2016

Nevada Abandoned Mine Lands Report

Commission on Mineral Resources

Division of Minerals

June 2017

State of Nevada

Commission on Mineral Resources

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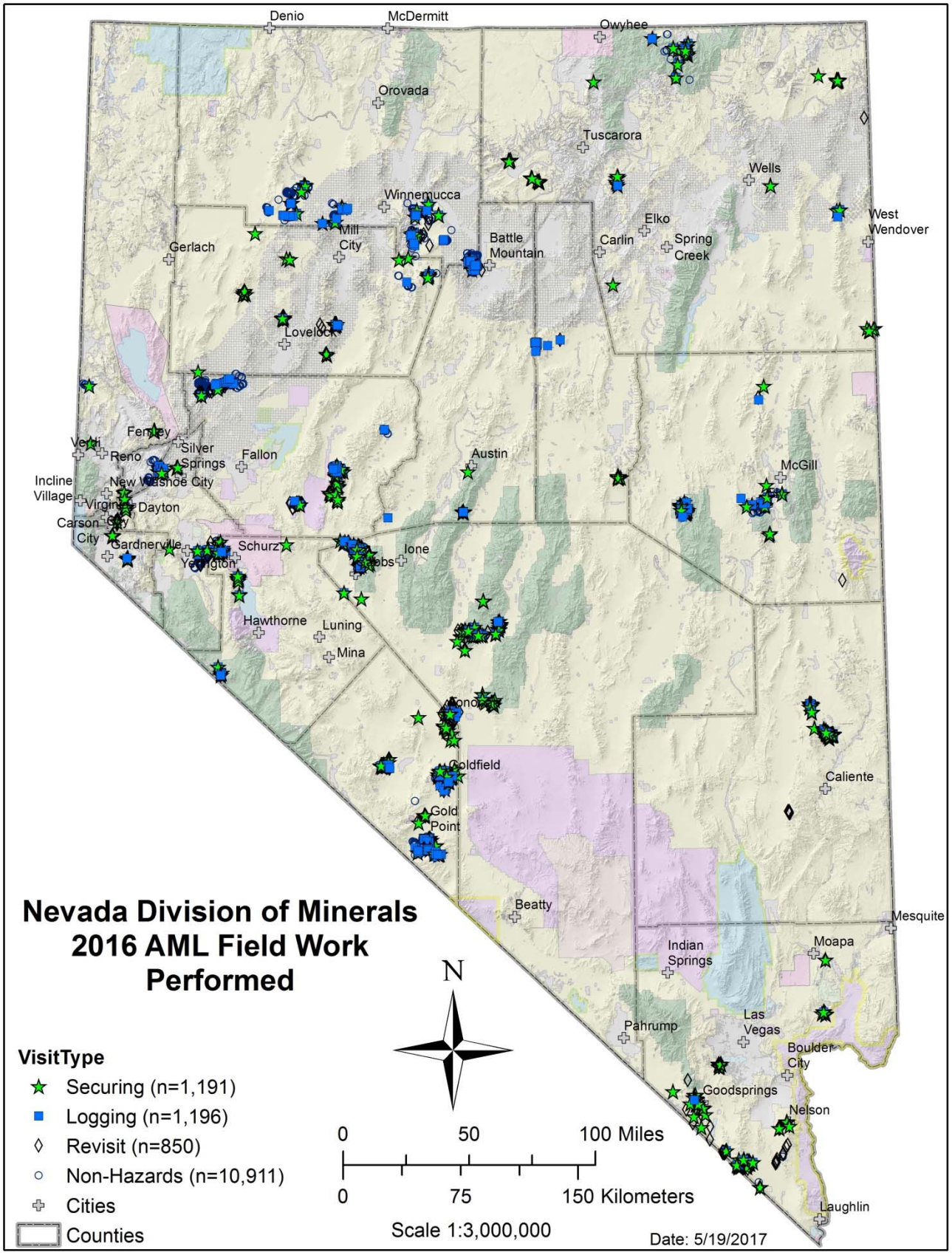
1. Executive Summary

The State of Nevada's Abandoned Mine Lands (AML) program finished its 30th year in 2016. Details and milestones of the program in 2016 include:

- There were NO reported abandoned mine accidents or fatalities making 2016 the third year in a row without an incident.
- 2016 had the second most hazards discovered, 1,196, and the third most hazards secured, 1,191.
- Of the 1,191 hazards that were secured in 2016, mining claimants and private property owners secured 322 hazards. Division staff, contractors and volunteers secured 538 hazards, the most in program history for a calendar year.
- 850 known hazards were revisited to confirm securing status and make repairs as needed.
- Hazards discovered and ranked since the beginning of the program now totals 20,683 and the total number recorded as secured is 16,802. The cover photo is the 20,000th hazard inventoried.
- Permanent AML closure projects took place in 12 of 17 Nevada counties.
- AML interns secured 369 hazards.
- Implementation of new digital software on tablets improved field efficiency, data accuracy, ease of data entry, and eliminated the need for paper maps and forms.
- The Division surpassed both of the AML performance indicators required by the State Legislature. 81% of discovered hazards were secured, and total public awareness presentations averaged 26 per staff member for the year.
- In 2016 the Division reached over 40,000 citizens through AML & minerals education presentations and the annual brochure mail-out campaign to all 4th grade students in Nevada public and private schools.
- The Division worked closely with the Bureau of Land Management (BLM), Nevada Department of Wildlife (NDOW), and the US Forest Service (USFS) to accomplish statutory goals.

Figure 1: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Wells
Winnemucca
Mill City
Battle Mountain
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Carlin
Spring Creek
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Fernley
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Virginia City
Dayton
Carson City
Gardnerville
Schurz
Ione
Hawthorne
Luning
Mina
Goldfield
Caliente
Gold Point
Beatty
Mesquite
Indian Springs
Moapa
Pahrump
Las Vegas
Boulder City
Goodsprings
Nelson
Laughlin
Nevada Division of Minerals
2016 AML Field Work Performed
VisitType
Securing (n=1,191)
Logging (n=1,196)
Revisit (n=850)
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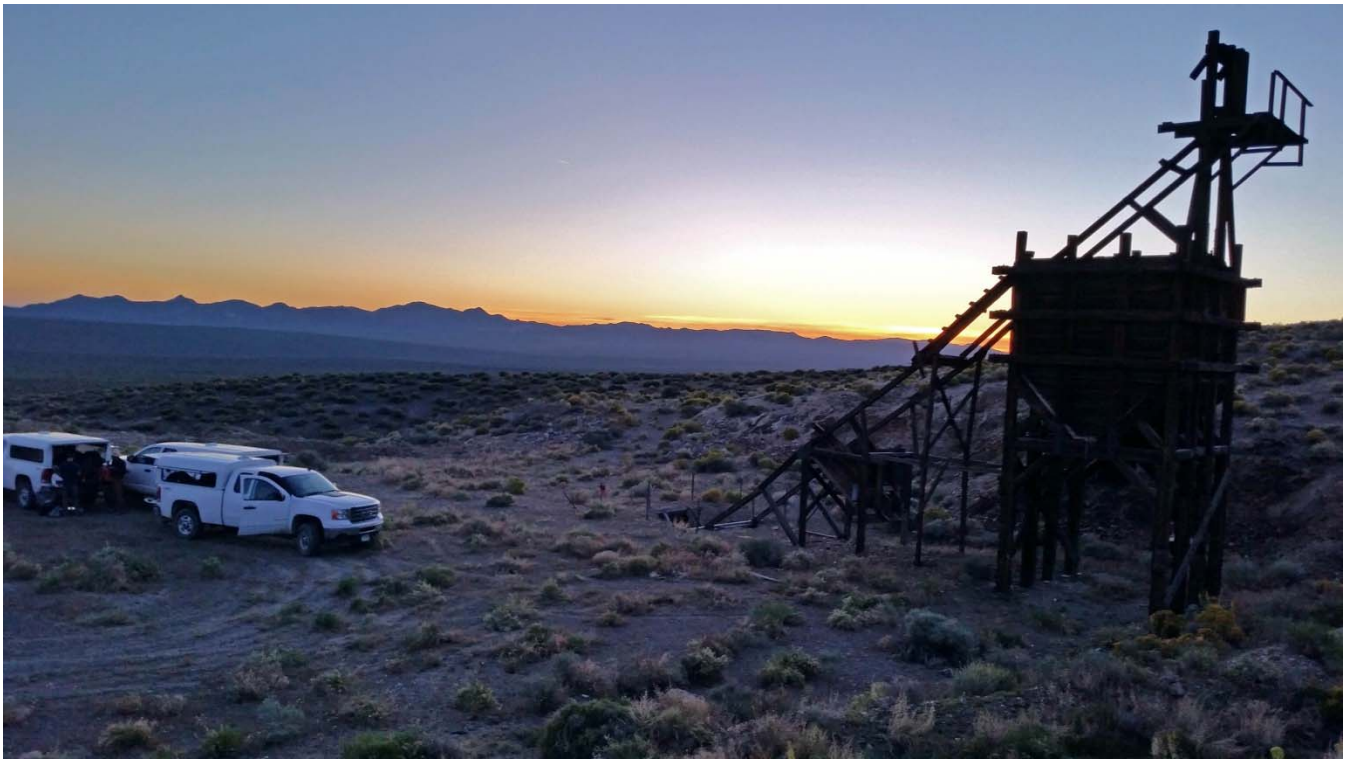
Date: 5/19/2017



2. The Commission on Mineral Resources

The Nevada Division of Minerals (the Division), a part of the Commission on Mineral Resources (CMR), 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. The seven-member CMR is a public body appointed by the Governor which adopts regulations, formulates administrative policies for the Division, and advises the Governor and Legislature on policy relating to mineral resources. The Division focuses its efforts on four main areas: industry relations and public affairs, abandoned mine lands, regulation of oil, gas, and geothermal drilling activities and well operations, and minerals education.

The Division's Abandoned Mine Lands (AML) program provides public safety by identifying and ranking dangerous conditions at mines that are no longer operating, and by securing dangerous orphaned mine openings. The program continually urges 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 200,000 of these mining-related features exist in the state. Of these, the Division estimates that 50,000 are significant hazards that require some type of securing.

The State of Nevada 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 legislation placed the AML program with the Division and mandated two primary functions:

1) Establish a program to discover dangerous conditions that result from mining practices which took place at a mine that is no longer operating, identify the owner if feasible or other person responsible for the condition 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 AML program can be found in Appendix C.

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 "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 under NRS 41.0331 (Appendix C).

The AML program is administered under Nevada Administrative Code chapter 513. Chapter 513 can be found in Appendix D. 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 county commissions of hazardous conditions discovered within their respective counties at least once a year. The appropriate county commission 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.

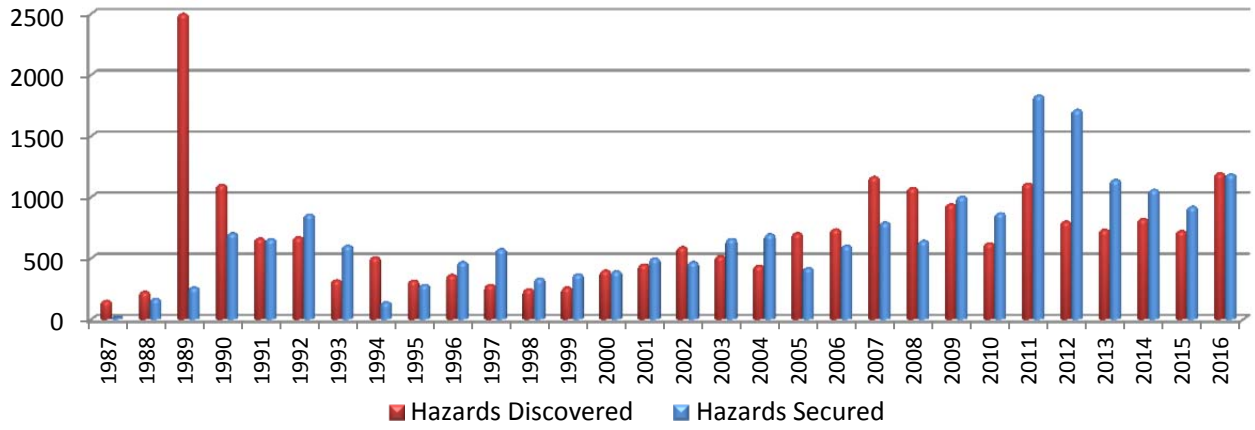
No state general funds are used to operate this program. The AML program is funded from these three sources:

1. For every unpatented mining claim filed on Federal land, a $4 fee is collected by the County recorder 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 has cooperative agreements in

Figure 2: Inventories and securings by Year, 1987-2016



place with both the Bureau of Land Management (BLM) and the United States Forest Service (USFS) which provide financial assistance to enhance and accelerate both field investigation activities and work performed by staff, contractors, and volunteers to secure hazards.

AML revenues are used to pay salaries, travel and vehicle expenses, required office supplies and software, summer interns, contracted, and closure projects, and field supplies such as fence posts, signs and barbed wire. The revenue is also used to support the AML public awareness program through school presentations, videos, brochures, magnets, pencils, bumper and hard hat stickers, and other means of outreach. Table 1 shows the historical revenues received by the Division from the three funding sources.

Table 1: Dedicated Revenue to the AML program for the calendar years 2007 through 2016

Year	BLM/USFS Assistance Agreements	Mining Claim Fees	Disturbance Fees	Total
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
2008	$50,000	$317,625	$4,080	$371,705
2007	$10,000	$278,493	$34,126	$322,619

3.b Abandoned Mine Incidents in 2016

There were NO reported abandoned mine injuries or fatalities in 2016. This was the third year in a row without a reported injury or death in Nevada. Appendix A lists a 55-year history of reported incidents related to abandoned or idle mines.

4. Inventory and Securings

From inception of the AML program, 20,683 hazards have been discovered and ranked and 16,802 hazards are recorded as secured. Table 2 is a historical listing of hazards discovered and secured Figure 2 is a graph of hazards discovered and secured from 1987 through 2016. Figure 3 shows all secured hazards by rank and Figure 4 shows the securing methods.

Intern conducting inventory work in Esmeralda County, 2016

Interns securing hazards in Humboldt County, 2016

Table 2: Hazards Discovered and Hazards Secured as of December 31st, 2016 by County			
COUNTY	**SITES DISCOVERED**	**SITES SECURED**	**% SECURED**
Carson	76	76	100.0%
Churchill	821	648	78.9%
Clark	2,193	1,858	84.7%
Douglas	206	200	97.1%
Elko	859	717	83.5%
Esmeralda	3,080	2,547	82.7%
Eureka	876	739	84.4%
Humboldt	942	764	81.1%
Lander	634	540	85.2%
Lincoln	992	846	85.3%
Lyon	1,111	1020	91.8%
Mineral	1,731	1,488	86.0%
Nye	2,839	2,211	77.9%
Pershing	1,771	1,449	81.8%
Storey	197	191	97.0%
Washoe	454	407	89.6%
White Pine	1,901	1105	58.1%
TOTAL	**20,683**	**16,806**	81.2%

Revisit by Nevada Department of Wildlife (NDOW) in White Pine County, 2016

In 2016, 2,583 hazardous sites were visited consisting of loggings, securings and revisits. Total hazards secured during 2016 numbered 1,191. Of 1,191 hazards secured in 2016, 491 were orphans and 700 were on private land or on unpatented mining claims. 972 hazards were secured by fencing, 146 by backfilled or sealed, 60 by Bat compatible closures (BCC), and 9 were found caved by nature in 2016. Figure 5 shows the distribution of 2016 securing work by group or agency.

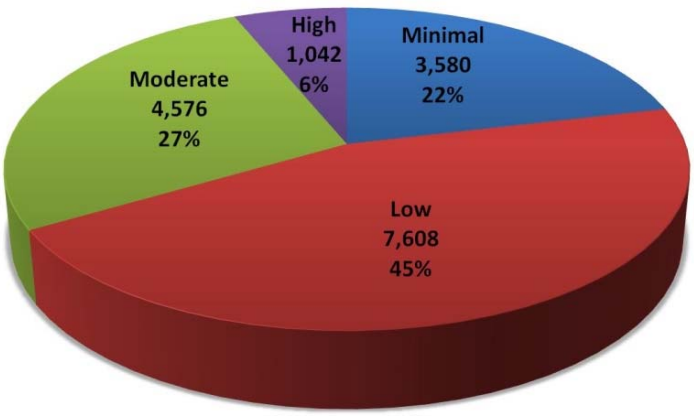


Figure 3: 1987-2016 Hazards secured by rank (n=16,806)

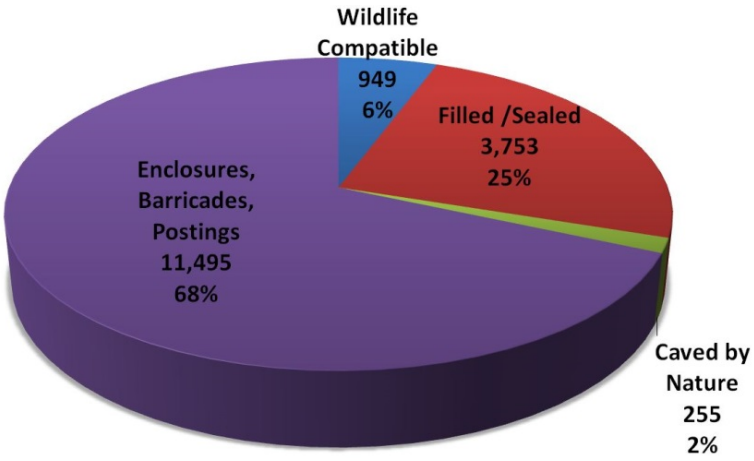


Figure 4: 1987-2016 Hazards securing by method (n=16,806)

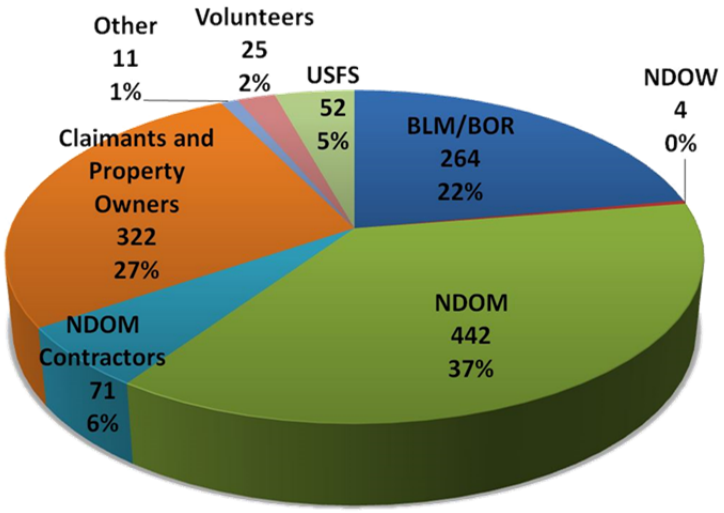


Figure 5: Total 2016 securings by agency or group (n=1,191)

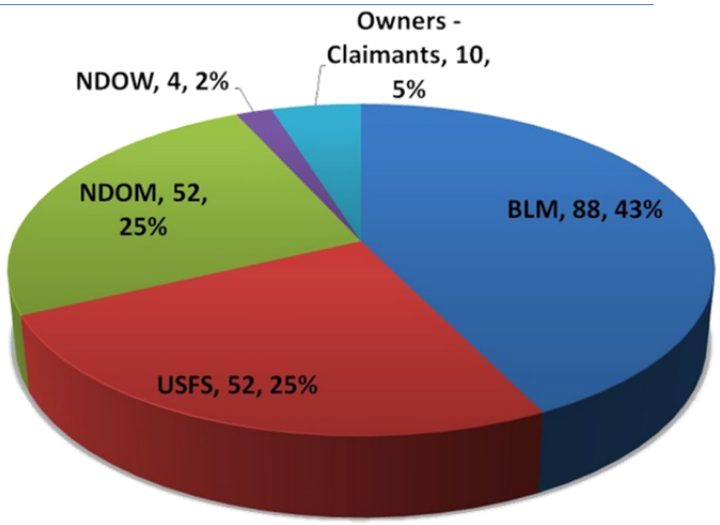


Figure 6: 2016 Permanent securings by agency or group (n=206)

5. Permanent Closure Projects

Prioritization for permanent closures is based on a risk assessment. This may include an 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 structures, polyurethane expansive foam (PUF) plugs, 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 potential. Closure methods are determined based on the outcome of the biological and cultural resource surveys as well as the safety hazard potential.

In 2016, 206 hazards were permanently secured in Nevada, including 88 by the BLM, 52 by the USFS, 52 by the Division, four by the NDOW, and 10 by owners or claimants.

Prior to any permanent closure, pre-closure surveys are performed to confirm that the closure will not negatively impact significant biological habitat. These surveys are conducted by biologists working for NDOW, BLM, or the United States Forest Service. During 2016, a total of 60 bat compatible closures were constructed. Figure 7 shows the closure by agency. In 2016 NDOW and BLM created an agreement to focus on biological surveys for permanent closures. NDOW was responsible for surveying and providing closure recommendations for 337 AML features. These included:

- 83 hazards at the Double O complex, Pershing County
- 39 hazards at the Broken Hills complex, Mineral County
- 35 hazards at the Nevada Eagle complex, Esmeralda County
- 57 hazards near Goldfield, Esmeralda County
- 67 hazards near Tonopah, Nye County
- 56 hazards near Ely, White Pine County

For hazards determined to have no significant wildlife habitat potential, backfill or PUF plug closures are employed. In 2016, a total of 146 hazards were secured using backfill or PUF plugs. Figure 8 summarizes backfill and PUF closure projects from 1999 through 2016.

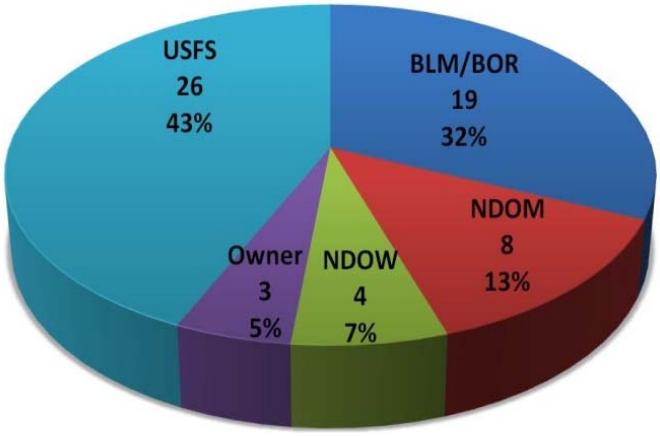


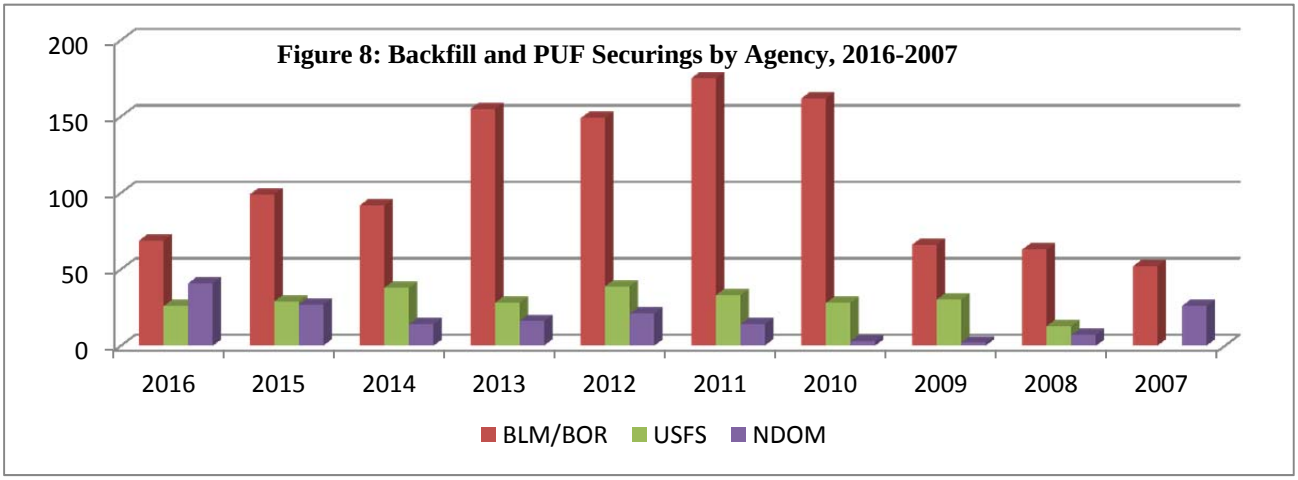
Figure 7: Wildlife compatible closures completed in 2016 by agency

5.a Apex Mine Remediation and Closure

The Apex mine located in Lander County was the largest producing uranium mine in Nevada's history. It was discovered in 1953 by the Rundberg Brothers and mined primarily by the Apex Mining Corporation between 1954-1966. Ore was mined from one small pit and over 8,100 feet of underground workings. All of the ore was shipped to Utah for processing, with no milling on site. Recorded ore production totaled just over 21,000 tons at a average grade of 0.15% to 0.5% U_3O_8. In 2014, the USFS started to develop an engineering design to secure the site, and construction began in 2015. In 2016, the last access to underground workings was secured by bat compatible steel gates, grates and natural caving processes.

A bat compatible cupola built by EPS for NDOW in White Pine County

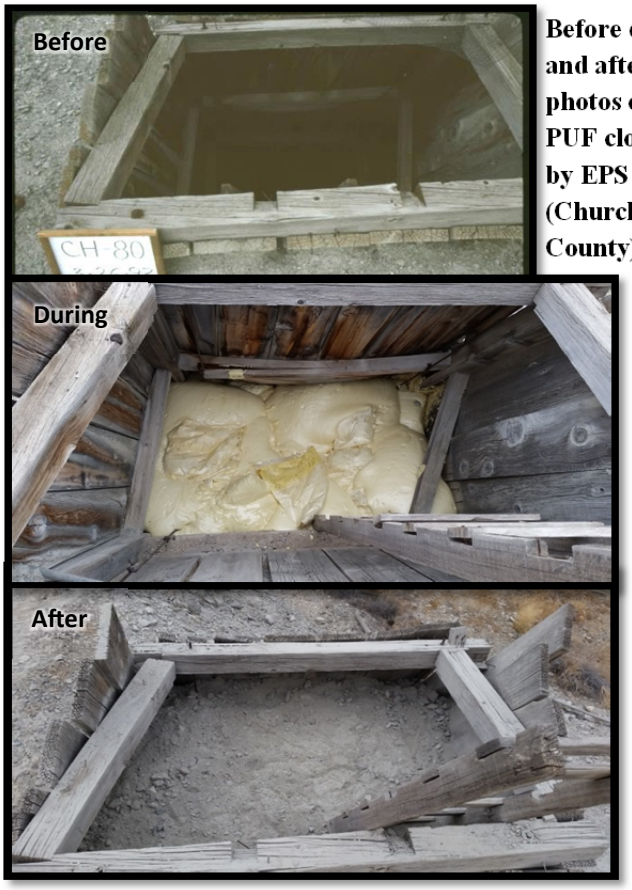
Construction photos of the grate build over the Apex mine in Nye County by the USFS



6. Contracted AML Work

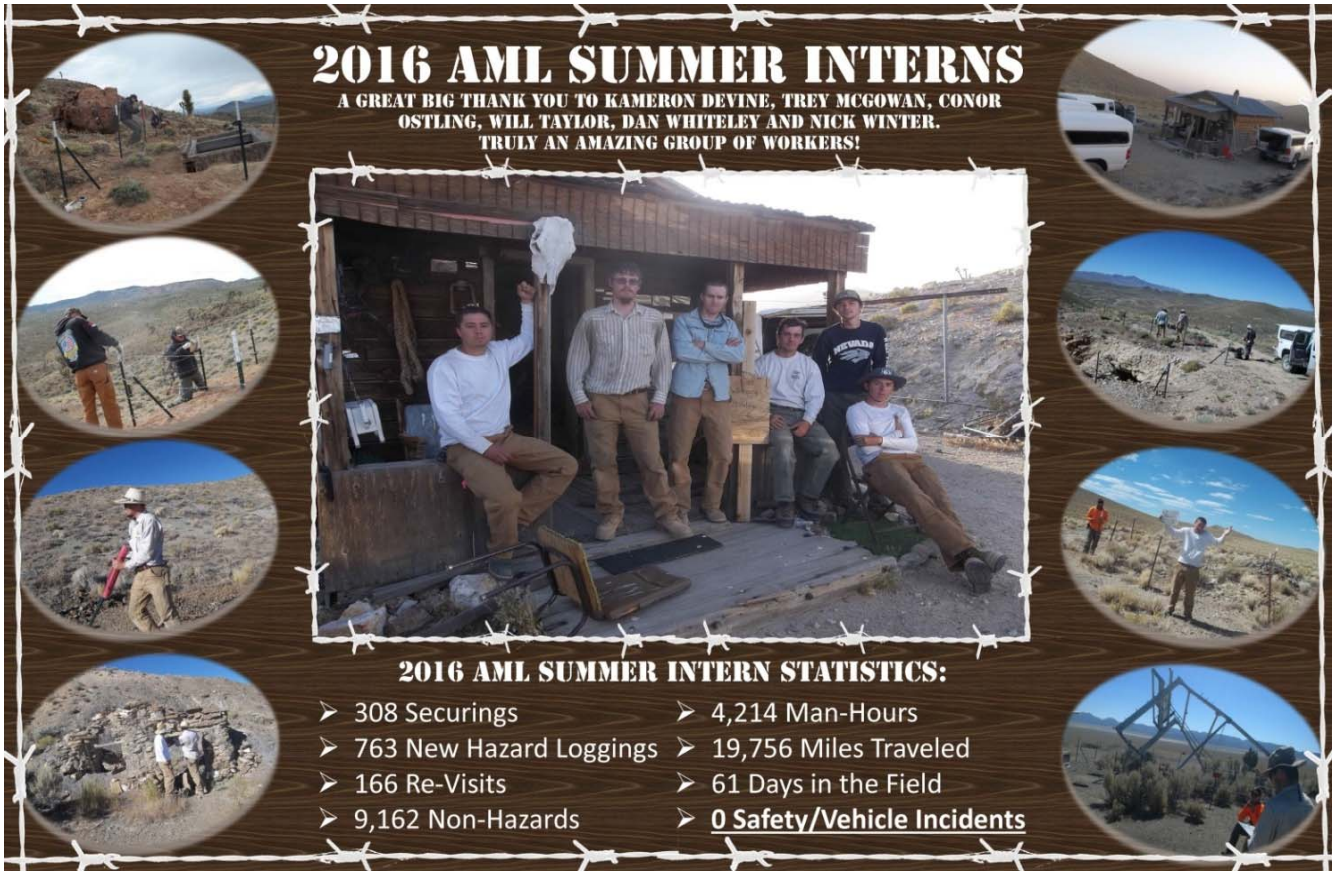
Environmental Protection Services (EPS) worked as the contractor for the Division performing general inventory and securing work throughout Nevada. EPS is also Nevada's statewide contractor for wildlife compatible and other permanent closures. During 2016, EPS inventoried 48 new AML hazards, revisited 65 previously secured hazards and secured 75 hazards (71 for the Division and 4 for NDOW).

EPS backfilling a shaft in Churchill County



Before during and after photos of a PUF closure by EPS (Churchill County)

A bat compatible grate built over a large stope complex in Elko County by the BLM



7. Intern Program

The Division hires paid college interns to assist with logging, revisits, and securings of AML features. These interns are trained and supervised by Division staff. The interns worked 14 weeks of the summer and 3 weeks of the winter. The intern program advances the AML program in a cost-effective manner, as well as provides the students with valuable field experience in map reading, data collection, and GPS skills, along with valuable group and leadership experience. In 2016, the interns worked in 12 counties.

Intern Conor Ostling performing data entry on a tablet during the 2016-2017 winter intern season

8. American Canyon AML Project

The American Canyon placer shafts are in the Spring Valley Mining District in Pershing County. The following summary of the history of the settling and early exploration of American Canyon is compiled from Valentine's American Canyon history (1998, 2008). In 1881, the placer deposits were discovered by Euro-American prospectors who eventually leased their claims to Chinese immigrants by 1884. It has been estimated that the American miners extracted approximately $1,000,000 worth of gold from these early placer workings. When claim owners felt the overburden was too much hassle to continue to mine the resource themselves they leased their land to the Chinese immigrants for royalty payments, which proved to be advantageous.

Chinese workings, American Canyon, year unknown. On file at the Nevada State Historical Society.

The Chinese lessees sublet 20 square foot blocks assigned by lottery to male family members or fellow nationals that typically organized into partnerships or groups. Hundreds of Chinese compatriots participated in sub-leasing of these claims and began inhabiting the area, which lead to the creation of the American Canyon settlement. These lessees excavated shafts on each parcel down to the pay-streak. Miners dug shafts on average 40 to 100 feet into gravel employing only the use of primitive tools and hand labor. Total placer production in the Spring Valley district between 1881 and 1895 is estimated at $5 - $20 million. The large variation in estimated production exists because the Chinese were not known to keep detailed records. These workers also sent a considerable amount of money back to China.

The diligent work completed by the Chinese in American Canyon left one of the highest densities of placer shafts in Nevada. In less than 50 acres, there are a recorded 174 placer shafts. In the heart of the canyon there are one-acre segments that have over 20 placer shafts still open to the surface. Today the sagebrush has overgrown a majority of the dumps and helped to obstruct the 30-60 foot deep shafts hidden throughout the landscape.

A 35 foot deep shaft is hidden three feet behind the sign.

Due to the proximity of the placer shafts to each other, building individual fences was deemed inefficient. With help from the Division, the BLM started planning multiple large enclosure fences to capture as many shafts as possible. Following the completion of cultural resource surveys, the BLM was able to complete the fencing of 176 placer shafts December 2016. The remaining placer shafts are spread apart and could not reasonably be captured in the large perimeter fences. These remaining shafts are scheduled to be secured in 2017.

One of the enclosure fences in American Canyon constructed by the BLM in 2016

9. Scout Projects

In 1992, a young Eagle Scout candidate presented the Division with a proposal to secure mine openings for his Eagle Scout Service Project in Washoe County. Since then 175 Eagle Scout projects have been completed resulting in 772

orphan hazards secured and 167 previously constructed hazard securings re-built or restored.

A safety meeting before work started on a Boy Scout AML securing project in Clark County.

A finished fence with the Scout in front with Division Staff.

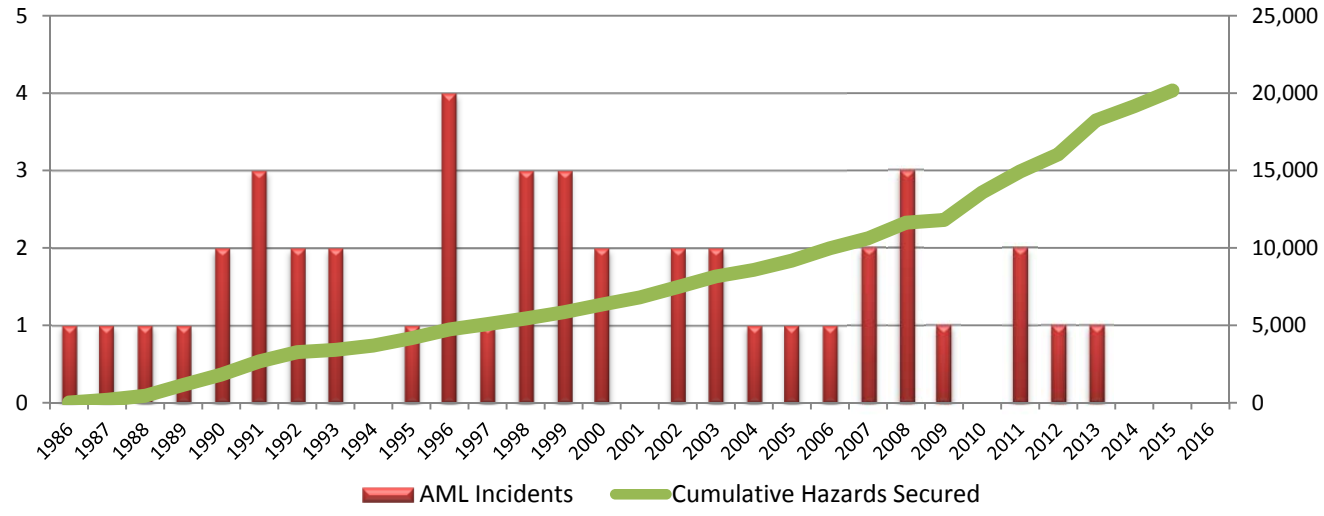
In 2016, 10 Eagle Scout projects were completed in Clark, Lincoln, Lyon and Storey counties resulting in 30 mine openings secured and 32 repairs made to previously existing fences. The previous photos show several Eagle Scout AML securing projects in Nevada. The Division would like to thank the Boy Scouts of America for their assistance in Nevada's AML Program

10. 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. At presentations, conferences and other statewide events "Stay Out, Stay Alive" handouts, bumper stickers, hard hat stickers, magnets, pencils, and other items are distributed. These materials reach thousands of Nevada school children and adults each year through presentations by Division staff.

Mine geologist explaining the geology of the Gypsum Mine at a Education Workshop in Clark County.

Figure 9: Reported AML Incidents vs. Cumulative Hazards Secured



In 2016 the Division staff gave 171 AML presentations in Carson, Clark, Douglas, Elko, Lyon, Nye, Storey and Washoe counties to more than 40,537 students, teachers and members of the public. The presentations target K-12 student science nights, classrooms, student career fairs, prospector club meetings, professional association meetings, outdoor recreation events and the annual Earth Science Education workshops for teachers, co-sponsored by the Nevada Mining Association. Over 200 educators attend the workshops in southern and northern Nevada, covering topics in general geology, mining, reclamation, AML, geothermal, and minerals education. On the second day of the two-day workshop educators tour local mining operations or localities of geologic interest in both southern and northern Nevada.

Figure 9 shows the reported incidents by year and cumulative securings in Nevada since the inception of the AML program. The efforts of the Nevada's AML program have clearly helped save lives and decrease AML incidents in Nevada.

11. Performance Indicators

The Legislature requires state agencies to have performance indicators in place for major programs. For the AML program, the Division has two performance indicators:

Blind folded teachers using more than their vision to describe minerals at the southern Nevada Earth Education Workshop, April 2016.

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 is ended 2016 at 81% secured.
2. Maintain the number of public awareness and education presentations concerning the Nevada mineral industry and abandoned mines at a minimum of 12 per year per staff member. The Division staff averaged 26 presentations per staff member.

12. Future Program Goals

In 30 years the Division has inventoried 20,683 AML hazards, leaving an estimated 30,000 hazards left to be inventoried. The Division will continue to prioritize efforts in areas with orphan hazards.

In 2011, the introduction of a bi-annual AML notification campaign to claimants and property owners effectively doubled the amount of securings from the previous year. Cooperation between the Division, BLM, USFS, NDOW, and claimants or property owners is essential to maintain the greatest level of public safety. The Division will continue to perform this important notification process.

The Division updated regulations in NAC 513 during 2016 to clarify language discrepancies to match modern techniques and properly address the securing methods for minimal hazards (Appendix D).

Technological advancements in areas such as remote sensing, fixed winged unmanned aerial vehicles, high-resolution aerial photography and 3-D mapping, along with LiDAR surveys are being evaluated to improve field work efficiency. 2016 marked the first use of digital field data collection using handheld field devices with interns and staff. The efficiency and accuracy of the devices reduced the amount of human error and time required for data entry.

12.a RAMS (Restoration of Abandoned Mine Sites) Program

In 2014, the US Army Corps of Engineers (USACE) RAMS program awarded the Division a project to develop a new web-accessed AML database. This database was launched in May, 2015 and has since greatly increased the productivity of the program. The USACE program has continued to fund the development of the AML database and will continue to further expand its capabilities through 2018.

In the spring of 2016, the RAMS program flew an Unmanned Aerial Vehicle (UAV) demonstration project in the Wonder Mining District, Churchill County. The data was evaluated for efficiency of inventory efforts. The data collected were of great quality, but with the cost of flying the survey, analyzing the data, and going back out to the potential hazardous sites, it was deemed to not be cost-effective method for an everyday inventory tool. In specific areas of Nevada, a UAV would be a cost effective tool and now with live video feed, the need for multiple trips can be eliminated.

13. Summary

2016 was one of the most productive in the history of the AML program. The introduction of the winter intern program, and the field accessible AML database that allows for digital field data collection have increased production for the program. Maintaining strong relationships with federal land management agencies, the Nevada mining industry and numerous volunteers proved vital in the advancement of the program. Despite the growing population of citizens that recreate on public lands in Nevada, there has been a decrease in the number of safety incident from abandoned mine hazards in the state. The Division encourages the public to report AML hazards using the Report of an Abandoned Mine Hazard form, found in Appendix B.

13.a Acknowledgements

We would like to recognize John Callan, Kurt Mires, and Nycole Burton at the Nevada BLM 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 for their work throughout the state; Jason Williams and the entire Nevada Department of Wildlife AML survey crews for their statewide efforts. I would also like to bring attention to and thank all of the claimants and land holders who work with the Division to secure AML sites statewide.

To all who have contributed to Nevada's highly successful AML program in 2016, a sincere **THANK YOU!**

Appendix A

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 Brougher 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 City
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 B

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			2030 E. Flamingo Rd. #220
Carson City, NV 89703			Las Vegas, NV 89119
Phone:	775-684-7040	or	702-486-4343
Fax:	775-684-7052	or	702-486-4345
Email:	ndom@minerals.nv.gov	or	ndomlv@minerals.nv.gov

Appendix C

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 D

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)

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)

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)

NAC 513.390 Methods for securing dangerous condition. A dangerous condition must be secured by one or more of the following:
1. 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 Commission on Mineral Resources, eff. 12-21-88)