2024 MINING AND LAND RESOURCES INSTITUTE

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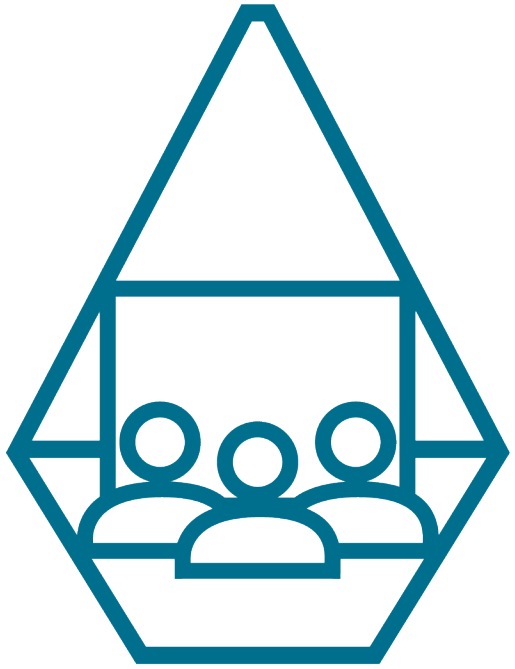

AAPL ENERGY INSTITUTES

Nevada Division of Minerals

The Abandoned Mine Lands Delema

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A BRAND WITH A MISSION.

For more than 60 years, AAPL has been a catalyst that moves the energy industry, guiding by these core principles:

- PROFESSIONAL CREDIBILITY
- PROFESSIONAL SUPPORT
- TRUSTED RESOURCE
- PROTECTING THE PROFESSION
- INDUSTRY LEADER

Today, we are poised to take on a new era of change and opportunity as we advance not only land professionals, but the entire industry.

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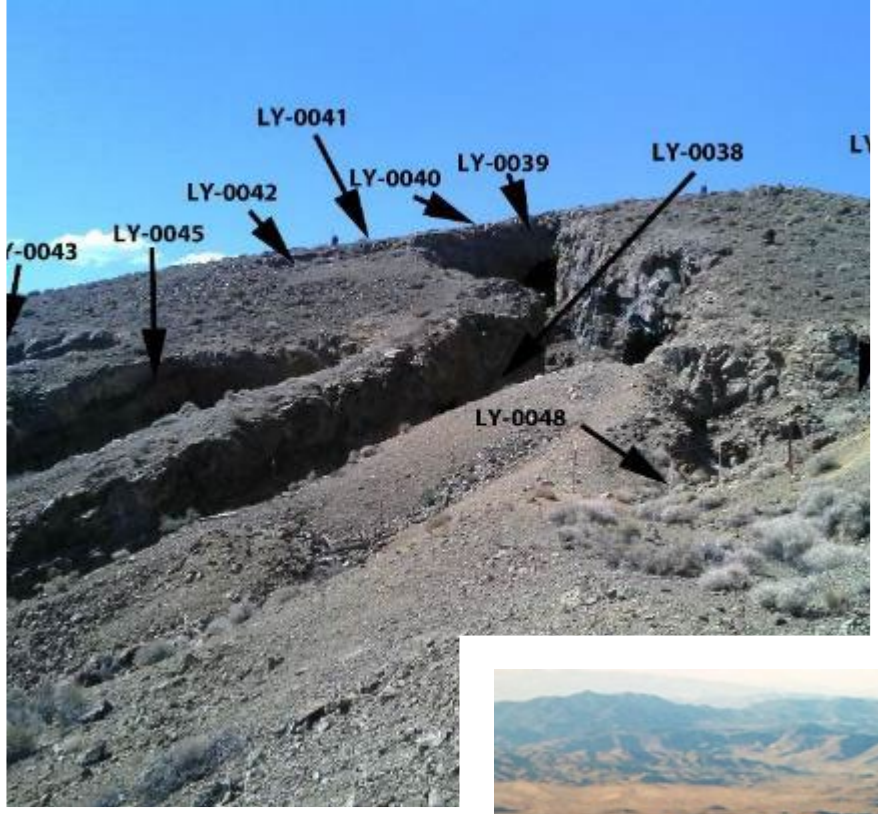
Overview

- What is AML
- Coal vs. Hardrock
- Magnitude of the problem
- Funding Mechanisms
- DC / Federal AML Programs
- Approaching the AML Problem
- Good Sam
- Project Examples



Abandoned Mine Lands

Carswell Refuse Before and After, West Virginia

Coal AML

- Surface Mining Control and Reclamation Act (SMCRA)
- Oversite and Reporting
- Certified vs. Uncertified
- ~$11 Billion in funding since 1977
- IIJA added $11 Billion
- Leasable vs Locatable

Coal AML

Pennsylvania

Primarily Coal AML

Largest AML program

Good Sam

Minimal production compared to past

Wyoming

Coal and hardrock AML

Largest active Coal state

Large existing production, minimal historical production

Hardrock AML

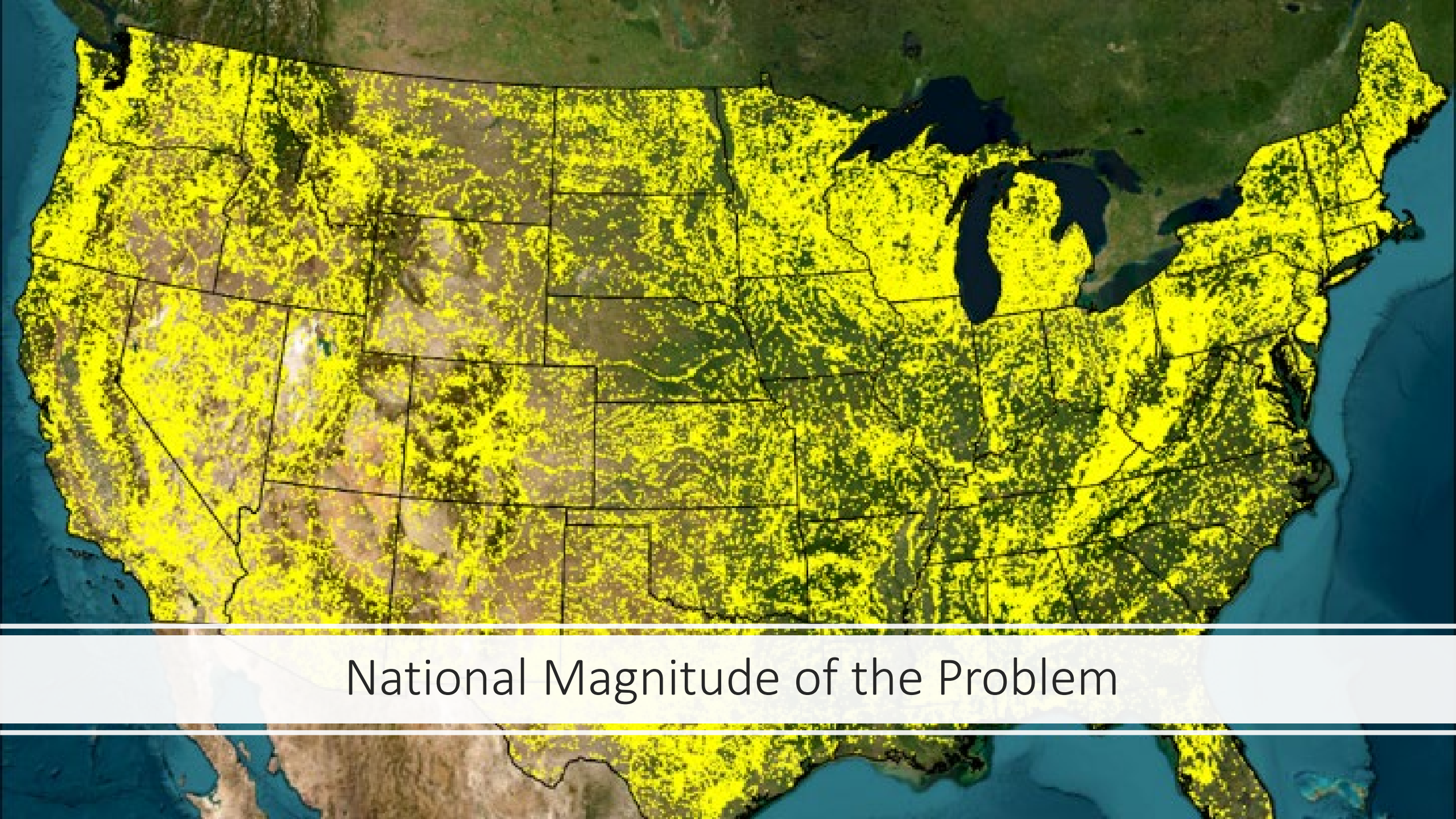
- No dedicated funding mechanism
- Contention between date of enactment and actual abandonment
- Multiple attempts made in the past for funding
  - All include some sort of fee based on industry
- Historically a small budget
  - Vast majority of funding spent on EPA Superfund sites
  - Responsible parties provide majority of remaining revenue
  - $50+ billion in costs
  - Unknown operation and maintenance ongoing costs
- Clean Water Act limitations

Hardrock AML

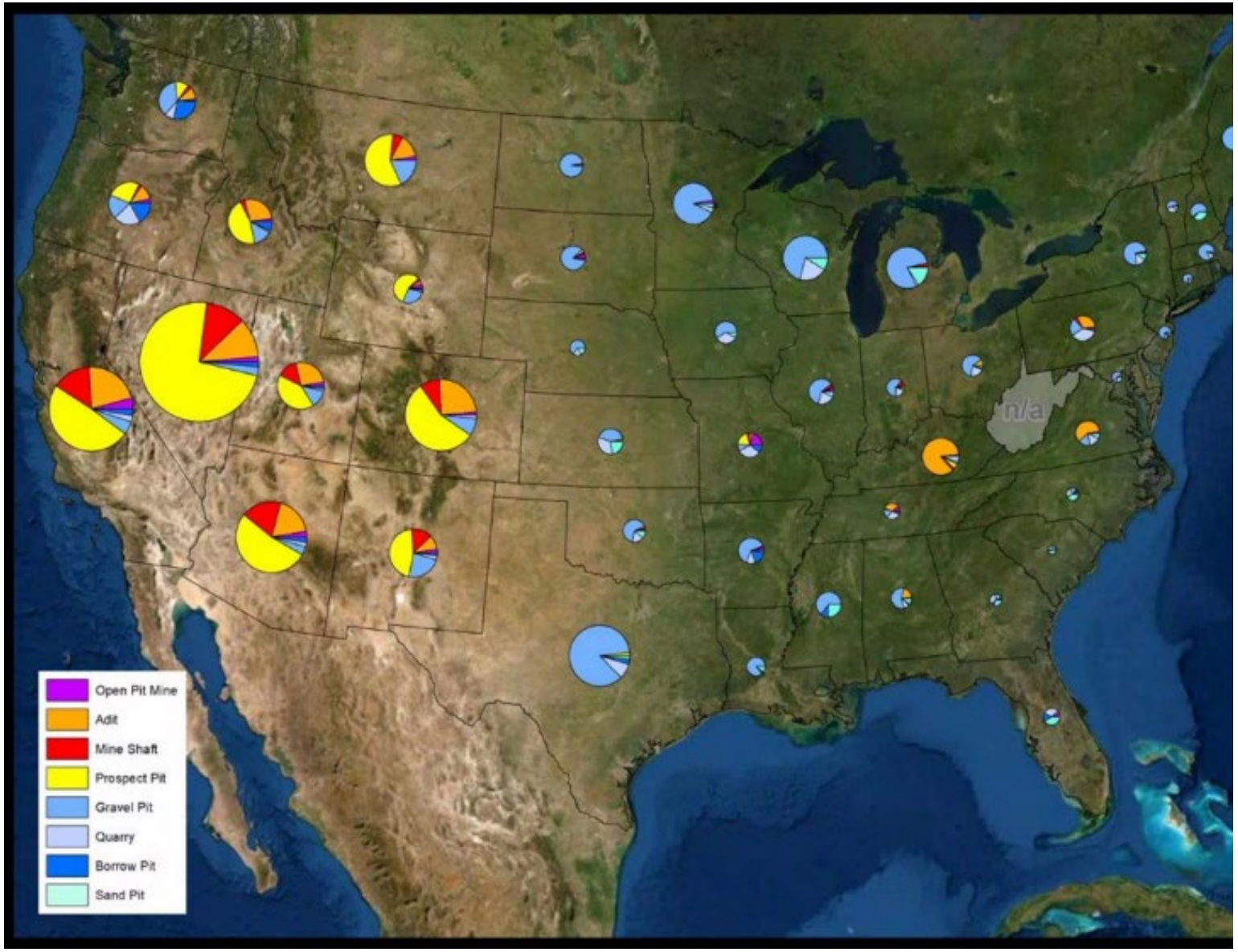
- Nevada, Arizona, and California the most historic mining related features
- Nevada and Arizona have very high production
- California has big historic production with minimal current production
- Coal AML states with Certification or near Certification
  - Utah
  - Colorado
  - Wyoming
  - New Mexico
- Three GAO reports on Hardrock AML

Hardrock AML Commodities

- Gold
- Silver
- Copper
- Uranium
- Lead
- Zinc
- Limestone
- Sand and Gravel
- Dimensional Stone
- Lithium
- All critical minerals
- Gypsum
- Diatomite
- Barite
- Antimony
- REE’s
- Tin
- Magnetite
- Precious Stones
- Anything NON-COAL



National Magnitude of the Problem



The West's AML Problem

Nevada:

- Physical AML, started in 1987
  - Estimates (2021)
    - 50,000 hazards
    - 36 years remaining to complete inventory
    - 40 years remaining to complete safeguarding
    - 119 years to closes 70% of hazards
    - Cost ~$450,000,000 (not including inflation)
- Thousands of environmental AML hazards
  - No funding dedicated towards inventory
  - Up to tens of billions of dollars to remediate with no time estimate

BLM Estimates

7. Conclusion

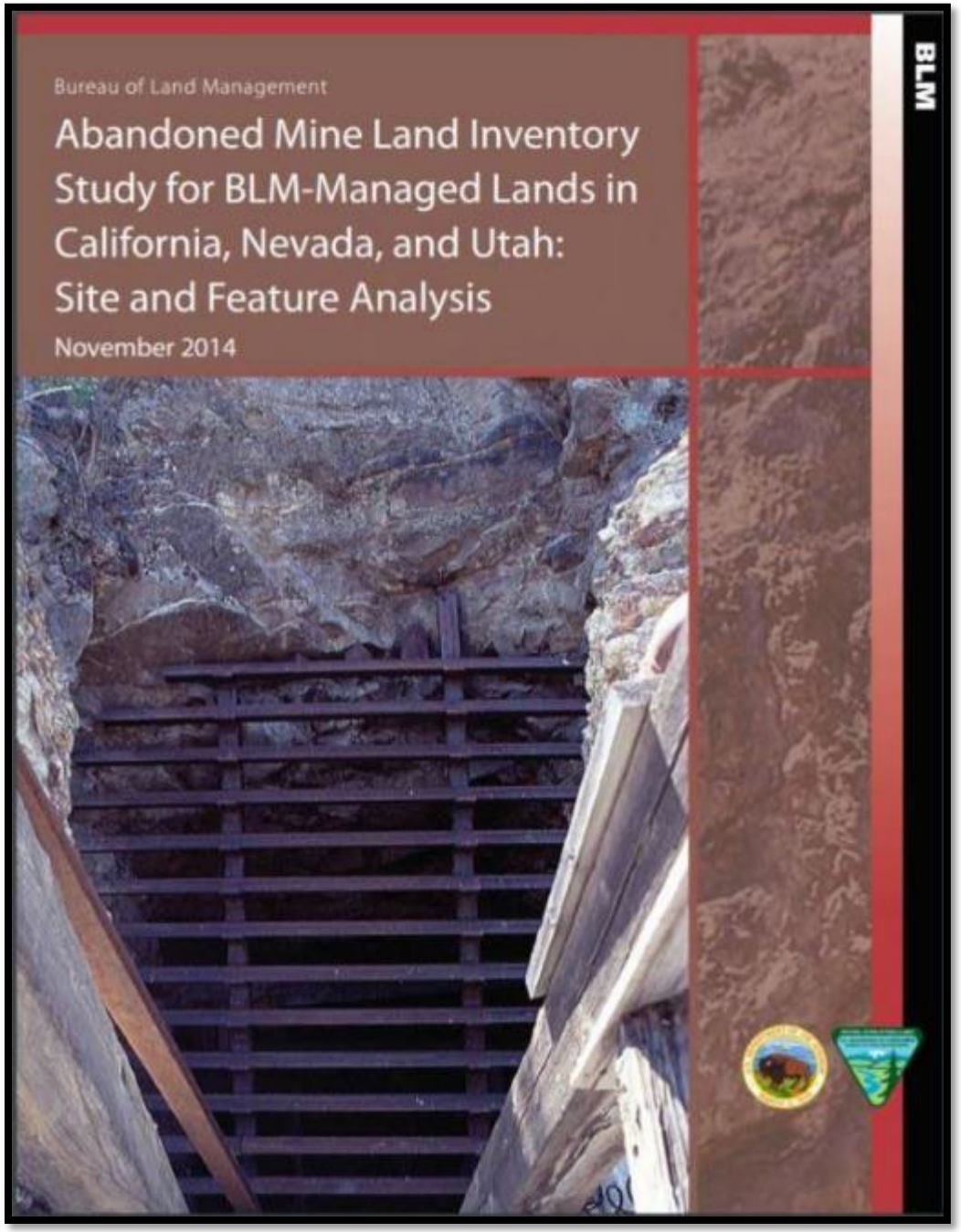
Using the USGS symbol approach greatly improves the BLM's ability to build a current, complete, and accurate database of AML sites and features. This is critical to measuring progress and reporting comprehensive results of program activities. Through field validation of the mine symbols, the BLM can inspect suspected AML sites and take appropriate action to mitigate hazards.

The BLM currently estimates that the total cost of field validating and recording in the AMSCM database the estimated remaining 93,000 sites and 368,000 features in California, Nevada, and Utah to be approximately $212 million (see Table 3 for overall summary). This would require 10 two-person teams approximately 20 years to complete. In California alone, there are an estimated 30,308 features that pose physical safety hazards requiring $588 million to remediate.

Table 3. Overall summary of the estimated number of sites and features remaining to be inventoried on BLM lands in California, Nevada, and Utah and the estimated time and cost to complete the inventory

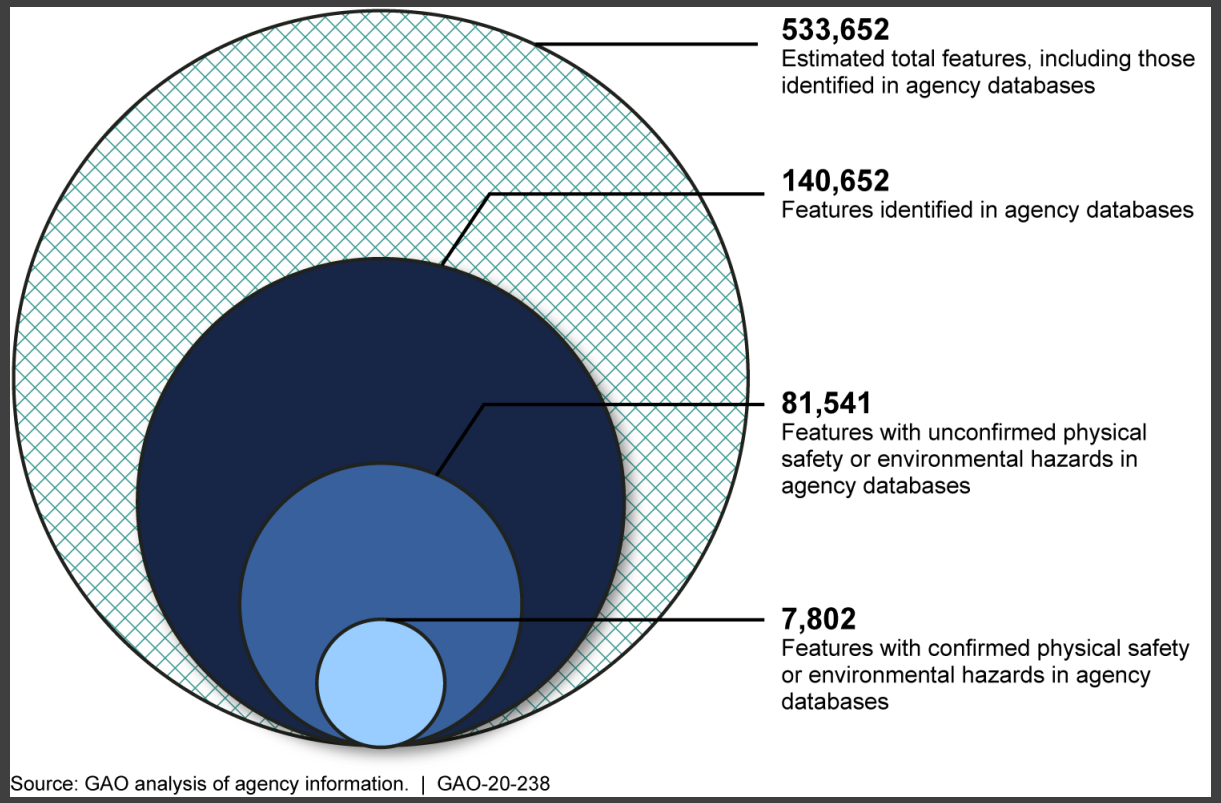
	Estimated Number of Sites to be Inventoried	Estimated Number of Features to be Inventoried	Estimated Time to Complete Inventory	Estimated Cost to Complete Inventory
California	22,730	79,757	568 work months	$118 million
Nevada	68,564	273,239	1,952 work months	$86 million
Utah	1,399	14,752	105 work months	$8 million
Total	**92,693**	**367,748**	**20 years**[1]	**$212 million**

[1] This inventory time is based on 10 two-person work crews.



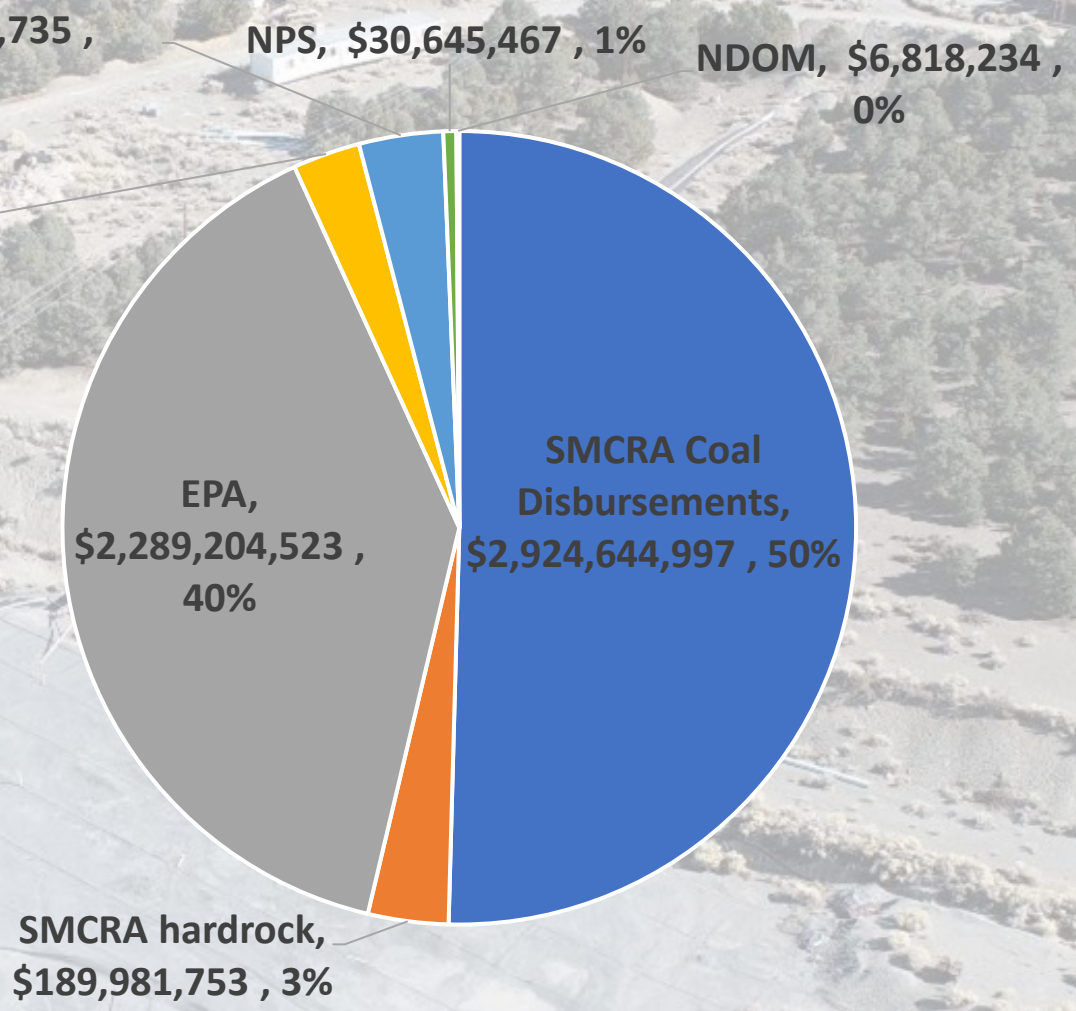
Change in Scope

Abandoned Hardrock Mines Report GAO-20-238



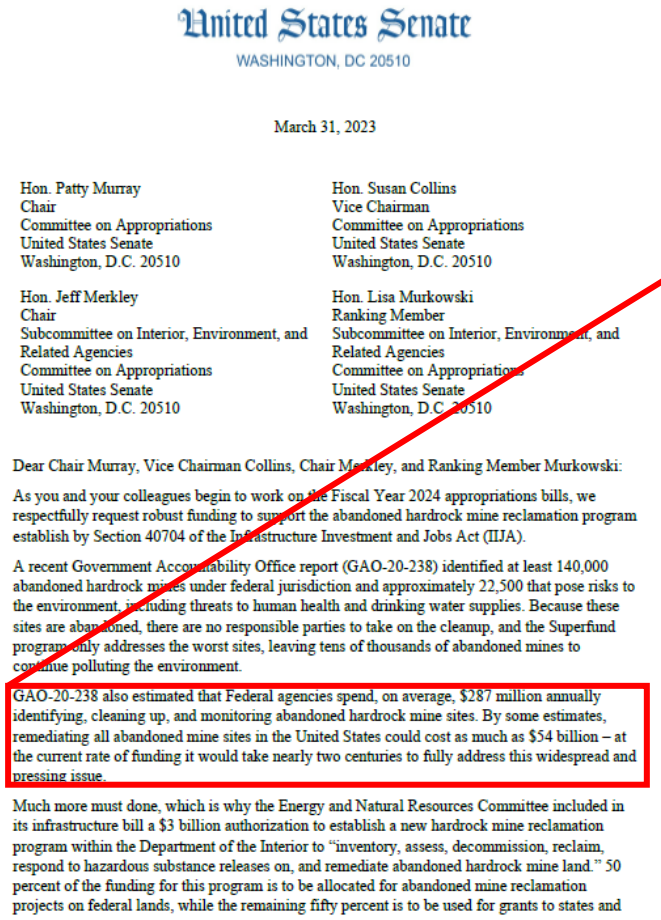
- Agencies spent about $300 million annually from fiscal years 2008 through 2017 to address abandoned hardrock mines, vast majority by EPA
- Agencies in 13 states estimated spending a total of about $117 million of non-federal funds from fiscal years 2008 through 2017 to address abandoned hardrock mines
- In 2000, an EPA report estimated at least $35 billion needed for hardrock AML
- Federal and state agencies and stakeholders cited availability of resources and legal liability concerns as factors that limit efforts to address abandoned hardrock mines
  - Need for Good Sam bill

AML Funding 2008-2017



Sources: GAO Report GAO-20-238; OSMRE Grant Website; NDOM 2018 AML Report

Funding Shortfall



United States Senate
WASHINGTON, DC 20510

March 31, 2023

Hon. Patty Murray
Chair
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Hon. Susan Collins
Vice Chairman
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Hon. Jeff Merkley
Chair
Subcommittee on Interior, Environment, and Related Agencies
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Hon. Lisa Murkowski
Ranking Member
Subcommittee on Interior, Environment, and Related Agencies
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Dear Chair Murray, Vice Chairman Collins, Chair Merkley, and Ranking Member Murkowski:

As you and your colleagues begin to work on the Fiscal Year 2024 appropriations bills, we respectfully request robust funding to support the abandoned hardrock mine reclamation program establish by Section 40704 of the Infrastructure Investment and Jobs Act (IIJA).

A recent Government Accountability Office report (GAO-20-238) identified at least 140,000 abandoned hardrock mines under federal jurisdiction and approximately 22,500 that pose risks to the environment, including threats to human health and drinking water supplies. Because these sites are abandoned, there are no responsible parties to take on the cleanup, and the Superfund program only addresses the worst sites, leaving tens of thousands of abandoned mines to continue polluting the environment.

GAO-20-238 also estimated that Federal agencies spend, on average, $287 million annually identifying, cleaning up, and monitoring abandoned hardrock mine sites. By some estimates, remediating all abandoned mine sites in the United States could cost as much as $54 billion – at the current rate of funding it would take nearly two centuries to fully address this widespread and pressing issue.

Much more must done, which is why the Energy and Natural Resources Committee included in its infrastructure bill a $3 billion authorization to establish a new hardrock mine reclamation program within the Department of the Interior to "inventory, assess, decommission, reclaim, respond to hazardous substance releases on, and remediate abandoned hardrock mine land." 50 percent of the funding for this program is to be allocated for abandoned mine reclamation projects on federal lands, while the remaining fifty percent is to be used for grants to states and

$3 Billion authorized in 40704

- $10 Million allocated between FY22 & 23

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The 40704 Program

Infrastructure Investment and Jobs Act (IIJA) Section 40704

- Created a new Federal AML Hardrock Program
- Authorized $3B for 10 years
- No funding was appropriated
- Under Development
- No inventory
- No database

OEPC, NAAMLP, IMCC, USDA & USGS

- Office of Environmental Policy and Compliance
- National Association of Abandoned Mine Lands Program
- Interstate Mining Compact Commission
- United States Department of Agriculture
- United States Geological Survey

OEPC

- "To serve as a trusted source of Departmental leadership and guidance to ensure sustainable utilization and conservation of natural, cultural, and historical resources for current and future generations."
- Charged under the BIL to create the AML hardrock Program
  - 90 days from passing of law to creation of program to have a program outline
    - ~February 14th 2022
  - Started conversations with future partners before the BIL was signed
  - Was given very little direction from BIL language
  - Been extremely receptive of NAAMLP, IMCC's, and other Federal Programs comments and suggestions

Hardrock AML Program MOU

- Led by OEPC (draft)
  - Establishes framework for agency cooperation on hardrock AML program under IIJA sec. 40704
  - DOI/USGS/USDA/EPA/IMCC are contributors
  - Seeks to create “culture of collaboration and partnership”
  - Establishes inter-agency “Federal Program Technical Working Group”
  - Establishes separate State Grant Program
  - Establishes separate Tribal Grant Program
  - Includes list of “points of contact”
  - Includes “general” section for how MOU will operate legally

Funding and Eligibility of IIJA 40704

Funding

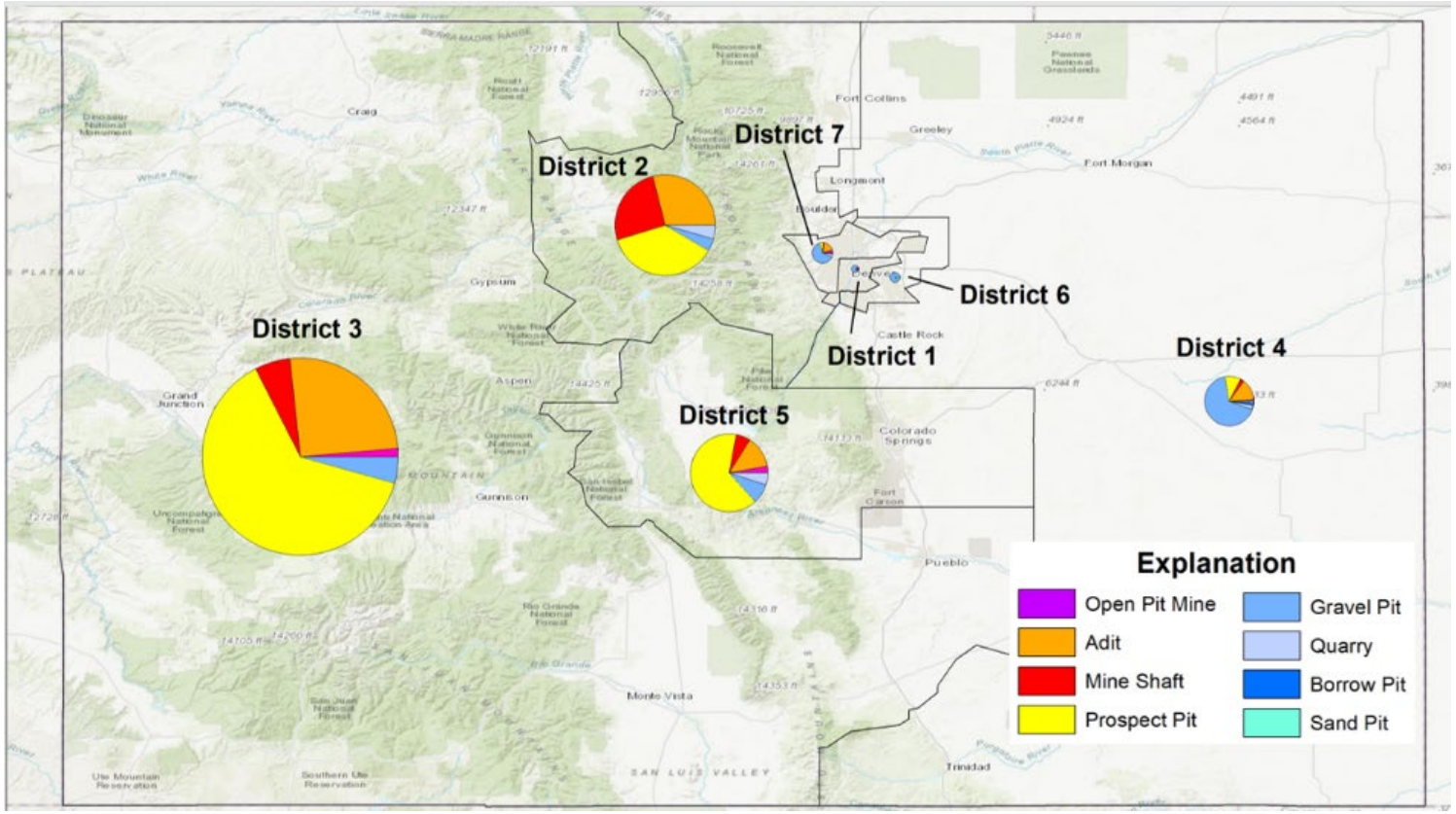
- Annual basis under the Federal budget
- FY22 and 23 were $5M
- FY24 request was $30M ended with $4.8M
  - Expected that the funding to continue at the approved rate into the future
  - Potentially planning of long-term funding coming from an industry fee

Eligibility

- Everything “non-coal”
- Definition of “Abandoned”
- State eligibility
- Federal programs
- EJ and Justice 40
- Prevailing wages
- CERCLA type projects
- NEPA
- Overhead

National AML Database

- Purpose of Database
- Roles / Users
- NAAMLP/IMCC Inventory committee
- USGS delegation
- USGS development team
- USMIN Dataset
- Challenges
- All non-coal
- Multiple databases
- Lack of inventory
- Cost



NDOM's Role

- NAAMLP Hardrock Committee Chair
- Providing State perspective
- Various meetings with IMCC, OEPC, USGS, NAAMLP on near monthly basis
- Worked with nearly 20 states and IMCC to develop a proposed National AML Hardrock database and provided to OEPC
- Member of the new USGS Hardrock AML database review group

Building an inventory of abandoned mine features in the United States: Partnerships among the U.S. Geological Survey's USMIN project, and state, federal, and tribal agencies

Jeffrey L. Mauk[1,†], Nick A. Karl[1], John D. Horton[1], Emma L. Boardman-Larson[1], Keith Closson[2], Robert Ghiglieri[3], Carma A. San Juan[1], and Carl T. Seaberg[4]

[1] U.S. Geological Survey, Geology, Geophysics, and Geochemistry Science Center, P.O. Box 25046, MS 973, Denver, CO 80225 USA

[2]Office of Surface Mining Reclamation and Enforcement

[3]Interstate Mining Compact Commission and Nevada Division of Minerals

[4]Bureau of Land Management

[†]Corresponding author: e-mail, jmauk@usgs.gov

Building the inventory

Section 40704 of the U.S. Infrastructure Investment and Jobs Act of 2021 requires the Secretary of the U.S. Department of the Interior to establish a program "to inventory, assess, decommission, reclaim, respond to hazardous substances release on, and remediate abandoned hardrock mine land based on conditions including need, public health and safety, potential environmental harm, and other land use priorities" on state, federal, and tribal lands. The Office of Environmental Policy & Compliance in the Department of the Interior has funded the U.S. Geological Survey's mineral deposit database project (USMIN) to help build a national inventory of mine features of non-coal sites that were abandoned or left in an inadequate reclamation status before the enactment of the Act in November 2021. Our goal is to supplement this information with data from coal sites from the Office of Surface Mining Reclamation and Enforcement, so the final database will include mine features from all types of mining, including hardrock, industrial minerals, and coal mines.

Federal Mining Law Reform Impacts to AML

Washington DC

Changing leadership equals change in:

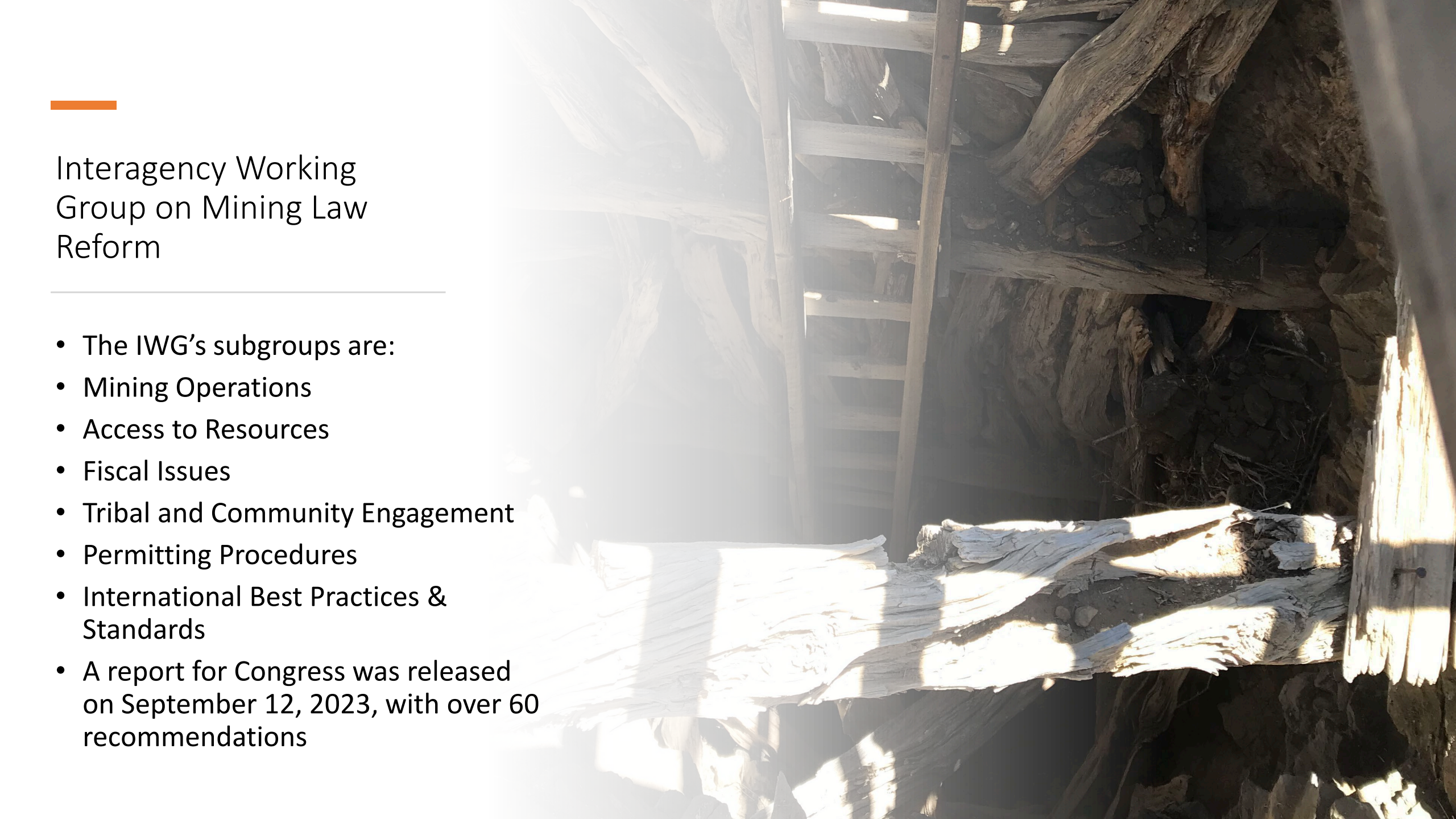
- Priorities
- Goals
- Funding mechanisms
- Restrictions
- Coal vs Hardrock
- Industry vs. AML
- Good Sam
- Anti-mining vs. Pro-mining
- 1872 Mining Law

Interagency Working Group on Mining Law Reform

- Interior Department Established
- Multiple working groups, comprised of all Federal agencies
- NDOM, NDEP, and the Governor's Office jointly provided comments
- Little to no state involvement in development of the working groups
- IMCC was not consulted until late in the process
  - Provided comments similar to Nevada
  - Requesting State involvement

Interagency Working Group on Mining Law Reform

- The IWG's subgroups are:
- Mining Operations
- Access to Resources
- Fiscal Issues
- Tribal and Community Engagement
- Permitting Procedures
- International Best Practices & Standards
- A report for Congress was released on September 12, 2023, with over 60 recommendations

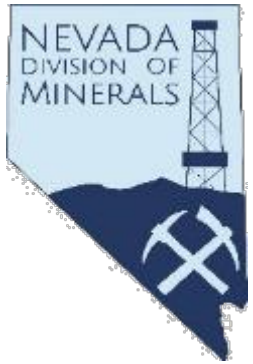


Interagency Working Group on Mining Law Reform Recommendations for AML

- New revenue from royalties and updated claim maintenance fees would… ...to fully address all remaining legacy mining impacts
- Congress should create a reclamation fee to generate additional revenue for abandoned hardrock mine remediation.
- Create a Revenue Sharing Program to Help States and Local Governments Address the Impacts that Result from Hardrock Mineral Development on Federal Lands
- Enact Good Samaritan protections.
- Recovery of critical minerals from unconventional sources such as mine wastes, mine influenced waters and coal ash, without exacerbating environmental impacts from these sources

How to approach the AML problem

Recent and Current Nevada AML Project Partners



Partners Contributions

- County / City
  - Sherriff deputy
  - Close area to public and help with public notifications
  - Facilitated Media interactions
  - Homeless liaison
  - Permitting
  - Materials/equipment
- State
  - Wildlife Surveys
  - SHPO
  - DOT road closures
  - Contracting
- Federal
  - NEPA
  - Inventory
- NGO’s
  - Engineering
  - Expertise

Post AML Land Use

- Recreation
- Wildlife habitat
- Conservation
- Mining
- Re-processing of materials
- Green Energy

AML Good Samaritan Legislation

Good Sam

- No Federal Legislation to allow Good Samaritans to cleanup AML
- You touch it, you own it.
- Questions to resolve regarding Good Sam:
  - Re-mining AML
  - Operation and Maintenance
  - Clean Water Act and Civil Suits
  - Permitting

AML Good Samaritan Bills

S.2781

- Introduced in Senate by Heinrich of NM on September 13, 2023
- Championed by Trout Unlimited
- Cosponsored by 35 Senators, bipartisian including Cortez-Masto and Rosen
- Passed unanimously in committee on Senate floor
- Governor Lombardo submitted a support letter
- 15 Pilot Projects nationwide to be selected by EPA
- Clean Water Act and Civil Suits

H.R.7779

- Introduced in House by Maloy of UT on September 13, 2023
- Championed by Trout Unlimited
- Cosponsored by 9 representatives, bipartisan including Cortez-Masto and Rosen
- Introduced and assigned to committee
- 15 Pilot Projects nationwide to be selected by EPA
- Clean Water Act and Civil Suits

Good Sam Project Challenges

- PRPs
- Unknown physical and environmental risks
- Land Status
- Size of Features
- Human Interaction
- Wildlife
- Unknown environmental contamination
- Liability
- National Historic Landmarks
- Operation and Maintenance

Trout Unlimited Good Sam

Industry – KGHM
2020 Reclamation Award Winner

- Land City Waste Rock Facility
- Copper mine
- Created between mid 1950's – 1978
- Predates any Nevada Regulations
- Potential contamination to alluvial groundwater and adjacent creek
- Remediation
- New channel and check dams
- Four limestone rip-rapped channels
- Additional alluvial Material
- Regrading

Potential Nevada AML Projects

- Arden
- Rochester Canyon
- Comstock Mercury Clean Up
- Hill Top
- Buckskin
- Big Six Mine
- Gooseberry

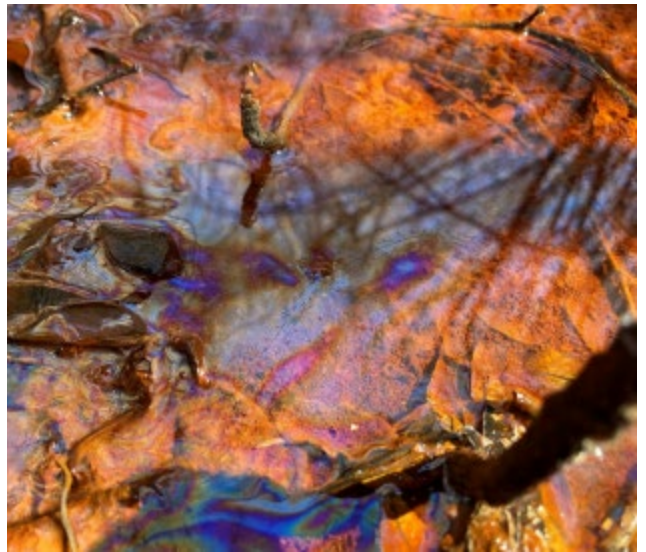
Arden

Early 1900's Gypsum Mine in SW Las Vegas

- County and BLM Lands
- Removal of High Walls
  - ~1.2 miles
- Stabilization of East hill
- Revegetation
- Creation of official trail system

Hill Top

- Gold discovered in 1907 and worked until the 1930’s
- Plugged adit with seepage containing elevated levels of Fe, Mn, Ni, and As (pH: 3.1 to 3.6)
- Elevated levels of As and Sb were discovered in the tailings material with a pH of 4.32 to 5.0
- A 1910 amalgamation mill
- Mostly Private lands but interacts with BLM.



Buckskin (Douglas County)

1930-1980’s gold, silver, and copper mine

- Mix of private and BLM lands
- Bonding in the 2000’s with forfeiture in 2013 for mill area
- Remediation work completed on lower tailings in the 2016
- Need of ponds being closed, pit wall stabilization, and mill site remediation
- Candidate for Solar on brownfields

Rochester Canyon

Silver with minor gold

- Produced ~8.7 million ounces of silver between 1912-1934
- Current largest silver mine in Nevada is next door
- Other sulfides found within ore
  - galena, sphalerite, chalcopyrite, arsenopyrite, tetrahedrite
- Multiple cyanide mills constructed in the canyon

Liability and Permitting

National Environmental Policy Act (NEPA, 1970)

Clean Water Act (1972)

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 1980)

Resource Conservation and Recovery Act (RCRA, 1976)

National Historic Preservation Act (NHPA, 1966) Section 106

Primary Responsible Party

Prove Success to Ensure Long-term Good Sam AML

- Quick Wins
- Physical Safety
- Easy cleanups
- Containment of mobile contaminates
- Damp projects
- Inventory / Site Investigations
- Partnerships
- Re-process for Critical Minerals
- Limited quid pro quo

Questions?