



ABANDONED URANIUM MINES WORKING GROUP (AUMWG)

ANNUAL STAKEHOLDER REPORT

2023-2024

PREFACE

In 2013, Congress directed the U.S. Department of Energy (DOE), in consultation with the secretary of the U.S. Department of the Interior (DOI), the secretary of the U.S. Department of Agriculture (USDA), and the administrator of the U.S. Environmental Protection Agency (EPA), to conduct a review and prepare a report on approximately 4225 abandoned uranium mines (AUMs) across the nation that provided ore to the U.S. Atomic Energy Commission (AEC) for defense-related activities. DOE assigned the Office of Legacy Management (LM) to take lead. In August 2014, LM submitted the *Defense-Related Uranium Mines Report to Congress* (DOE 2014), known as the Report to Congress.

The Report to Congress has four associated topic reports: (1) mine location and status; (2) priority ranking for reclamation and remediation; (3) potential cost and feasibility for reclaiming or remediating the mines; and (4) risks mines pose to human health and the environment.

Each of these topic reports noted and documented numerous data gaps, primarily related to three major issues: (1) the status of reclamation and remediation could only be confirmed at 15% of the mines; (2) location data were not always accurate (including information in AEC records); and (3) information about whether the mines pose risks to public health and safety and the environment was insufficient. This drove the need for a multiagency effort to fill existing data gaps and verify and validate existing information.

The Abandoned Uranium Mines Working Group (AUMWG) — consisting of senior management and staff from DOE, DOI, USDA, and EPA — was formed to maintain ongoing dialogue among the agencies and continue collaborative efforts to exchange technical and administrative information. This heightened focus on inventorying and assessing potential impacts on public health and safety and the environmental condition of these mines contributed to the initiation of DOE's Defense-Related Uranium Mines (DRUM) program.

The DRUM program aims to fill the data gaps the Report to Congress identified and provide accurate information to help decision makers prioritize mines for additional action if warranted. DRUM sites' geographic distribution and land ownership requires multiple agencies be involved. As a result, DOE developed a phased-implementation strategy. This was also the impetus for establishing partnerships between DOE; federal land management agencies (FLMAs), including DOI and USDA; EPA; and state and Tribal abandoned mine lands (AML) programs. These relationships, both formal and voluntary, are beneficial and allow partners to leverage resources on an as-needed basis.

The purpose of this annual stakeholder report is to communicate AUMWG's collaborative efforts and accomplishments over the past year toward assessing, safeguarding, reclaiming, and remediating AUMs.

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EXECUTIVE SUMMARY

In 2023 and first half of 2024, AUMWG partners reconfirmed the viability of their programmatic documents and communication strategies. The partners recognized that marshalling and leveraging multiple federal agencies' resources increases the probability of success. Moreover, the coordinated efforts of a one-team approach are cost effective and strengthen public support. The partners worked with states and Tribes to identify and address high-priority mines in an effective and coordinated manner.

This interaction and collaboration between DOE; FLMAs, including the U.S. Bureau of Land Management (BLM), the National Park Service (NPS), and the U.S. Forest Service (USFS); EPA; and state and Tribal AML programs contributed to AUMWG's formation and the ongoing implementation of the DRUM program.

AUMWG provides a forum to exchange operational experiences, advice, and lessons learned from each partner agency's challenges and successes. Through AUMWG, the partners recognized shared objectives, coordinated schedules, and exchanged constructive information for their respective administrative and technical needs. This one-team approach is intended to expedite the protection of human health and the environment from any hazards resulting from AUMs.

2023-2024 AUMWG highlights include the following:

- ❖ The partners continued to fulfill their responsibilities to protect human health and the environment, focusing on assessments and response actions, enforcement of responsible party agreements and settlements, and community outreach.
- ❖ The partners continued to engage one another on project and programmatic levels and assisted one another, where possible, in leveraging resources, experience, and methods.
- ❖ The DRUM program continued to verify and validate the condition of about 2400 mines on public land. To date, the DRUM team has evaluated about 2250 sites on public land, and preliminary analysis suggests the following:
 - Unprotected open mine entries, subsidence features, dangerous highwalls, and unstable structures — all associated with historic mining operations — are the primary risks.
 - Fifty-three% of mines evaluated, or 1,222 mines, were ranked “low” by DOE for risk of physical, chemical, or radiological hazards that could result from the recreational use of the mine site.

- DOE used relative screening rankings (“high,” “medium,” and “low”) to rank sites . However, it should be noted that the relative rankings do not constitute detailed human health risk assessments under the Comprehensive Environmental Response, Compensation, and Liability Act, known as CERCLA, and it’s up to FLMAs, EPA, and other stakeholders to evaluate the actual risks at these sites and determine which, if any, of the mines require risk mitigation actions in the future.
- ❖ The partners safeguarded physical hazards at mine sites in several locations across Colorado and Utah. The DRUM team has planned additional safeguarding efforts in Utah and Colorado in 2024.

INTRODUCTION

The purpose of this annual stakeholder report is to communicate AUMWG’s collaborative efforts and accomplishments over the past 18 months.

Formed in the aftermath of the Report to Congress, AUMWG is a consortium of federal agencies working together to address the human health, safety, and environmental challenges posed by the nation’s AUMs. By marshalling and leveraging the resources of multiple federal agencies, AUMWG works with states and Tribes to identify and address high-priority mines in an effective and coordinated manner. The working group is led by LM and comprises directors, managers, and senior technical AML personnel from DOE, EPA, DOI, USDA, BLM, USFS, NPS, and the U.S. Bureau of Indian Affairs (BIA).

The Abandoned Uranium Mines Working Group Addressing Health and Safety Risks of Abandoned Uranium Mines Multiagency Strategic Plan (AUMWG 2020), known as the AUMWG Strategic Plan, guides the activities of the working group. The working group holds quarterly calls and an annual face-to-face meeting to discuss its progress in addressing the problems AUMS pose and share technical approaches to assessing, safeguarding, reclaiming, and remediating these mines. After three years foregoing an annual face-to-face meeting because of COVID-19, the June midyear meeting was held in a hybrid format, where a face-to-face component was hosted in the EPA Region 8 Headquarters office in Denver, Colorado. Additionally, quarterly calls were engaging, collaborative, and informative.

GOALS AND OBJECTIVES

AUMWG’s goals are to (1) identify areas of common ground between the partner agencies with regard to AUM responsibilities and (2) improve resource allocation strategies to identify and address unacceptable risks to human health, safety, and the environment.

To accomplish these goals, the working group leverages the collective experience and expertise of member agencies. This one-team approach benefits the government and overall program implementation by leveraging resources and reducing risks to human health, physical safety, and the environment.

In support of these goals, AUMWG's objectives are to:

1. Share existing information and collect site-specific data at each mine to identify potential safety hazards or human health and environmental risks.
2. Perform high-level or relative-risk scoring and ranking of mine hazards.
3. Improve the data quality and content of the DRUM program and agency databases.
4. Exchange information with federal, Tribal, and state governments.
5. Work together to leverage resources to address mines with priority safety hazards, as well as human health and environmental risks.

A primary DRUM program goal is to provide sufficient information to partner agencies to help them make informed decisions about what, if any, actions to take to address physical hazards or human health and environmental risks from AUMs. Accomplishing this goal facilitates AUMWG achieving its goals and objectives.

WORKING GROUP PLANS

The AUMWG Strategic Plan and the *Abandoned Uranium Mines Working Group Communications Strategy* (AUMWG 2019) are critical to providing the group with strategic direction and useful for guiding executive-level decisions, allocating resources, evaluating progress, and collaborating with stakeholders.

Abandoned Uranium Mines Working Group Strategic Plan

The AUMWG Strategic Plan is a collaborative effort among the partner agencies to develop a comprehensive multiagency strategy to address the potential human health, safety, and environmental risks AUMs pose. It summarizes the scope of the problem; provides existing information on cleanup costs; describes the authorities and roles involved in addressing hazards associated with these mines; and proposes a coordinated strategy by the agencies, along with state and Tribal partners, to address these mines.

Communications Strategy

Through the Communications Strategy, AUMWG representatives will deploy an assortment of partnership-building activities and engagement opportunities to increase collaboration with communities; local, state, and Tribal governments; and stakeholders. AUMWG recognizes successfully implementing its strategy requires strong strategic partnerships and meaningful engagements with stakeholders.

MAJOR ACCOMPLISHMENTS

AUMWG members continued to network, partner, and collaborate on the DRUM program and other AML activities as one team. Member agencies reconfirmed the AUMWG Strategic Plan and Communications Strategy and prepared an annual report to its stakeholders. In 2023 and first half of 2024, AUMWG member agencies accomplished the following:

U.S. Environmental Protection Agency

EPA continued its efforts to carry out enforceable agreements with potentially responsible parties for mine and groundwater cleanup, implement the Tronox Inc. settlement, oversee trust settlements, and conduct fund-lead response actions. Groundwater and surface contamination from uranium mining remain the main concerns of communities and stakeholders near AUMs. EPA made progress, including the following:

- ❖ EPA continued to implement the Region 6 Grants (New Mexico) Mining District Five-Year Plan to address legacy mining and milling impacts in New Mexico. This plan is a partnership with federal agencies; state environmental, mining, and health agencies; and Tribal governments. Region 6 also continued developing the Grants Mining District 2024-2028 Five-Year Plan through discussions with federal, state, and Tribal partners. Region 6 expects to publish the plan in 2024.
- ❖ EPA Region 6 continued overseeing Atlantic Richfield Company's implementation of the Remedial Investigation/Feasibility Study at the Jackpile-Paguete uranium mine on Laguna Pueblo land. The site was one of the world's largest open-pit uranium mines.
- ❖ EPA Region 6 continued overseeing three former mine operators who are conducting the groundwater Remedial Investigation/Feasibility Study of the lower portion of San Mateo Creek. This work will identify the nature and extent of contamination, assess the risk to human health and the environment, and analyze cleanup options.
- ❖ EPA Region 6 provided oversight to Homestake Mining Company's removal site evaluations (RSEs) for eight mines in the Ambrosia Lake region of New Mexico. RSEs define the nature and extent of site contamination and are expected to be finalized in fiscal year (FY) 2024 after revisions. The RSEs will be followed by the development of Engineering Evaluation/Cost Analyses for the mines to evaluate potential cleanup alternatives.
- ❖ EPA Region 8 began defining the scope of work in the Cottonwood Wash area in Utah and worked closely with the Ute Mountain Ute Tribe for the watershed analysis of the area.
- ❖ EPA Region 8 coordinated with BLM's Utah State Office on Lisbon Valley work, which will be funded through the Tronox settlement. The goal is to assess and conduct cleanup projects at priority sites. In 2022, two AUMs were identified, the

Radon Mine and Columbia Shaft sites. Beginning in fall 2022, EPA conducted a CERCLA Time-Critical Removal Action at both sites.

- ❖ In 2023, EPA Region 9 established a field office in Flagstaff, Arizona, and plans to open a field office in Window Rock, Arizona, in 2025. These field offices allow staff to be closer to the mines and the surrounding communities at a time when projects are moving into the construction phase. These offices also make it easier to recruit Navajos to fill EPA positions to support this work.
- ❖ EPA continued collaborating with the DRUM program by sharing methods for conducting mine assessments, collecting technical data, addressing potential risks to human health posed by AUMs, coordinating assessment and cleanup activities, and supporting the development of DOE plans for work on Tribal lands.
- ❖ EPA Office of Mountains, Deserts, and Plains worked with Regions 6 and 9 and BLM to explore and identify possible off-site disposal locations on federal land near Navajo Nation land.
- ❖ The Infrastructure Investment and Jobs Act (Public Law 117-58 [PL 117-58]), known as IIJA, provided \$3.5 billion to the Superfund program. It reinstated the excise tax on the sale of certain chemicals, which is being discussed with the U.S. Office of Management and Budget. There is no state cost share for construction projects. The funding will be placed into three categories: clearing backlog, accelerating cleanup construction projects already underway, and beginning new cleanup projects in the next two-five years. EPA is working with regional offices and FLMAs to identify projects.
- ❖ EPA Region 8 made an unacceptability notice on CERCLA's Off-Site Rule for the White Mesa Mill site in Utah. This notice informs the facility that CERCLA wastes may not be sent to White Mesa Mill until they come into compliance. This will impact the Navajo Nation AUM waste disposal option at this facility. Region 8 informed the Utah Congressional delegation about the notice. The facility's acceptability to receive CERCLA waste was reinstated in July 2023 following a return to physical compliance with the Clean Air Act National Emission Standards for Hazardous Air Pollutants.
- ❖ Executive Order (EO) 14017, *America's Supply Chains*, one-year critical minerals reports from seven agencies on U.S. supply chains were announced Feb. 22, 2022. EPA created a cross-agency group to support EO 14017, which relates to critical minerals: the Critical Minerals Recovery Mining Dialogue. DOI is leading the interagency workgroup effort on critical minerals domestic mining to streamline the National Environmental Policy Act (NEPA) process and reform the General Mining Law.
 - The Critical Minerals Recovery Subcommittee was formed under the Federal Mining Dialogue. U.S. Geological Survey (USGS) is leading this effort, and Tanya Gallegos is the chair. USGS is compiling a database to assess mine sites for critical minerals.

- ❖ The U.S. Department of Justice and the Navajo Nation entered into the Phase 2 Expanded Trust Agreement. The scope of work under this Trust Agreement includes RSEs at 30 AUMs, two water studies, and 15 engineering evaluation/cost analysis, or EE/CA, and removal actions.
- ❖ The Abandoned Uranium Mine Waste (AUMW) subcommittee was established under the existing multiagency Federal Mining Dialogue (FMD) in fall 2022. FMD AUMW subcommittee members consisting of the U.S. Department of Defense (DOD), DOE, DOI, EPA, U.S. Nuclear Regulatory Commission (NRC), and USDA collaborate to identify potential federal lands for disposal of AUM wastes from the Navajo Nation and surrounding areas. The AUMW subcommittee identified limited solutions using all existing authorities, agreed to explore executive actions, and legislative changes that would allow for disposing uranium mine rock on federal lands. The subcommittee has held two workshops to discuss progress with the Navajo Nation, Pueblo of Laguna, Ute Mountain Ute Tribes, and the Four Corners states to discuss potential federal land AUM waste disposal options. A meeting between federal, state, and Tribal partners is scheduled for fall 2024.
- ❖ EPA added the Lukachukai Mountains Mining District in northeastern Arizona to the National Priorities List, or NPL, in March 2024. This is the first Superfund site on the Navajo Nation encompassing 88 AUMs within the same watershed. Many of these mines are covered by the existing Tronox settlement and Cyprus Amax enforcement agreement. However, 11 of them were previously unfunded. Over the next several years, EPA Region 9 will conduct investigations and integrate completed investigations into a remedial investigation as well as follow through with non-time-critical removal actions and time-critical removal actions at AUMs covered by the Tronox settlement. The NPL status will also enable EPA Region 9 to conduct a comprehensive investigation on groundwater and surface water throughout the watershed.
- ❖ In 2023, EPA Region 9 completed cleanup of the Cove Transfer Station in the northern region of the Navajo Nation. About 20,000 yd³ of mine rock located at two transfer stations located within the Cove community was transported and disposed at the Deer Trail Subtitle C landfill in Colorado. In 2024, EPA will complete restoration activities at this site and initiate planning for another time-critical removal action at Mesa V mine site.
- ❖ In 2024, EPA Region 9 plans to complete consent decree negotiations with United Nuclear Corporation/General Electric to clean up the Northeast Church Rock mine site (Eastern Agency), or NECR, which entails removing approximately 1M yd³ of mine rock from the NECR site and consolidating and capping the waste at the United Nuclear Corporation, or UNC, Mill Superfund site in Region 6. Depending on the consent decree negotiations, cleanup is scheduled to begin late 2024 or early 2025.

- ❖ In 2023, EPA Region 9 issued the first cleanup decision for a site in the western region of the Navajo Nation (Charles Huskon No. 12) which will entail on-site closure of about 16,000 yd³ of mine rock in 2025. In 2024, EPA Region 9 proposed cleanup decisions for 10 AUM sites in the Eastern Agency of the Navajo Nation addressing about 2.7M yd³ of mine rock, including the Quivira Mine Site where we are recommending removal of about 1.2M yd³ to a repository currently under design at the Red Rocks Disposal Facility near Thoreau, New Mexico (not yet permitted by the state of New Mexico).
- ❖ Leaving waste on the Navajo Nation (e.g., capping on-site or consolidating in regional repositories) can create a long-term monitoring and maintenance challenge that EPA will attempt to address through different approaches, such as funding Navajo Abandoned Mine Lands Program to stand up a program.
- ❖ EPA Region 9 conducted treatability studies at three Navajo Nation AUMs using ablation technology. This high-pressure water treatment is used to remove uranium and vanadium from mine rock and thereby reduce the volume of waste requiring disposal. Treatability study results will be shared in a report in March 2023.

U.S. Department of Energy

The DRUM program’s 2023 field season began March 6, 2023, and the 2024 field season began March 4, 2024. To date, the DRUM team has conducted verification and validation, known as V&V, work at about 2300 mines on public land, achieving 98% completion of Campaign 1; 90 mines on Tribal land, or 42% completion of Campaign 2; and 40 mines on private lands, or 6% completion of Campaign 3. Specifically, DOE accomplished the following:

- ❖ With partner support from BLM, NPS, USFS, U.S. Bureau of Reclamation, Navajo Nation, and states, DRUM is overcoming its primary challenge obtaining appropriate real estate instruments to get DRUM teams access to mine sites.
- ❖ DRUM teams have adapted V&V efforts to effectively accomplish work across a larger geographic region than has been experienced in the past. Teams have shifted efforts to coordinate and travel to Arizona, Nevada, New Mexico, California, Colorado, Oregon, Washington, Idaho, Montana, Wyoming, North Dakota, and South Dakota.
- ❖ In January 2023, the DRUM program reached the milestone of writing its 2,000th V&V report for the Hal 1 mine. The Hal 1 mine is near Beaver, Utah, on USFS-administered land.
- ❖ In July 2023, LM concurred with a request by Navajo Nation AML to increase field V&Vs from one week per month to every other week, or twice per month. This change necessitated sliding the suspense date for Campaign 1 fieldwork from March 31, 2024, to Dec. 31, 2024.

- ❖ DRUM field teams completed V&V work on NPS land after collaborating with NPS program managers and individual national parks on planning requirements for NEPA documentation, cultural resources management, and access. Planning for safeguarding physical safety hazards in the parks will begin in 2024.
- ❖ Field V&V on BLM-administered land is 99% complete, with 19 mines remaining and 96% completed, and 13 mines remaining on USFS-administered land.
- ❖ DRUM field teams continued work on the Navajo Nation in the northern AUM region and started work in the north central AUM region in April 2024. DRUM field teams completed V&V activities on 84 AUMs on the Navajo Nation since beginning work there in the 2022 field season.

Through the Office of Legacy Management’s cooperative agreements with Colorado Division of Reclamation, Mining, and Safety (DRMS), Utah Abandoned Mine Reclamation Program (AMRP), and Bat Conservation International (BCI) and with the support of FLMAAs, 469 physical safety hazards were safeguarded in Colorado and Utah during the reporting period. To date, 1,085 physical safety hazards have been safeguarded at DRUM sites, accounting for about 17% of known physical hazards.

- ❖ DOE met with EPA Region 6 to discuss the Grants Mining District Five-Year Plan. Federal, state, and Tribal agencies are plan partners, which addresses contamination caused by legacy uranium mining and milling operations in the mining district. The DRUM program will contribute the resources to inventory and safeguard DRUM sites in that mining district.
- ❖ DOE participated in the 2023 National Association of Abandoned Mine Land Programs (NAAML P) conference in Chicago, Illinois, and in the 2024 NAAML P Winter Business Meeting in Santa Fe, New Mexico, to present on DRUM program status, project achievements, and future planned safeguarding work.

DOE continued to form and revise necessary partnership agreements among various federal and state entities to accomplish V&V work and safeguard physical safety hazards such as hazardous mine openings at AUMs. Most notably, DOE continued its cooperative agreement with Bat Conservation International, providing long-term access to the ranging contracting services needed to safeguard mines on public land, including project development, environmental review (including NEPA documentation), design, and construction.

The DRUM program is proceeding well. Table 1 shows the program’s progress to date by state. Notably, the DRUM program has preliminarily investigated more than 36,000 acres of public land with AUMs.

Table 1. Progress of the DRUM Program by State

State	Estimated Number of DRUM Sites ^a	Current DRUM Site Estimate	Field V&V Operations Completed (1/1/2023-6/30/2024)	Field V&V Operations Remaining
Alaska	1	1	0	0
Arizona	413	363	82	112
California	26	23	19	3
Colorado	1539	1243	21	203
Florida	1	0	0	0
Idaho	7	6	1	5
Montana	19	21	5	4
Nevada	24	22	18	4
New Jersey	1	1	0	1
New Mexico	247	225	26	96
North Dakota	14	12	1	9
Oklahoma	2	2	0	2
Oregon	4	3	1	0
Pennsylvania	1	1	0	1
South Dakota	155	138	4	28
Texas	29	29	0	27
Utah	1380	1077	26	51
Washington	17	15	2	12
Wyoming	319	260	53	139
Unknown	26	2	0	0
Totals	4225	3444	259	697

^a Represents the estimated number of DRUM mines per state presented in the 2014 Report to Congress.

The DRUM program assisted FLMA's in safeguarding the immediate hazards posed by physical mine features, while honoring historical, cultural, and ecological values at individual mine sites. These hazards are primarily unprotected open mine entries and subsidence features. Table 2 describes the safeguarding projects performed in 2023-2024 and their associated closure costs.

Table 2. 2023-2024 Safeguarding Projects

State	Project Area	Features Safeguarded	Cooperating Land Management Agency	Total Cost (\$)	Cost Per Feature (\$)
Colorado	Colorado DRMS				
	Spud Patch	49	BLM Tres Rios Field Office	\$239,820	\$4,890
	Bishop Point	21	BLM Tres Rios Field Office	\$113,590	\$5,410
	Bishop Canyon	19	BLM Tres Rios Field Office	\$84,240	\$4,430
	Wedding Bell and Bachelor Draw	45	BLM Tres Rios Field Office	\$152,450	\$3,390
	Rimrock Blues, Starlight, and Fawn Springs	29	BLM Tres Rios Field Office	\$96,100	\$3,310
Utah	Utah AMRP				
	Kane Creek/Brumley Ridge Phase 1	75	BLM Moab Field Office	\$540,830	\$7,210
	East Henry Mountains Phase 1	100	BLM Richfield Field Office	\$377,000	\$3,770
	BCI				
	Yellow Cat	82	BLM Moab Field Office/SITLA	\$443,880	\$5,410
	Manti-La Sal	49	USFS Monticello Ranger District and Moab Ranger District	\$218,050	\$4,450
	Freeport-McMoRan Inc.				
	East Henry Mountains	6	BLM Richfield Field Office	N/A	N/A
Total		475		\$2,265,960	\$4,831

Abbreviations:

AMRP = Abandoned Mine Reclamation Program

BCI = Bat Conservation International

DRMS = Division of Reclamation, Mining, and Safety

SITLA = School and Institutional Trust Lands Administration

Federal Land Management Agencies

U.S. Bureau of Indian Affairs

As a trustee for Tribal mine sites, BIA continued to participate in community outreach efforts, to make sure Tribes are informed and consulted, both formally and informally. BIA monitored the ongoing work at Tribal sites and provided long-term monitoring of institutional controls and completed remedies.

U.S. Bureau of Land Management

BLM continued inventorying, assessing, and cleaning up AUMs on BLM-managed lands. BLM made progress, despite the constraints caused by available funding and the ongoing pandemic, leveraging program funding for contracts and existing agreements with state agencies to continue its response actions at AUMs under its purview. BLM is partnering with DOE so both agencies can leverage resources to collectively perform DRUM program inventory work and safety closures on BLM-managed land.

- ❖ BLM collaborated with DOE to facilitate numerous V&V operations in Colorado and Utah.
- ❖ BLM began working with DOE to review and comment on numerous draft Field Operations Plans (FOPs) for V&V efforts scheduled to start in 2023, including V&V work at the remaining DRUM sites in Arizona, California, Nevada, New Mexico, and Wyoming.
- ❖ BLM coordinated with DOE; the Colorado Division of Reclamation, Mining, and Safety; and Utah's Abandoned Mine Reclamation Program on AUM safeguarding projects in Colorado and Utah (see Table 2).
- ❖ BLM's Colorado State Office continued inventorying non-DOE, non-Freeport-McMoRan Inc. AUMs and, to date, inventoried more than 1400 sites on BLM-managed land throughout western Colorado. Mine features deemed to be extremely high physical safety risks were signed, fenced, or both.
- ❖ BLM's Utah State Office worked with the BLM National Operations Center and its support contractor to review DRUM V&V reports and risk roll-up reports.
- ❖ BLM's Utah State Office worked with EPA Region 8 on time-critical removal actions in the Lisbon Valley region. These removals are part of the Tronox settlement. BLM accomplished all field reconnaissance work in May 2021. BLM is conducting document review and establishing a memorandum of understanding.
- ❖ BLM's Montana/Dakotas State Office posted warning signs at several Pryor Mountains DRUM sites. Polyurethane foam was used to close a subsidence feature the DRUM program identified.

U.S. Forest Service

USFS continued assessing and cleaning up AUMs, commensurate with annual funding and relative project prioritization. Additional funding would permit USFS to conduct a complete AUM inventory and evaluate these sites for their potential environmental impacts. Despite funding constraints and the ongoing pandemic, USFS made incremental progress, including the following:

- ❖ USFS partnered with EPA regions, as well as states and DOE, to leverage agency resources and collectively address AUMs on National Forest System land.
- ❖ USFS has a new AML program manager after having a vacancy for many years. The new program manager is rebuilding the abandoned mine lands group.
- ❖ USFS facilitated agreement with the Manti-La Sal National Forest supervisor to carry out safeguarding projects in the future.
- ❖ USFS began planning for DRUM safety closures in Arapaho and Roosevelt National Forests and Pike-San Isabel National Forests.
- ❖ USFS continued assessing and cleaning up other AUMs on National Forest System land. USFS awarded the contract and started construction for remediation and removal-in-place for the Bluff B mine near Riley Pass, South Dakota.
- ❖ Riley Pass, South Dakota, work is in progress and on schedule. The on-scene coordinator collaborated with DOE to determine sites' V&V needs.

National Park Service

NPS continued to investigate the nature and extent of contamination at the Orphan mine site in Grand Canyon National Park in Arizona using its CERCLA authority. NPS intends to recommend cleanup action for the upper mine area in the near term and address the lower mine area in the future, as park visitors generally can't access them because of fencing and signage (in the upper mine area) and off-trail remoteness (in the lower mine area).

- ❖ NPS entered into an interagency agreement with DOE to facilitate inventory, environmental, and safeguarding activities at DRUM sites. The agreement reflects NPS' natural resource stewardship approach based on the bureau's guiding statutes.
- ❖ Under the interagency agreement, V&V activities have been successfully completed at all FOP-specified parks with DRUM sites within NPS units (Canyonlands National Park in Utah, Capitol Reef National Park in Utah, Glen Canyon National Recreation Area in Arizona and Utah, Bighorn Canyon National Recreation Area in Montana and Wyoming, and Petrified Forest National Park in Arizona).
- ❖ NPS is currently working with Bat Conservation International to conduct wildlife

surveys at mine sites DOE's risk roll-up reports identified as requiring safeguarding.

- ❖ After completing wildlife surveys (FY 2024), NPS will complete site-specific compliance (National Environmental Policy Act [NEPA]/National Historic Preservation Act [NHPA]/Endangered Species Act [ESA]), before recommended closure work is scheduled to begin (FY 2025).

U.S. Department of the Interior Office of Environmental Policy and Compliance

- ❖ DOI established the Abandoned Hardrock Mine Reclamation (AHMR) program as required under IJA Section 40704. IJA authorized \$3 billion to fund the AHMR program but didn't appropriate the funding. DOI received \$5 million in FY 2022 appropriations to initiate program activities that will include a federal program (DOI and USFS) and a grant program for states and Tribes.
- ❖ Through an interagency agreement, U.S. Geological Survey began developing a comprehensive AML database using the USMIN Mineral Deposit Database as a starting point. This effort is being coordinated with DOE's DRUM program, the U.S. Environmental Protection Agency, the Interstate Mining Compact Commission, the National Association of Abandoned Mine Land Programs, and others. DOI is working closely with states and Tribes to structure a grant program similar to that developed for orphaned wells (see below).
- ❖ Under IJA Section 40601, DOI received \$4.677 billion to establish an Orphaned Well Site Plugging, Remediation, and Restoration program to address orphaned wells on federal, state, and Tribal lands. The program distributed \$560 million in initial state grants and \$33 million to federal agencies in DOI and USDA, in addition to releasing Tribal grant guidance following listening sessions and Tribal consultation.

BENEFIT POTENTIAL

Several benefits can be achieved when AUMWG and its partner agencies collectively address the hazards AUMS pose. With effective partnerships and collaboration, AUM cleanup and restoration can provide significant economic, public health, and environmental benefits.

Background

Uranium mining has a long history in the United States. After the Atomic Energy Act of 1946 (42 USC [United States Code] 2011 et seq.), the U.S. Atomic Energy Commission facilitated a mining boom, offering incentives and guaranteed prices as the sole purchaser of uranium. Uranium mines initially opened in the states of Utah, Colorado, New Mexico, and Arizona and then rapidly spread to other states. When mining ventures were no longer economically viable, prospectors abandoned their mines without being subject to the closure and cleanup requirements of present-day regulation. Most abandoned mines have no responsible or solvent party to safeguard or reclaim them, so the federal government, including AUMWG agencies, have undertaken the extensive effort to assess and clean up the mines. There are still

many abandoned mines that may pose significant safety hazards.

Nearly 11% of AUMs are on Tribal lands, and the vast majority of these are on the Navajo Nation. Because radiological risks are not visually obvious, mine rock material was used to construct some homes, and some homes were built directly on top of mine rock.

Benefits

As part of its commitment to finding effective solutions to address the potential threats that abandoned mines pose to human health, safety, and the environment, AUMWG is focusing significant attention on potential future use of these lands and on economic, environmental, and social impacts of reusing the land on neighboring communities. AUMWG is critical to achieving these benefits, which include:

- Reclaiming and reusing thousands of acres of formerly contaminated land.
- Safeguarding historic mining areas for recreational visitation and tourism.
- Providing neighboring communities with new opportunities to grow and prosper.
- Creating, preserving, and restoring land for recreational and ecological purposes.
- Creating and enhancing wildlife habitats.
- Restoring the connection between local communities and the impacted area.
- Maintaining the protective use of the land.
- Sustaining the environment for future generations.

CONCLUSION

AUMWG successfully fostered dialogue among partner agencies, enabled community and stakeholder engagement, and collaborated to address the human health, safety, and environmental challenges AUMs pose. By orchestrating the resources and efforts of multiple federal agencies, the working group helped states and Tribes identify and address high-priority mines in an effective and coordinated way. Acting as one team was essential to the group's overall success.

Notably, the work on the DRUM program is 98% complete for AUMs on public land. Based on the preliminary analysis of data collected from ongoing mine evaluations, concerns regarding physical hazards continue, since they are an immediate threat to humans and wildlife. These hazards mostly consist of unprotected open mine entries, subsidence features, dangerous highwalls, and large unstable structures associated with historic mining operations.

AUMWG partners continued to fulfill their imperative responsibility to protect human health and the environment, focusing their efforts on assessments and response actions, enforcement of responsible party agreements and settlements, and community outreach. The team made great progress, but more is needed.

Finally, as part of its commitment to finding effective solutions to address the potential threats AUMs pose to human health, safety, and the environment, AUMWG paid significant attention to potential future uses of these lands and to economic, environmental, and social impacts of reusing them on neighboring communities. This attention is important for sustaining the environment for future generations.

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PL 99-499. "Superfund Amendments and Reauthorization Act," Public Law.

PL 117-58. "Infrastructure Investment and Jobs Act," Public Law.

APPENDICES

APPENDIX A
Abbreviations List

AEC	U.S. Atomic Energy Commission
AHMR	Abandoned Hardrock Mine Reclamation
AML	abandoned mine lands
AUM	abandoned uranium mine
AUMWG	Abandoned Uranium Mines Working Group
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGULS	Coordination Group for Uranium Legacy Sites
COVID-19	coronavirus disease 2019
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DRUM	Defense-Related Uranium Mines
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FLMA	federal land management agency
FLPMA	Federal Land Policy and Management Act
FOP	Field Operations Plan
FY	fiscal year
IAEA	International Atomic Energy Agency
IJA	Infrastructure Investment and Jobs Act
LM	Office of Legacy Management
NAAML	National Association of Abandoned Mine Land Programs
NAML	Navajo Abandoned Mine Lands Reclamation Department
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NHPA	National Historic Preservation Act
NNEPA	Navajo Nation Environmental Protection Agency
NPL	National Priorities List
NPS	National Park Service
NRC	U.S. Nuclear Regulatory Commission

PL	Public Law
RSE	removal site evaluation
SARA	Superfund Amendments and Reauthorization Act
SMCRA	Surface Mining Control and Reclamation Act
Stat.	<i>Statutes at Large</i>
USC	<i>United States Code</i>
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V&V	verification and validation

APPENDIX B

Agency Authorities

This appendix documents the statutes that provide authority to Abandoned Uranium Mines Working Group partner agencies. It defines the extent of the agencies' powers and responsibilities, which must be consistent with constitutional constraints and legislative intent.

Atomic Energy Act

Title 42 *United States Code* Section 2011 et seq. (42 USC 2011 et seq.) (1954)

This federal law covers development, regulation, and disposal of nuclear materials and facilities in the United States. It was an amendment to the Atomic Energy Act of 1946 and substantially refined certain aspects of the law; these changes included increasing support for the possibility of a civilian nuclear industry. Notably, it made it possible for the government to allow private companies to gain technical information (Restricted Data) about nuclear energy production and the production of fissile materials, allowing for a greater exchange of information with foreign nations as part of President Dwight D. Eisenhower's Atoms for Peace program. It reversed certain provisions in the 1946 law, which had made it impossible to patent processes for generating nuclear energy or fissile materials.

Comprehensive Environmental Response, Compensation, and Liability Act

42 USC 9601 et seq. (1980)

The act provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and the release or threatened release of pollutants and contaminants into the environment. Through CERCLA, the U.S. Environmental Protection Agency was also given authority to require parties responsible for contamination to either clean it up or reimburse the government for EPA-led cleanup work.

While other federal agencies have authority to clean up federal land, EPA is the lead agency for cleaning up private and mixed-ownership sites.

EPA cleans up orphan sites when potentially responsible parties can't be identified or located or when they fail to act. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and other settlements. EPA also recovers costs from financially viable individuals and companies after completing response actions.

EPA is authorized to implement the act in all 50 states and U.S. territories. EPA may undertake Superfund site identification, monitoring, and response activities in coordination with state and Tribal environmental protection or waste management agencies.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499 [PL 99-499]) reauthorized CERCLA to continue cleanup activities around the country. Lawmakers added several site-specific amendments, definition clarifications, and technical requirements to the legislation, including additional enforcement authorities. Also, Title III of SARA authorized

the Emergency Planning and Community Right-to-Know Act.

Under CERCLA, the secretary of the interior has the authority to address hazardous substances, pollutants, and contaminants release or threatened release on or from land under DOI's jurisdiction, custody, or control. The secretary has delegated this authority to bureau directors. In addition, under CERCLA, DOI is designated as a trustee for natural resources and must act as such on the public's behalf.

Federal Land Policy and Management Act

PL 94-579 (1976)

This federal law governs the way the U.S. Forest Service (USFS), the U.S. Bureau of Land Management (BLM), the U.S. Fish and Wildlife Service (USFWS), and the National Park Service (NPS) administers public land. The act phased out homesteading in the United States by repealing preexisting homestead acts. Congress recognized the value of public land, declaring these lands would remain in public ownership. USFS, USFWS, NPS, and BLM are commissioned in the Federal Land Policy and Management Act to allow a variety of uses on their land while simultaneously trying to preserve the natural resources within it. This concept is best summarized by the term "multiple use."

The act defines "multiple use" as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people."

The act addresses topics like land-use planning, land acquisition, fees and payments, federal land administration, range management, and rights-of-way on federal land.

The law specifies objectives and time frames for accomplishing objectives, which contributes to its authority and eliminates the uncertainty around BLM's role in wilderness designation and management.

National Forest Management Act

PL 94-588 (1976)

This federal law is the primary statute governing the administration of national forests and was an amendment to the Forest and Rangeland Renewable Resources Planning Act of 1974 that called for the management of renewable resources on National Forest System land.

The main objectives of the National Forest Management Act, or NFMA, are to require USFS to develop plans for national forests, set standards for timber sales, and create policies to regulate timber harvesting. The objectives purpose is to protect national forests from permanent damage from excessive logging and clear cutting. Congress requires USFS, in conjunction with other appropriate agencies, to thoroughly assess, research, and plan for the

nation's renewable resource use, including current demand, anticipated demands, and environmental and economic impacts.

The USFS Abandoned Mine Lands program uses this act to restore land historic mining activities disturbed. There are about 40,000 abandoned mine sites on National Forest System lands. Of those, 34% were mines with mineral production records.

National Park Service Organic Act

PL 64-235 (1916)

This federal law established the National Park Service, an agency of DOI. NPS, as established by this act, promotes and regulates using federal areas known as national parks, monuments, and reservations in order to conserve scenery, natural and historic objects, and wildlife therein and provide for the enjoyment of the same in such manner and by such means to leave them unimpaired for future generations to enjoy.

Surface Mining Control and Reclamation Act

30 USC 1201 et seq. (1977)

This act provides for cooperation between the secretary of the interior and the states on regulating surface coal-mining operations, abandoned mines acquisition and reclamation, and other purposes.

Surface Mining Control and Reclamation Act, or SMCRA, created two programs: one for regulating active coal mines and a second for reclaiming abandoned mine lands. SMCRA also created the Office of Surface Mining Reclamation and Enforcement, an agency within DOI, to promulgate regulations, fund state regulatory and reclamation efforts, and ensure consistency among state regulatory programs.

Regulating active mines under SMCRA has five major components:

- ❖ **Standards of performance.** SMCRA and its implementing regulations set environmental standards mines must follow while operating and that must be achieved when reclaiming mined land.
- ❖ **Permitting.** SMCRA requires companies obtain permits before conducting surface mining. Permit applications must describe what the pre-mining environmental conditions and land use are, what the proposed mining and reclamation will be, how the mine will meet SMCRA performance standards, and how the land will be used after reclamation is complete. This information is intended to help the government determine whether to allow the mining and set permit requirements that will protect the environment.
- ❖ **Bonding.** SMCRA requires mining companies post a bond that covers the cost of reclaiming the site, ensuring the mining site will be reclaimed even if the company goes out of business or fails to clean up the land for some other reason. The bond isn't released until the mining site has been fully reclaimed and the government has found

the reclamation was successful.

- ❖ **Inspection and enforcement.** SMCRA gives government regulators the authority to inspect mining operations and punish companies that violate SMCRA or an equivalent state statute. Inspectors can issue violation notices, which require operators to correct problems within a certain amount of time, levy fines, or order that mining stop.
- ❖ **Land restrictions.** SMCRA prohibits surface mining altogether on certain lands, such as national parks and wilderness areas. It also allows citizens to challenge proposed surface mining operations on the grounds they'll cause too much environmental harm.

Surface Resources Act

PL 84-167 (1955), 30 USC 611 et seq

This act allows BLM to address abandoned mine openings on active mining claims staked after 1955 as long as the proposed closure work doesn't endanger or materially interfere with actual, established prospecting, mining, or processing operations or reasonably incidental uses. Therefore, BLM is authorized to take the necessary steps to protect public safety and prevent further unnecessary and undue degradation caused by abandoned mines.

U.S. Bureau of Indian Affairs

25 USC 1 et seq. (1969)

Congress gave the U.S. Bureau of Indian Affairs statutory authority by the act of July 9, 1832, Volume 4 *Statutes at Large* page 564 (4 Stat. 564). In 1849, BIA was transferred to the newly created U.S. Department of the Interior (DOI). DOI adopted the agency's name on Sept. 17, 1947. BIA carries out its core mission to serve 574 federally recognized Tribes through four offices. The Office of Indian Services operates BIA's general assistance, disaster relief, child welfare, Tribal government, Indian Self-Determination, and Indian Reservation Roads programs. The Office of Justice Services directly operates or funds law enforcement, Tribal courts, and detention facilities on federal Tribal lands. The Office of Trust Services works with Tribes and individual American Indians and Alaska Natives in the management of their trust lands, assets, and resources. Finally, the Office of Field Operations oversees 12 regional offices and 83 agencies, which carry out the bureau's mission at the Tribal level.

