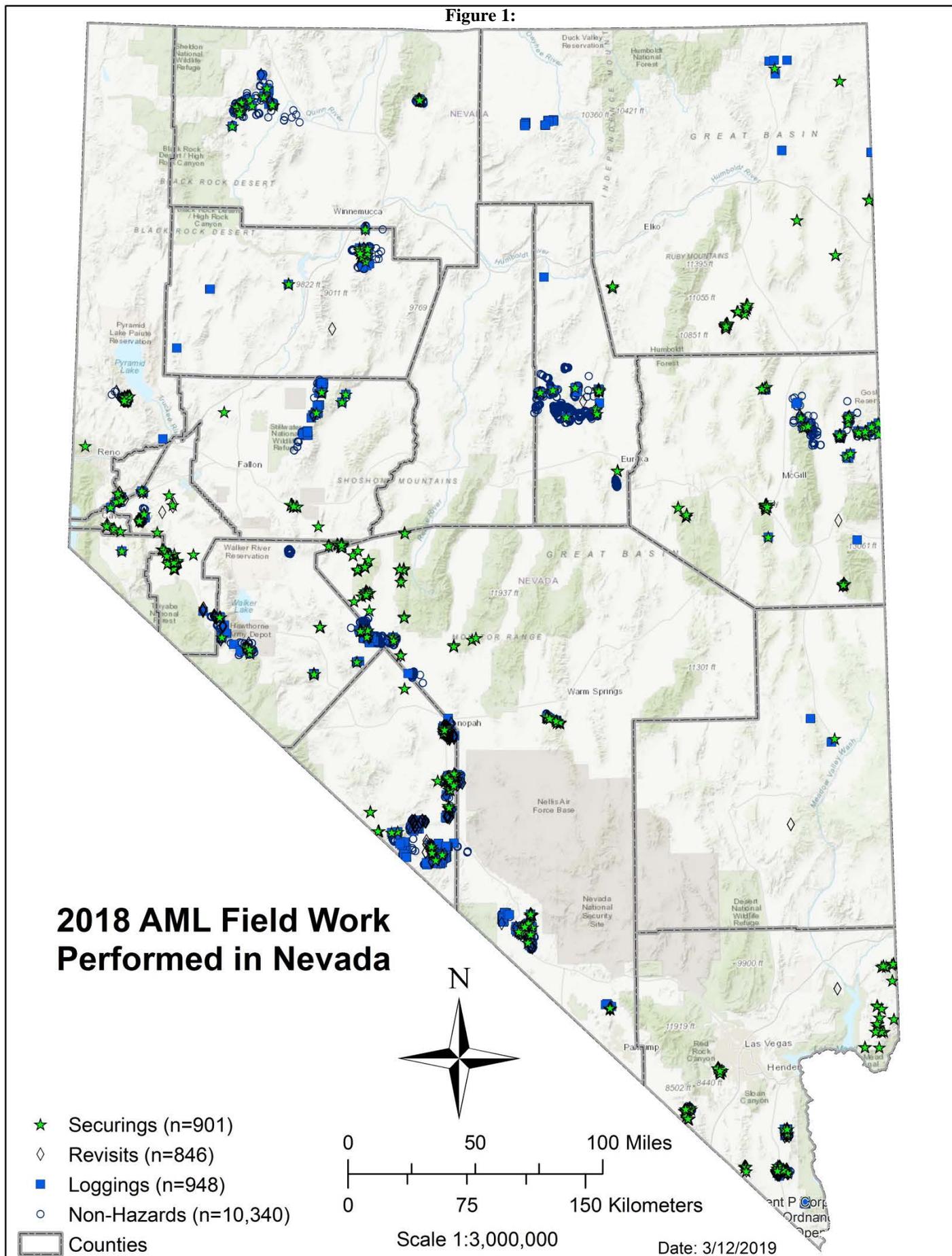
The State of Nevada's Abandoned Mine Lands (AML) program finished its 32<sup>nd</sup> year in 2018. Details and milestones of the program in 2018 include:

- There were NO reported abandoned mine accidents or fatalities, making 2018 the fifth consecutive year without an incident.
- Over 100,000 mining related features have been cataloged since the inception of the AML program.
- 948 hazards were discovered and 901 hazards were secured.
- Of the 901 hazards that were secured in 2018, mining claimants and private property owners secured 246 hazards. Division staff, contractors and volunteers secured 471 hazards, Figure 1.
- 891 known hazards were revisited to confirm securing status and make repairs as needed.
- 22,601 hazards have been discovered and ranked since the beginning of the program, and the total number recorded as secured is 18,063.
- 319 permanent closures took place in 12 of the 17 Nevada counties. 134 of the 319 permanent closures were completed by the Division's contractor. This is a record number of closures by the Division in one calendar year.
- The program expended \$408,113 of Division funds and \$359,910 of partnering organizations funds for closures of abandoned mines state wide.
- Five Eagle Scout projects secured 15 hazards and repaired three hazards for a total of 796 securings and 181 repairs by Eagle Scouts since 1992.
- The Division surpassed both performance indicators required by the State Legislature with 80% of discovered hazards were secured, and total public awareness presentations averaged 30 per staff member for the year.
- The Division worked closely with the Bureau of Land Management (BLM), Clark County Real Property, Clark County Desert Conservation, Nevada Department of Wildlife (NDOW), and the US Forest Service (USFS) to secure abandoned mine land hazards.



Loadout at Gunmetal mine complex, Mineral County

Figure 1:





Summer intern inventorying a hazard in White Pine County, summer 2018

## 2. The Commission on Mineral Resources

The Nevada Division of Minerals (the Division), a part of the Commission on Mineral Resources (Commission), is charged by statute to encourage and assist in the responsible exploration for and the production of minerals, oil, gas, and geothermal energy which are economically beneficial to the State; to provide for public safety by identifying, ranking and securing dangerous conditions at mines that are no longer operating; and to collect and disseminate information on exploration, production and related topics. The seven-member Commission is a public body appointed by the Governor to adopt regulations, formulate administrative policies for the Division, and advise the Governor and Legislature on policy relating to mineral resources. The Division focuses its efforts on three main areas: collection and dissemination of educational information, inventory and securing of abandoned mine hazards, regulation of oil, gas, and geothermal drilling activities, and dissolved mineral resource exploration.

The Division's Abandoned Mine Lands (AML) program addresses public safety by identifying and ranking dangerous conditions at mines that are no longer

operating and by securing dangerous mine openings. The Division is focused on physical safety while the Nevada Division of Environmental Protection is focused on sites with environmental hazard concerns. Both programs continually urge the public to recognize and avoid hazardous abandoned mines.

## 3. Background

Nevada's geology provides ideal conditions for a large variety of valuable and useful minerals, and has attracted the attention of miners and prospectors for over 150 years. The prospectors who traveled across the state exploring for this vast mineral wealth left behind a legacy of shafts, adits, glory holes, stopes, mill sites and other features that are potentially dangerous to people and animals. It is estimated that over 300,000 of these mining-related features exist in the state. Of these, the Division estimates that 50,000 are significant physical safety hazards that require some type of securing.

The Division's AML program was created by the Nevada Legislature in 1987 in response to incidents, both fatal and nonfatal, that had occurred at abandoned mines. The number of hazards discovered and secured each year since the program's inception is shown in Figure 2. The legislation placed the program with the Division and mandated two primary functions:

- 1) Establish a program to discover dangerous conditions that result from mining practices that took place at a mine that is now no longer operating, identify the owner or other person responsible for the condition, if feasible, and apply a hazard ranking based on the location and type of feature.
- 2) Develop a public awareness campaign to educate the public about dangerous conditions that exist as a result of historic mining activities. The statutes governing the program can be found in Appendix A.

In 1989, the Nevada Legislature expanded the program to include the responsibility of securing hazardous conditions on open public lands where no claimant or property owner could be identified. These are referred as "orphan" mine openings. The Legislature also provided an opportunity for companies, individuals, and civic groups to voluntarily assist the program in the construction of a fence or other safeguard around a dangerous condition at an abandoned mine opening under a designated good Samaritan law. (NRS 41.0331, Appendix A).

The AML program is administered under Nevada Administrative Code chapter 513, found in Appendix B. Sections 513.320 through 513.360 provide for the openings or structures to be given a hazard ranking based on the location and type of feature. The Division notifies claimants and property owners of hazardous conditions on their claims or property and their responsibility to secure the hazards. The Division also notifies the county board of commissioners of hazardous conditions discovered within their respective counties at least once a year. The appropriate county is notified if a claimant fails to notify the Division of completion, or of their intention to secure hazards within the timeframe specified. The county is authorized to take appropriate enforcement action, which may include warnings issued by the county sheriff, securing work performed under direction of the county at the owner’s expense, and possible fines of up to \$250 per violation.

No state general funds are used to operate this program. It is funded from the following three sources:

1. For every unpatented mining claim filed or retained on Federal land, a \$4 fee is collected by county recorders and remitted to the Division (NAC 513.315).
2. The Division collects a one-time fee of \$20 per acre for every acre of permitted disturbance associated with new or amended mining or exploration plans of operation on public lands (NRS 519A.250).
3. The Division currently has cooperative agreements in place with multiple partnering organizations including the Bureau of Land Management (BLM), the United States Forest Service (USFS), Clark County Real Property, and Clark County Desert

Conservation Program which provide financial assistance to enhance and accelerate both field investigation activities and work performed by staff,

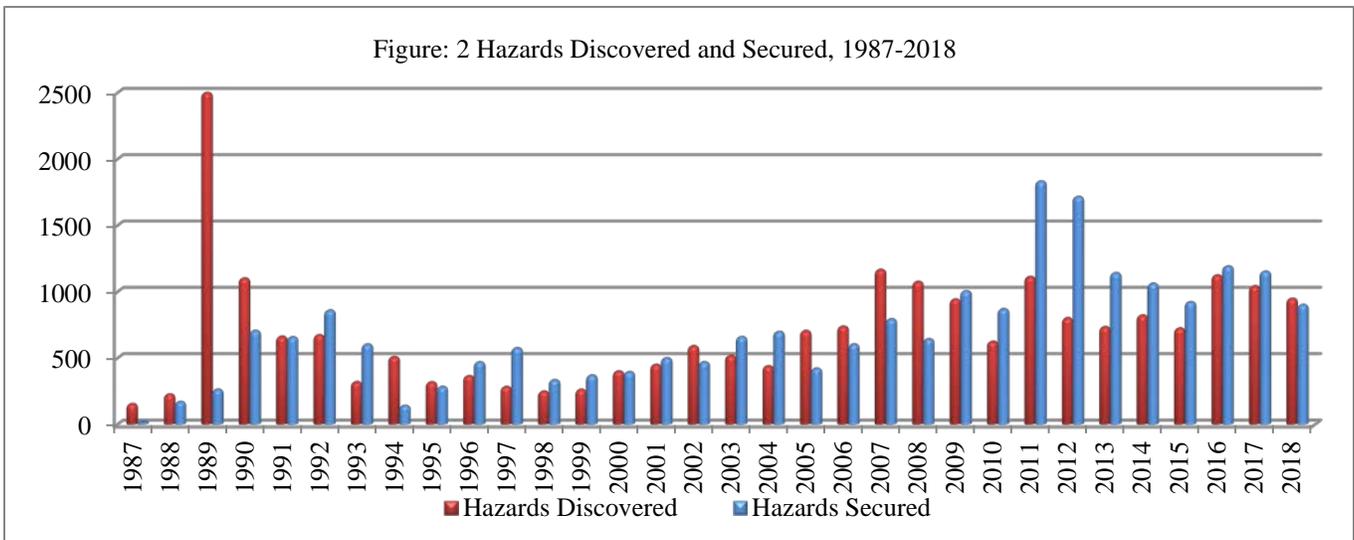
**Table 1: Dedicated Revenue to the AML program for the calendar years 2009 through 2018**

Year	Assistance Agreements	Mining Claim Fees	Disturbance Fees	Total
2018	\$359,910	\$837,688	\$36,630	\$1,234,228
2017	\$137,198	\$802,372	\$84,640	\$1,024,210
2016	\$110,448	\$725,257	\$5,280	\$840,985
2015	\$60,000	\$432,242	\$64,300	\$556,542
2014	\$84,008	\$466,835	\$164,740	\$715,583
2013	\$69,031	\$494,967	\$228,220	\$792,218
2012	\$31,670	\$561,930	\$9,800	\$603,400
2011	\$0	\$481,584	\$139,360	\$620,944
2010	\$75,000	\$463,236	\$41,008	\$579,244
2009	\$110,000	\$455,223	\$148,180	\$713,403

contractors, and volunteers to secure hazards.

Revenues are used for contracted closures, fencing, and inventory work, field supplies such as fence posts, signs and barbed wire, travel and vehicle expenses, required office supplies and software. The revenue is also used to support the AML public awareness program through school presentations, videos, AML handouts, classroom exercises, and other means of outreach. Table 1 shows the historical revenues received by the Division from the three funding sources.

**3.a Abandoned Mine Incidents in 2018**



There were NO reported abandoned mine injuries or fatalities in 2018. This was the fifth consecutive year without a reported injury or death in Nevada. The first recorded AML incident in Nevada happened in 1888 when a 14 year old was chasing after her hat, which had blown off, and she fell down a shaft in the Virginia City area. She was rescued within an hour by local miners without serious injuries. Appendix C lists a 59-year history of reported incidents related to abandoned or idle mines.

#### 4. Inventory and Securings

During 2018, the Divisions’ AML program surpassed a milestone of 100,000 historic mining related features being inventoried. By the end of 2018, 22,601 hazards have been discovered and ranked, and 85,402 non-hazardous features have been characterized. Out of the 22,601 hazards that have been discovered and ranked, 18,063 are currently secured. Table 2 lists hazards by County, Figure 3 lists all by securing method, and Figure 4 lists 2018 securings by agency or group.

In 2018, 2,695 hazardous sites were visited for the purpose of conducting loggings, securings and revisits. Hazards secured during 2018 totaled 901. Of the 901, a total of 568 hazards were secured by fencing, 220 by backfill or plugged, 99 by bat compatible closures (BCC), and 14 were found to be caved by nature.

Many agencies contribute to the inventory and securing efforts of mine hazards, with the Division or its contractors accounting for more than half of all securings in the state, Figure 4. The use of digital field tablets for collecting digital data has increased the efficiency of the

field staff. The tablets have also greatly reduced time needed for data entry and increased data integrity. The use of two Unmanned Aircraft Systems (UAS or drones) has increased inventory efficiency. This is most evident when looking at the record breaking 10,340 non-hazards inventoried in 2018. By using drones for preliminary flights of new areas, the staff is allowed to cover larger amounts of land in very short period of time.

<b>County</b>	<b>Sites Discovered</b>	<b>Sites Secured</b>	<b>% Secured</b>
Carson	76	75	99%
Churchill	880	670	76%
Clark	2,279	1,988	87%
Douglas	210	204	97%
Elko	942	789	84%
Esmeralda	3,441	2,690	78%
Eureka	1093	857	78%
Humboldt	980	819	84%
Lander	639	556	87%
Lincoln	1028	884	86%
Lyon	1,181	1055	89%
Mineral	1,933	1,559	81%
Nye	3,160	2,393	76%
Pershing	1,876	1,480	79%
Storey	219	202	92%
Washoe	459	410	89%
White Pine	2,205	1432	65%
<b>TOTAL Since 1987</b>	<b>22,601</b>	<b>18,063</b>	<b>80%</b>



Summer intern securing a hazard in Humboldt County

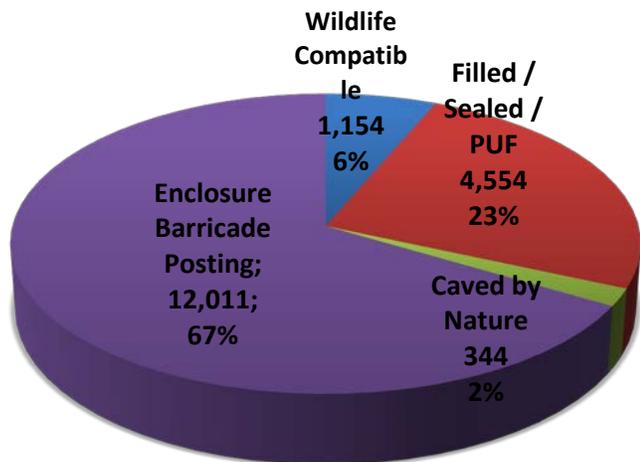


Figure 3: 1987-2018 Hazards secured by method (n=18,063)

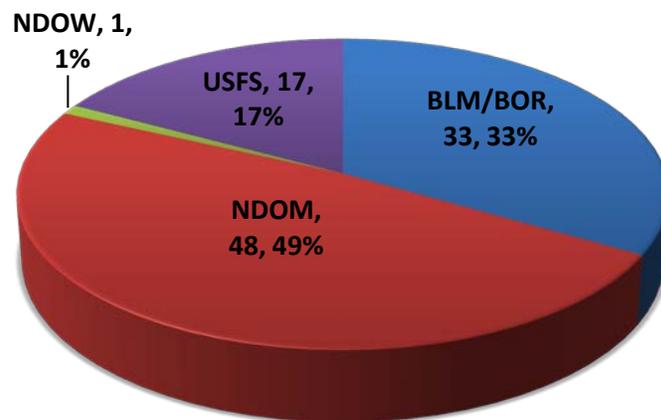


Figure 6: Wildlife compatible closures completed in 2018 by agency (n=99)

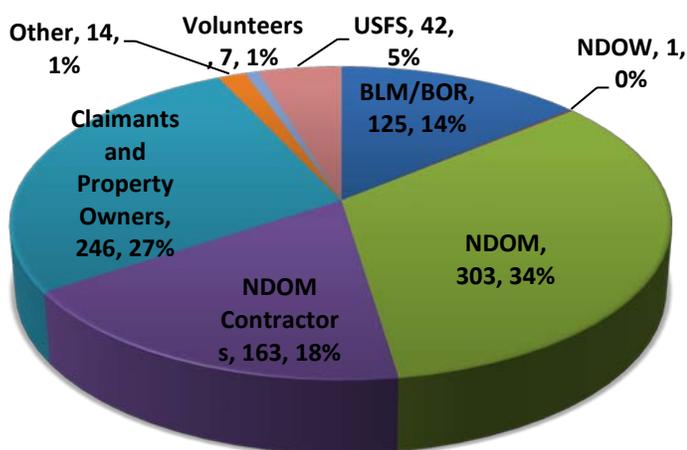


Figure 4: 2018 Hazards secured by Agency or Group (n=901)

## 5. Permanent Closure Projects

Hazards permanently secured in Nevada totaled 319, including 124 by the Bureau of Land Management (BLM), 42 by the United States Forest Service, (USFS), 134 by the Division, two by Boy Scouts, and 17 by owners or claimants. Figure 5 shows the backfills or polyurethane expansive foam plugs (foam plugs) by agency. Prioritization for permanent closures is based on a risk assessment. This may include a recorded incident, a high ranking hazard, proximity to public or recreation sites, or when exclusionary fencing or barricading are determined to not be a suitable securing method. Permanent closures may employ methods such as backfilling, bat-compatible structure, foam plug or a combination of these methods. Unlike fence or barricade securings, permanent closure of an abandoned mine opening may result in alteration of the landscape and character of the site. Under the guidelines of the National Environmental Policy Act (NEPA), all mine openings proposed for permanent closure on Federal lands must be evaluated for cultural and biological resource impacts. Closure methods are determined based on the outcome of the biological and cultural resource surveys as well as the safety risk potential.

The biological surveys are conducted by biologists working for Nevada Department of Wildlife (NDOW), BLM, or the USFS. A total of 99 bat compatible closures were constructed in 2018. NDOW surveyed and provided closure recommendations for 423 mines across the state. These included:

- 81 hazards near Nelson, Clark County

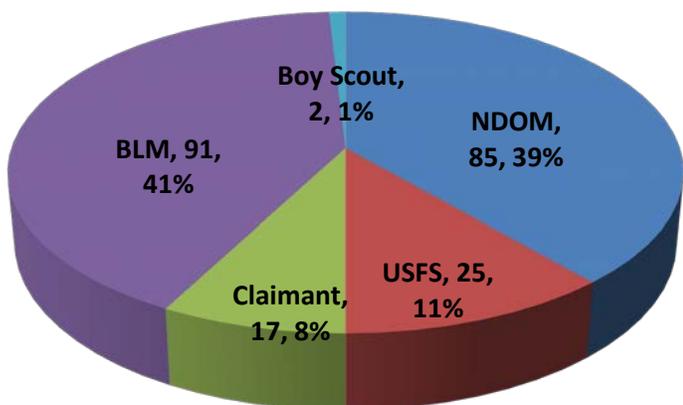


Figure 5: Backfill or foam plugs completed in 2018 by agency (n=220)

- 34 hazards in Crescent Peak area, Clark County
- 101 additional hazards in southern Nevada, Clark County
- 62 hazards in the Pine Nuts, Douglas County
- 26 hazards at Como, Lyon County
- 52 hazards near Walker River State Park, Lyon and Mineral Counties
- 20 hazards at VC Grand Prix, Storey County
- 30 hazards near Mullen Pass, Washoe County
- 17 hazards near Ely, White Pine County

Of the 423 hazards surveyed, 29 percent were found to support significant bat habitat and therefore recommended for wildlife compatible closures.

The Division completed the three largest closure projects in the history of the program in 2018. All contract closure work was completed by Environmental Protection Services (EPS):

### **5.a Arden Closure Project**

The Arden Gypsum Mine is located on the edge of southwest Las Vegas off Fort Apache Road. Gypsum was mined between 1909 and 1931 using room and pillar methods. The portals of the mine adits ranged from a few feet in size to over 40 feet wide by 35 feet tall.

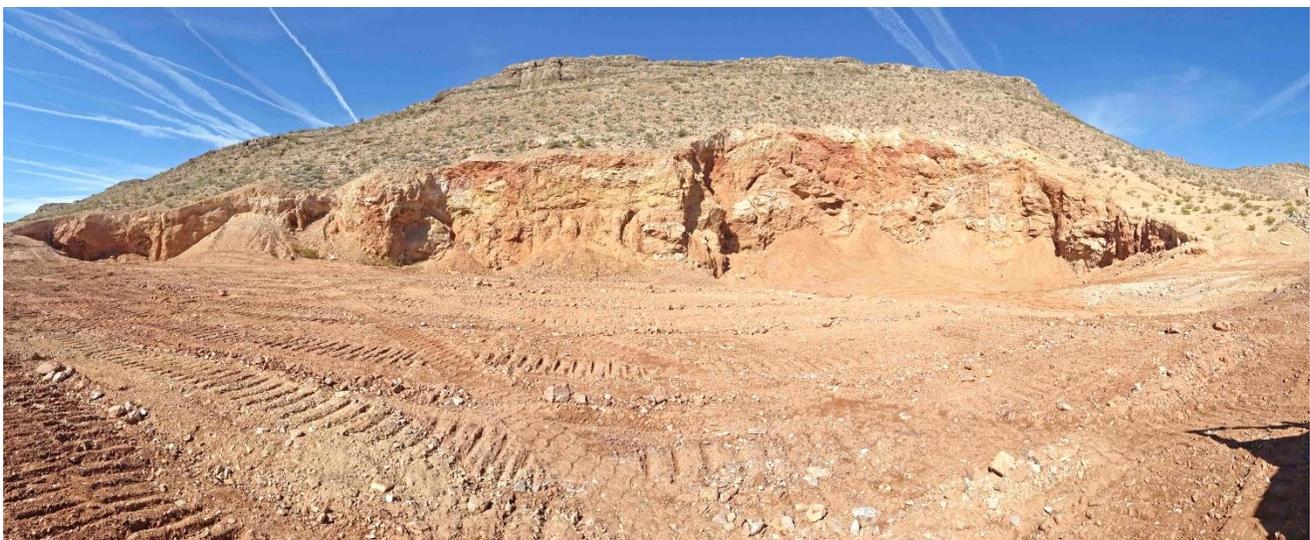
In 2003, the BLM transferred a large portion of the Arden Gypsum Mine complex land to Clark County. The BLM remediated the hazards that remained on land that was not transferred, which totaled 17 of the 59 hazards associated with the mine. Forty-one hazards were located on County property and were still accessible to the public, despite numerous attempts to fence.



Two D-10 dozers backfilling adits at the Arden Closure project, Clark County

In late 2016, the Division finalized a scope of work and authorized funding towards the project. The Division reached out to Clark County for financial assistance for the closures on county land, with the Division managing the project. In March of 2018 the County approved up to \$150,000 for the project. In April 2018, the Division staff and contractor were on the ground backfilling hazards. Securing of portals on adjacent BLM lands were also completed. The hazards on BLM land had been previously secured but were found to be vandalized.

The project was completed in 21 working days, finishing on time and within budget for a total cost of \$304,774. A total of 47 AML features were backfilled and several other small features consisting of overhanging or unstable ground were addressed. No incidents or injuries to staff, contractors, or the public occurred during construction. A total of 31 acres were disturbed during the project. All surface disturbances were re-contoured, graded and a soil stabilization palliative was applied for dust mitigation. Known vehicle access routes to the



After photo of multiple adits at the Arden Closure project, Clark County

project area were blocked by the creation of berms, cuts, and placement of large boulders at the request of the county.

### **5.b Broken Hills Closure Project**

The Broken Hills project is located just east of Hwy 361 in Mineral and Nye counties Nevada. The Broken Hills Mine operated intermittently from 1913 until 1936 and produced around \$220,000 of silver and lead ore. The ore occurs in narrow steeply-dipping veins, which miners stoped to the surface. Historic mining left one shaft that was reported to be 350' deep, with numerous stopes nearing 150' in length on both sides of the shaft, and a few thousand feet of horizontal and vertical underground workings. The northern stopes were three to twenty feet wide and over 150' deep. The stopes were also believed to connect with multiple other shafts in the immediate area.



Before photo of stope complex at Broken Hills closure project, Mineral County

During agency field visits to the mine, members of the public were seen either driving by or interacting with the historic mining features, including a family with young children climbing out of the 350' deep shaft. In 2016, the Division started working with the BLM and NDOW to develop closure plans for the 40 individual hazards. The wildlife surveys found that the complex stopes and shafts contained significant bat habitat. Also,

the cultural surveys required the preservation of the headframe and timbers of multiple shafts.



After photo of stope complex at Broken Hills closure project, Mineral County

The Division developed a scope of work with its contractor, EPS, for a closure plan. Due to the size of the stopes and presence of competent bedrock at the surface, it was decided that a bat compatible grate with I-beam supports pinned into the bedrock would be used to close the stopes. In 2018, all 40 hazards were closed, with 19 requiring bat-compatible closures. Over 500 bars of 2"x2"x20' long square tubing were used on the stope complex, resulting in the largest wildlife compatible closure completed by the Division. The total construction cost was \$155,072. Forty hazards were closed with the wildlife habitat and cultural resources preserved.



Bat Compatible cupola over the main shaft at the Broken Hills closure project, Mineral County

### **5.c Gold Butte Closure Project**

The Gold Butte AML Project is located in the recently created Gold Butte National Monument in Clark County Nevada. The project consisted of 40 hazards spread out over 220 square miles in two historic mining districts, Bunkerville and Gold Butte. Gold, silver, copper, zinc, platinum, cobalt, nickel and vermiculite were mined historically in the districts during the early 20<sup>th</sup> century.



Bat gate installed at the Gold Butte closure project, Clark County, October 2019

Wildlife surveys identified significant bat habitat at many of these locations and noted desert tortoise using the abandoned mine hazards. The Clark County Desert Conservation Program (DCP) contacted NDOW and the Division for a possible wildlife project. NDOW suggested that the Gold Butte Monument project would be a good fit. The Division and DCP created an interlocal contract to perform the closures at the sites with significant wildlife habitat. The Division received a categorical exclusion from the BLM to perform the closures.

The Division and its contractor determined that using a helicopter would significantly shorten the project timeline resulting in an overall savings for the project.

The project was completed on October 15th 2018, requiring 29 working days at a cost of \$269,349.



A desert tortoise exiting the recently installed bat gate with a tortoise door at the Gold Butte closure project, Clark County, October 2018

Twenty-eight of the 40 total hazards closed were wildlife compatible closures, three of which had tortoise doors. The remaining 12 sites were closed with polyurethane foam plugs. After completion of one of the tortoise doors, EPS moved equipment and were preparing to take the closure photo just in time to see a tortoise exiting the mine. This was the first time in Division history that a tortoise was witnessed using one of the wildlife compatible closures. The Gold Butte project was an example of successful collaboration between multiple agencies to remediate abandoned mine hazards while protecting wildlife habitat.

### **5.d Tonopah Historic Mining Park**

The Division coordinated with the Tonopah Historic Mining Park (the Park), Town of Tonopah, and State Historic Preservation Office to start the Silver Top headframe restoration project. In 2017, the Division used a downhole camera to evaluate the integrity of the Silver Top shaft to a depth of 600'; debris blocked the remainder

of the shaft beyond that depth. The Park worked with Robison Engineering to develop an engineering plan for dismantling and rebuilding the headframe. The Division utilized its contractor to level out the Silver Top dump for a laydown yard and eventual park viewing area, requiring the plugging three stopes using foam plugs to provide a safe working platform. The headframe restoration project will continue into 2019 and is expected to be completed by summer 2019.



The Division Contractor, EPS, re-contouring the Silver Top waste rock dump for the future headframe restoration, Nye

underneath a dirt road just outside of Mound House in Lyon County. In May 2018, a local resident was driving their truck on the road near some houses when what was described as a “sinkhole” formed underneath their back tire in middle of the road. The “sinkhole” was actually subsidence into an underground mine working. The original portal of the adit was naturally collapsed and had no opening to the surface. The BLM was notified and a fence was built the following day. Division staff was notified and investigated the site in the same day and initiated the hard closure permitting process. The collapsed adit was backfilled by the Division’s contractor in June 2018.

The second emergency closure was a previously closed adit that was vandalized and reopened. The adit was slated for re-closure during the future Virginia City Grand Prix Closure Project. During the wildlife survey, a biologist gas meter alarmed only a short distance inside the mine. Carbon monoxide was at deadly levels and the adit was located within 30’ feet of a paved highway. The wildlife biologist notified the Division which installed a foam plug closure.

**5.e Emergency Closures**

There were two separate emergency closure projects in 2018:

The first project was the ground collapse

**6. Intern Program**

The Division employs college interns majoring in the geosciences or mining engineering to assist with

**Nevada Division of Minerals - Abandoned Mine Lands  
2018 Internship Program**

**Accomplishments**

*Over 35,000 miles traveled in 12 counties  
to complete 757 new inventories, 688  
revisits, and 276 securings.*



**Thanks to the Participants**

*Marcus Alsagoff, Kameron Devine, Sage Gandolfo, Christopher Hood, Ashley Landes,  
Austin Lemmons, Taylen Lopez-Simms, Devin McAndrews, Trey McGowan,  
Andrew Olson, Claire Roberts, and Nick Romano*

inventorying, revisiting, and securing of AML hazardous features. These interns are trained and supervised by Division staff. The interns worked 13 weeks of the summer and three weeks of the winter. The intern program is a means to achieve program goals and objectives while providing the students with field experience in map reading, data collection, GPS skills, and valuable teamwork and leadership experience.



Summer interns installing a fence around a hazard, Esmeralda County

## 7. Public Awareness

In the area of public awareness, the Division’s theme is “Stay Out and Stay Alive.” This message is carried to the public through several mediums, including an 11-minute “Stay Out, Stay Alive” video, informational brochures, and curriculum guides targeting fourth-grade students. These guides have been distributed to every school and library in Nevada as well as downloadable from the Division’s website. At presentations, conferences and other statewide events “Stay Out, Stay Alive” handouts, bumper stickers, hard hat stickers, buttons, pencils, and other items are distributed. These

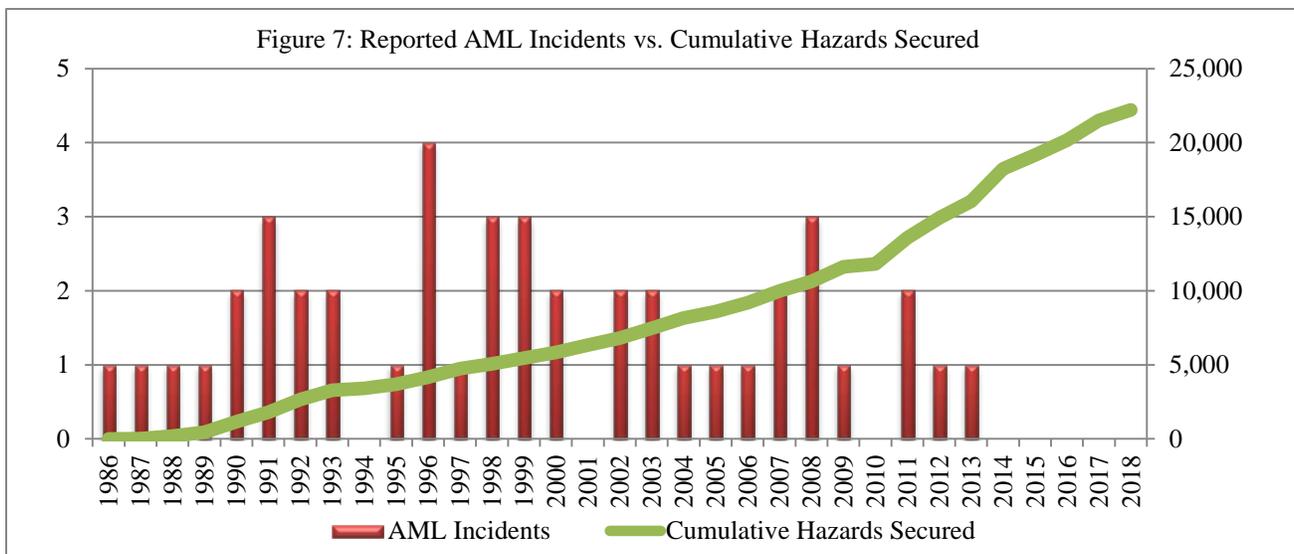
materials also reach thousands of Nevada school children and adults each year through educational presentations by Division staff.

In 2018 the Division staff gave 327 presentations statewide. Presentations target K-12 student science nights, classrooms, student career fairs, prospector club meetings, professional association meetings, outdoor recreation events, media interviews, and the annual Earth Science Education workshops for teachers. The Division provides an AML exercise detailing Nevada’s historic mining legacy to every fourth grade class in Nevada. This project-based learning module was developed in cooperation with Alice Maxwell Elementary school in Sparks and includes applicable Core Standards to every fourth grade class in Nevada.

## 8. Performance Indicators

Figure 7 shows the reported incidents by year and cumulative securings in Nevada since the inception of the program. The Legislatively-approved performance indicators, for the abandoned mine lands public safety program are:

1. Maintain the percentage of secured hazardous mine openings relative to the number of hazardous mine openings investigated and ranked at a minimum of 70%. The Division finished 2018 at 80% secured.
2. Maintain the number of public awareness and education presentations concerning the Nevada mineral industry and abandoned mines at a minimum of 18 per year per staff member. The Division staff averaged 30 presentations per staff member in 2018.



## 9. Summary

2018 was another productive year for the Division's AML program. The Division set the new record of 134 permanent closures completed in one calendar year. The Division continued streamlining field work with digital data collection, the use of unmanned aerial systems, and the field accessible database. Maintaining strong relationships with federal and county land management agencies, the mining industry, and numerous volunteers proved vital in the advancement of the program. Despite growth in population and increased recreation on public lands in Nevada, there has been a decrease in the number of reported safety incidents from abandoned mine hazards in the state. The efforts of Nevada's AML public safety program have clearly helped save lives and decrease incidents. The public can report hazards using the Report of an Abandoned Mine Hazard form, Appendix D or through the Division's website.

for their work throughout the state; Jason Williams and the entire Nevada Department of Wildlife AML survey crews for their statewide efforts; Stefanie Ferrazzano with Clark County Desert Conservation Program, and Kyrnn Williams with Clark County Real Property. We would also like to bring attention to and thank all of the claimants and land owners who work with the Division to secure AML sites statewide.

## 10. Acknowledgements

We would like to recognize: John Callan and the entire Nevada BLM AML staff for their commitment and assistance; Ken Maas, Humboldt-Toiyabe National Forest, for all of his inventory and closure work on USFS land; the AML closure crew of the Bureau of Reclamation



Staging area for the Gold Butte closure project, Clark County

# Appendix A

## Nevada Revised Statutes (NRS) pertinent to the AML Program

NRS 455.010 Erection of fence or other safeguard around excavation, hole or shaft required. Any person or persons, company or corporation, who shall dig, sink or excavate, or cause the same to be done, or being the owner or owners, or in the possession under any lease or contract, of any shaft, excavation or hole, whether used for mining or otherwise, or whether dug, sunk or excavated for the purpose of mining, to obtain water, or for any other purpose, within this State, shall, during the time they may be employed in digging, sinking or excavating, or after they may have ceased work upon or abandoned the same, erect, or cause to be erected, good and substantial fences or other safeguards, and keep the same in good repair, around such works or shafts, sufficient to guard securely against danger to persons and animals from falling into such shafts or excavations.

NRS 41.510 Limitation of liability; exceptions for malicious acts if consideration is given or other duty exists.

1. Except as otherwise provided in subsection 3, an owner of any estate or interest in any premises, or a lessee or an occupant of any premises, owes no duty to keep the premises safe for entry or use by others for participating in any recreational activity, or to give warning of any hazardous condition, activity or use of any structure on the premises to persons entering for those purposes.

2. Except as otherwise provided in subsection 3, if an owner, lessee or occupant of premises gives permission to another person to participate in recreational activities upon those premises:

(a) The owner, lessee or occupant does not thereby extend any assurance that the premises are safe for that purpose or assume responsibility for or incur liability for any injury to person or property caused by any act of persons to whom the permission is granted.

b) That person does not thereby acquire any property rights in or rights of easement to the premises.

3. This section does not:

(a) Limit the liability which would otherwise exist for:

(1) Willful or malicious failure to guard, or to warn against, a dangerous condition, use, structure or activity.

(2) Injury suffered in any case where permission to participate in recreational activities was granted for a consideration other than the consideration, if any, paid to the landowner by the State or any subdivision thereof. For the purposes of this subparagraph, the price paid for a game tag sold pursuant to [NRS 502.145](#) by an owner, lessee or manager of the premises shall not be deemed consideration given for permission to hunt on the premises.

(3) Injury caused by acts of persons to whom permission to participate in recreational activities was granted, to other persons as to whom the person granting permission, or the owner, lessee or occupant of the premises, owed a duty to keep the premises safe or to warn of danger.

(b) Create a duty of care or ground of liability for injury to person or property.

4. As used in this section, "recreational activity" includes, but is not limited to:

(a) Hunting, fishing or trapping;

(b) Camping, hiking or picnicking;

(c) Sightseeing or viewing or enjoying archaeological, scenic, natural or scientific sites;

(d) Hang gliding or paragliding;

(e) Spelunking;

(f) Collecting rocks;

(g) Participation in winter sports, including cross-country skiing, snowshoeing or riding a snowmobile, or water sports;

(h) Riding animals, riding in vehicles or riding a road or mountain bicycle;

(i) Studying nature;

(j) Gleaning;

(k) Recreational gardening; and

(l) Crossing over to public land or land dedicated for public use.

NRS 455.030 Board of county commissioners to transmit information concerning dangerous condition at mine no longer operating to sheriff or constable; service of notice upon owner or responsible person.

1. If a board of county commissioners receives information from the division of minerals of the commission on mineral resources that there is in the county a dangerous condition that results from mining practices which took place at a mine that is no longer operating, if the information identifies a person responsible for the condition, the board shall transmit this information to the sheriff or the constable of the township where the condition exists.

2. Upon receipt of information pursuant to subsection 1 or upon the filing of the notice, as provided for in NRS 455.020, the sheriff or constable shall serve a notice, in the same manner and form as a summons, upon each person identified as owner or otherwise responsible.

[3:16:1866; B §§ 111; BH §§ 292; C §§ 273; RL §§ 3235; NCL §§ 5632]—(NRS A 1983, 905; 1987, 1869; 1993, 1625; 1999, 3624)

NRS 455.040 Contents of notice; judgment; criminal penalty.

1. The notice served pursuant to subsection 2 of NRS 455.030 must require the person or persons to appear before the justice of the peace of the township where the hole, excavation, shaft or other condition exists, or any municipal judge who may be acting in his place, at a time to be stated therein, not less than 3 days nor more than 10 days from the service of the notice, and show, to the satisfaction of the court, that the provisions of NRS 455.010 to 455.180, inclusive, or the standards established by the commission on mineral resources for the abatement of dangerous conditions have been complied with, or if he or they fail to appear, judgment will be entered against him or them for double the amount required to abate the condition.

2. All proceedings had therein must be as prescribed by law in civil cases.

3. Such persons, in addition to any judgment that may be rendered against them, are liable and subject to a fine not exceeding the sum of \$250 for each violation of the provisions of NRS 455.010 to 455.180, inclusive, which judgments and fines must be adjudged and collected as provided for by law.

[4:16:1866; B § 112; BH § 293; C § 274; RL § 3236; NCL § 5633]—(NRS A 1979, 1476; 1987, 1869; 1993, 881)

NRS 513.094 Additional fee; administrator to establish program to discover dangerous conditions of nonoperating mines; employment of qualified assistant; regulations.

1. An additional fee, in an amount established pursuant to subsection 4, is imposed upon all filings to which NRS 517.185 applies. Each county recorder shall collect and pay over the additional fee, and the additional fee must be deposited in the same manner as provided in that section.

2. The administrator shall, within the limits of the money provided by this fee, establish a program to discover dangerous conditions that result from mining practices which took place at a mine that is no longer operating, identify if feasible the owner or other person responsible for the condition, and rank the conditions found in descending order of danger. The administrator shall annually during the month of January, or more often if the danger discovered warrants, inform each board of county commissioners concerning the dangerous conditions found in the respective counties, including their degree of danger relative to one another and to those conditions found in the state as a whole. In addition, the administrator shall work to educate the public to recognize and avoid those hazards resulting from mining practices which took place at a mine that is no longer operating.

3. To carry out this program and these duties, the administrator shall employ a qualified assistant, who must be in the unclassified service of the state and whose position is in addition to the unclassified positions otherwise authorized in the division by statute.

4. The commission shall establish by regulation:

(a) The fee required pursuant to subsection 1, in an amount not to exceed \$4 per claim.

(b) Standards for determining the conditions created by the abandonment of a former mine or its associated works that constitute a danger to persons or animals and for determining the relative degree of danger. A condition whose existence violates a federal or state statute or regulation intended to protect public health or safety is a danger because of that violation.

(c) Standards for abating the kinds of dangers usually found, including, but not limited to, standards for excluding persons and animals from dangerous open excavations.

(Added to NRS by 1987, 1867; A 1993, 298, 1683; 1995, 579; 1999, 890, 3627; 2001, 66)

NRS 513.103 Account for the Division of Minerals: Creation; sources, lapse and use of money in Account.

1. The Account for the Division of Minerals is hereby created in the State General Fund.

2. The following special fees and money must be deposited in the Account:

(a) All fees collected pursuant to [NRS 513.094](#), [517.185](#) and [chapter 522](#) of NRS.

(b) All money collected pursuant to [NRS 235.016](#).

(c) Any money received by the Division from a county pursuant to [NRS 513.108](#).

(d) All fees collected pursuant to [NRS 534A.080](#).

(e) Any money appropriated to the Division from the State General Fund.

3. No money except that appropriated from the State General Fund lapses to the State General Fund.

4. The money in the Account is appropriated to the Division. The money deposited in the Account pursuant to paragraph (a) of subsection 2, and the interest earned thereon, must be expended for the purposes of administering [chapter 522](#) of NRS and the provisions of this chapter, except for [NRS 513.108](#). The money deposited pursuant to paragraphs (b) and (c) of subsection 2, and the interest earned thereon, must be distributed to the counties pursuant to [NRS 513.108](#), except that portion required to pay the cost of administering the provisions of that section. All interest earned on the Account must remain in the Account.

(Added to NRS by 1983, 2070; A 1985, 303; 1987, 1868; 1989, 141; 1991, 1779; 1993, 111, 1684; 1995, 509)

NRS 513.108 Abatement of dangerous condition of non-operating mines; reimbursement of Division.

1. The board of county commissioners in each county may apply to the Division for money to abate a dangerous condition resulting from mining practices which took place at a mine that is no longer operating.

2. The Division shall, within the limits of the money available pursuant to paragraphs (b) and (c) of subsection 2 of [NRS 513.103](#), provide counties with money to abate such dangerous conditions based on the relative degree of danger of those conditions.

3. If a county which receives money from the Division subsequently receives monetary compensation from the mine owner or other person responsible for the existence of the dangerous condition, it shall reimburse the Division to the extent of the compensation received. Any money received by the Division pursuant to this subsection must be deposited in the Account for the Division of Minerals created pursuant to [NRS 513.103](#). (Added to NRS by 1989, 141; A 1991, 1780; 1993, 1684)

#### FEE FOR FILING PLAN OF OPERATION

NAC 519A.634 Amount of fee. (NRS 519A.250) The amount of the fee that an operator must pay pursuant to subsection 1 of NRS 519A.250 is \$20 per acre or part of an acre.

(Added to NAC by Commission on Mineral Resources by R069 -99, eff. 8-19-99)

# Appendix B

## Nevada Administrative Code (NAC) pertinent to the AML Program

### DANGEROUS CONDITIONS CREATED BY ABANDONMENT OF MINES

NAC 513.200 Definitions. (NRS 513.094) As used in NAC 513.200 to 513.390, inclusive, unless the context otherwise requires, the words and terms defined in NAC 513.205 to 513.290, inclusive, have the meanings ascribed to them in those sections. (Added to NAC by Commission on Mineral Resources, eff. 12-21-88; A by R069 -99, 8-19-99)

NAC 513.205 “Administrator” defined. “Administrator” means the administrator of the division.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88) (Substituted in revision for NAC 513.250)

NAC 513.210 “Animal” defined. “Animal” means any member of the bovine, equine, porcine or caprine species as well as dogs, cats or other animals under the restraint or control of a person.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.220 “Commission” defined. “Commission” means the commission on mineral resources.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.230 “Dangerous condition” defined. “Dangerous condition” means a condition resulting from mining practices which took place at a mine that is no longer operating or its associated works that could reasonably be expected to cause substantial physical harm to persons or animals.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.240 “Division” defined. “Division” means the division of minerals of the commission on mineral resources.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.270 “Owner” defined. “Owner” means the owner of real property who is shown to be the owner on records located in the courthouse of the county in which the real property is located.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.280 “Person” defined. “Person” means a natural person.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.290 “Responsible person” defined. “Responsible person” means the owner of a patented claim or the claimant of an unpatented claim.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.300 Scope. The provisions of NAC 513.200 to 513.390, inclusive, apply to all owners or other responsible persons for dangerous conditions on private or public land.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.310 Waiver of provisions. Upon the approval of the administrator, the division may grant a waiver from any provision of NAC 513.200 to 513.390, inclusive, if the waiver does not defeat the purpose of NRS 513.094.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.315 Additional fee. (NRS 513.094) The amount of the additional fee that is imposed on filings pursuant to subsection 1 of NRS 513.094 is \$4 per claim.  
(Added to NAC by Commission on Mineral Resources by R069 -99, eff. 8-19-99; A by R199-08, eff. 8-14-2008)

NAC 513.320 Assignment of points to dangerous condition. The administrator or his representative shall assign a dangerous condition one to five points for the location of the condition and an additional one to five points for the degree of danger associated with the condition. The condition must then be ranked according to the total number of points for location and degree of danger.  
(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.330 Rating of location. The location of a dangerous condition must be rated in the following manner:

1. One point must be assigned to a dangerous condition located at least 5 miles from an occupied structure or a public road maintained by some governmental entity.
2. Two points must be assigned to a dangerous condition located between 1 and 5 miles from an occupied structure or a public road maintained by some governmental entity.
3. Three points must be assigned to a dangerous condition located ½ to 1 mile, inclusive, from a town.
4. Four points must be assigned to a dangerous condition located not more than ½ mile from a town or not more than 1 mile from an occupied structure or a public road maintained by some governmental entity.
5. Five points must be assigned to a dangerous condition located within a town or within 100 feet of an occupied structure or a public road maintained by some governmental entity.

The Administrator or his or her representative may assign a different rating to a dangerous condition in a location if other factors affecting accessibility warrant the modification, but the rating for a dangerous condition in a single location may not be scored higher than five points.

(Added to NAC by Commission on Mineral Resources, eff. 12-21-88; A by R127-15, 6-28-2016)

NAC 513.340 Rating of degree of danger. The degree of danger for a dangerous condition must be rated in the following manner:

1. One point must be assigned to a dangerous condition consisting of:
  - (a) A vertical or near vertical hole 8 to 20 feet, inclusive, in depth and highly visible upon approach;
  - (b) An inclined hole less than 50 feet deep from which a person could climb out;
  - (c) A horizontal hole with no associated stopes, winzes or raises; or
  - (d) A high wall of an open pit.
2. Two points must be assigned to a dangerous condition consisting of:
  - (a) A vertical or near vertical hole 8 to 20 feet, inclusive, in depth which is not visible upon approach;
  - (b) Any vertical or near vertical hole 20 to 50 feet, inclusive, in depth; or
  - (c) Any inclined hole greater than 50 feet deep from which a person could climb out with no associated stopes, winzes or raises.
3. Three points must be assigned to a dangerous condition consisting of:
  - (a) Any vertical or near vertical hole 50 to 100 feet, inclusive, in depth; or
  - (b) Any horizontal or inclined hole with associated stopes, winzes or raises with less than a 20 -foot vertical opening.
4. Four points must be assigned to a dangerous condition consisting of:
  - (a) Any vertical or near vertical hole which is at least 100 feet deep and visible upon approach; or
  - (b) Any horizontal or inclined hole with associated stopes, winzes or raises with a vertical opening greater than 20 feet.
5. Five points must be assigned to a dangerous condition consisting of any vertical or near vertical hole which is at least 100 feet deep and not visible upon approach.

The administrator or his representative may assign a higher degree of danger to a dangerous condition if other factors such as loose ground or the presence of water increase the danger, but the degree of danger for a single dangerous condition may not be scored higher than five points.

(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.350 Dangerous condition causing fatality or injury. Any dangerous condition that has been the cause of a documented fatality or injury must be ranked as a high hazard, regardless of its numerical score.

(Added to NAC by Commission on Mineral Resources, eff. 12-21-88)

NAC 513.360 Ranking of dangerous condition. Dangerous conditions must be rated as follows:

1. A dangerous condition with a total number of 2 or 3 points is a minimal hazard;
2. A dangerous condition with a total number of 4 or 5 points is a low hazard;
3. A dangerous condition with a total number of 6 or 7 points is a moderate hazard; and
4. A dangerous condition with a total number of at least 8 points is a high hazard.

(Added to NAC by Commission on Mineral Resources, eff. 12-21-88; A by R127-15, 6-28-2016)

NAC 513.380 Period after notification to secure dangerous condition. If notified by the Commission of the existence of a dangerous condition, the owner or responsible person shall:

1. Post within 180 days a warning sign in a prominent location near a dangerous condition ranked as a minimal hazard; and
2. In the manner prescribed in NAC 513.390:
  - (a) Secure within 180 days a dangerous condition ranked as a low hazard;
  - (b) Secure within 120 days a dangerous condition ranked as a moderate hazard; and
  - (c) Secure within 60 days a dangerous condition ranked as a high hazard .

(Added to NAC by Commission on Mineral Resources, eff. 12-21-88; A by R127-15, 6-28-2016)

NAC 513.390 Methods for securing dangerous condition; approval by Administrator to modification of method.

1. Except as otherwise provided in subsection 4, a dangerous condition ranked as a low, moderate or high hazard must be secured by one or more of the following:
  - (a) A barricade or other structure, including, without limitation, a structure consisting of metal posts and four strands of barbed wire, or other durable materials, constructed to prevent a person or animal from accidentally exposing himself or herself to the dangerous condition.
  - (b) Permanently anchored seals constructed of material not subject to rapid decomposition and, if used to secure a vertical opening, strong enough to support the weight of any person or animal.
  - (c) Backfilling so that no void spaces remain.
2. In addition to securing a dangerous condition pursuant to subsection 1, if the dangerous condition ranked as a low, moderate or high hazard is secured only by the method set forth in paragraph (a) of subsection 1, the owner or responsible person must post a warning sign in a prominent location near the dangerous condition. The warning sign must be posted within the period set forth in subsection 2 of [NAC 513.380](#) for securing the dangerous condition.
3. Regardless of the method used pursuant to subsection 1 to secure a dangerous condition, the owner or responsible person shall maintain the integrity of that structure.
4. The Administrator or his or her representative may approve the modification of a method of securing a dangerous condition to accommodate features or characteristics that are specific to the location of the dangerous condition.

(Added to NAC by Comm'n on Mineral Resources, eff. 12-21-88; A by R127-15; 6-28-2016)

## Appendix C

**Table 1: History of Nevada AML Incidents Since 1961**

Date	Incident	County
Sep. '13	17 year old male received minor injuries in fall down 60-foot deep mine shaft (rider on motorcycle)	Lyon
Nov. '12	Adult male (33) received moderate injuries after falling 35' down a winze	Clark
Jul. '11	Dog fell down shaft, rescued 8 days later	White Pine
Mar. '11	Adult male (28) suffered fatal injuries after falling 190 feet down a shaft	Pershing
May. '09	Dog fell down inclined shaft, rescued 10 days later	Esmeralda
Oct. '08	Adult male (62) suffered fatal injuries after falling 60' down a winze	Lyon
Sep. '08	Dog reportedly fell down 100' shaft, not recovered	Washoe
Aug. '08	Adult male (58) injured in 50' fall down inclined winze	Esmeralda
May. '07	Adult male (mid-20's) injured in fall down ~200' inclined winze	Clark
May. '07	Adult male (63) suffered fatal injuries after rolling his jeep ~450' into the Loring Pit in Virginia City	Storey
May. '06	Dog rescued from 22 foot-deep mine shaft	Washoe
May. '05	Woman of unknown age, received cuts and bruises from fall down a 35 ft. winze	Carson
Apr. '04	30 year-old man received moderate injuries from fall down 25 ft. winze near Las Vegas	Clark
Jan. '03	Dog fell down shaft	Humboldt
Jan. '03	62 year-old man received minor injuries from fall down 25 ft. winze (same as 10/2002)	Clark
Oct. '02	37 year-old CA male received severe injuries from fall down 25 ft. winze	Clark
Jul. '02	41 year-old male drowned swimming in open pit lake	Storey
Dec. '00	Dog rescued from fall down 60 ft. winze. Minor injury to hip	Pershing
Nov. '00	Dog rescued from fall down 40 ft. mine shaft. Moderate injury to hip	Storey
Oct. '99	Adult male (62) killed in mine cave-in	Lyon
Oct. '99	Female juvenile (11) killed in fall down 130 ft. deep mine shaft near Beatty	Nye
Jun. '99	Male juvenile (15) drowned swimming in open pit lake	Lander
Oct. '98	Two male adults seriously injured in fall down 50 ft. winze near Las Vegas	Clark
Sep. '98	Dog rescued from 20 ft. deep mine shaft	Douglas
Jul. '98	Male adult (20's) slightly injured in fall down mine winze in Brougner Divide Mine near Tonopah,	Esmeralda
Apr. '97	Two male adults (50's) injured in fall down hand dug well in town of Luning	Mineral
Oct. '96	Male juvenile (16) injured in fall down 19 ft. deep hole in concrete at American Flats millsite	Storey
Sep. '96	Two male adults (35) killed in mine adit near Virginia City by suffocation	Storey
May. '96	Male adult (44) fatally injured in fall off ATV at American Flats millsite	Storey
Mar. '96	Male adult (31) injured in fall down mine winze on west side of Las Vegas	Clark
Jun. '95	Male adult (30) killed scuba diving in mine shaft filled with water at the old Crown Copper Under	Humboldt
Nov. '93	Dog rescued from 30 ft. deep mine shaft near Iron Mtn. Estates	Storey
Jan. '93	Dog rescued from 25 ft. deep shaft	Humboldt
Oct. '92	Male adult (27) news reporter injured in dynamite blast at Happy Creek in the Jackson Mountains	Humboldt
Sep. '92	Female adult (28) injured (cuts and bruises) in fall down mine shaft Hot Springs Mtn.	Douglas
Dec. '91	Male adult (44) killed in fall down a mine winze at an abandoned copper mine in the Malachite	Lyon
May. '91	Male juvenile (13) injured (minor) in fall down 20 ft. deep mine shaft	Washoe
Feb. '91	Male adult (40) killed in fall down mine winze	Douglas
May. '90	Dog killed in mine shaft at the MGL Mine near Winnemucca Dry Lake	Pershing
Mar. '90	Male juvenile lost for 19 hours in mine shaft at Mizpah mine in Tonopah	Nye
Sep. '89	Male adult seriously injured in fall down a mine winze near Henderson	Clark
Sep. '88	Body of elderly male found at bottom of mine shaft	Lyon
May. '87	Female child (5) injured in fall down 35 ft. deep mine shaft	Washoe
Feb. '86	Young adult male (20) killed in fall down a mine winze	Lyon
Apr. '79	Two teenagers killed in fall down mine shaft at the Oest Mine	Lyon
Dec. '78	Juvenile killed in fall down mine shaft (Ninety-Nine Mine), body never recovered	Clark
Apr. '75	Two male juveniles killed when motorcycles fell into mine shaft near Searchlight	Clark
May. '71	Male juvenile (15) injured in fall down 200 ft. deep mine shaft on Duck Hill	Carson
Nov. '70	Male juvenile (12) injured in fall down 110 ft. deep mine shaft	Washoe
Jan. '61	Male juvenile (15) injured in 50 ft. fall down mine ventilation shaft	Storey

# Appendix D

**State of Nevada**  
Abandoned Mine Lands  
**Report of Abandoned Mine Land Hazard**

Person Reporting the Hazard:

Name: \_\_\_\_\_

Please keep my name confidential:

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

---

Date Found: \_\_\_\_\_

County Hazard is Located In: \_\_\_\_\_

Hazard Location \_\_\_\_\_ UTM E/Long. \_\_\_\_\_ UTM N/Lat.

(Coordinate Type - Select One):  UTM NAD27  UTM NAD83 (WGS84)

Longitude/Latitude  Do Not Know

Photo or Image of Hazard is Enclosed/Attached

Additional Comments or Information (if desired):

Please send this form along with any photos (If available) to:

**Attention: Abandon Mine Lands**

**Nevada Division of Minerals**

400 W. King St. #106

Carson City, NV 89703

Phone: 775-684-7040

Fax: 775-684-7052

Email: [ndom@minerals.nv.gov](mailto:ndom@minerals.nv.gov)

or

or

or

2030 E. Flamingo Rd. #220

Las Vegas, NV 89119

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