Overview of the Bonanza 2, 3, 5, and 6 Mine (LM ID 6004) Gateway Field Operations Plan

DEFENSE-RELATED URANIUM MINES ANNUAL REPORT

January 1 - December 31

2019

Table of Contents

Purpose 3

Background 3

Program Objectives, Scope, and Methods 3

Summary of DRUM Projects 4

Programmatic Accomplishments 12

Risk Screening 15

Strategic Partnerships 15

2020 Planned Activities 16

Program Plans 17

Acronym List 18

Additional Information 19

References 19

Corvusite Mine (LM ID 5950)
Corvusite Mine adits 1 and 2; Gateway Field Operations Plan

Purpose

The purpose of this document is to present the 2019 annual report for the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Defense-Related Uranium Mines (DRUM) Program. It provides details on 2019 program activities and accomplishments, project planning for 2020, and an updated program timeline. Additional information on the program is presented in other documents available through the contact information provided at the end of this report.

I Background

The 2014 *Defense-Related Uranium Mines Report to Congress* (DOE 2014) (Report to Congress) identified 4225 purchase records in 19 states revealing an unknown magnitude of liability from a unique set of abandoned uranium mines in the United States. These mines provided uranium ore to the U.S. Atomic Energy Commission (AEC) for defense-related activities that occurred between 1947 and 1970. In response to this Report to Congress, LM initiated DRUM Campaign 1 in 2017 to commence verification and validation (V&V) activities of existing mine information and collect screening level site-specific data at approximately 2500 legacy mines located on public land administered by federal and state agencies. Campaign 2 is scheduled to commence field V&V work in fiscal year (FY) 2023 and will assess DRUM mines on tribal land. Campaign 3, which will address DRUM mines on private property, is scheduled to begin field V&V work in FY 2024.

II Program Objectives, Scope, and Methods

The DRUM Program's mission is to identify DRUM sites that pose unacceptable risks to human health and the environment and improve strategies for allocation of government resources to address these risks. It relies on the integration of LM expertise with that of land management, regulatory, and state, and tribal agencies (known as partner agencies). This one-government approach optimizes the benefit to the government by leveraging resources to expedite the reduction of risk to human health and the environment and supports the prioritization of sites for safeguarding.

The DRUM Program supports LM's strategic goal of "protecting human health and the environment" (Goal 1), and its strategic objective to "address the environmental legacy of defense-related uranium mining and milling sites" (DOE 2016).

In support of these goals, the objectives of the DRUM Program are to:

1. Share existing information and collect site-specific data at each mine to identify physical safety hazards or the potential for the release of contaminants.
2. Perform program-specific risk scoring and ranking of these mine hazards.
3. Improve the data quality and content of the DRUM Program database and partner agency databases.
4. Exchange program results and information with federal, tribal, and state governments.
5. Work with partner agencies to leverage resources to safeguard mines with priority hazards.

The V&V process is composed of three sequential steps: (1) reconciliation; (2) field inventory and environmental sampling; and (3) technical report preparation. These comprise the scope and methods utilized for the V&V process to achieve program objectives.

In the reconciliation step, available data are reviewed to assess the location, ownership, and land status of the mine. This includes reviewing AEC ore purchase records, company records, available mine maps, and federal and private libraries and collections. Typical challenges encountered during reconciliation include inaccurate location information, duplicate records, multiple mines listed under one record, and missing records. In some cases, mine locations remain in an unknown status until additional data are uncovered. The reconciliation process ensures that the most accurate location data are available to field teams before conducting field validation activities. As mines in designated geographic areas are reconciled, they are compiled into project areas that are used by land management agencies and field teams to coordinate field activities.

In the field inventory and environmental sampling step, field teams are deployed to locate the mine site and map the existing features (e.g., adits, shafts, structures, waste rock piles). These activities include describing physical mine conditions, identifying mining-related features, assessing the physical hazards of each feature, evaluating ecological and environmental hazards, and assessing the ease of public access to the mine and signs of recent recreational use. Environmental samples are collected to determine the presence of selected radionuclides and chemicals in waste rock, soil, sediment shed areas, and surface water when present. In addition, environmental sampling includes performing gamma radiation surveys of the disturbed area of the mine. Field data and observations are used to perform risk rankings for each mine. Data are electronically collected and recorded and undergo a rigorous quality assurance/quality control process before being uploaded into the DRUM Program database.

In the final step, V&V reports are developed for each mine. Each report summarizes the V&V efforts that (1) confirmed the current conditions and location of the mine; (2) recorded information associated with mine features, such as adits, shafts, and waste rock piles; and (3) provided the primary hazard rankings for physical hazards and potential risks to human health and the environment. Additional factors that influence risk rankings, such as current ecology and ease of public access, are included in the report.

III Summary of DRUM Projects

This section presents a summary of 2019 program activities and accomplishments. DRUM teams completed field visits at 343 mine locations in 2019. In addition, 228 records were removed from the database during the reconciliation process since they were redundant records of the same mine (i.e., duplicate records). A summary of mine reconciliation and field verification and validation activities is presented in Table 1.

Table 1. Summary of Verification and Validation Activities

State	Duplicates Removed[a]		Field V&V Complete[b]		Total V&V Complete[c]	
	2019	Project to Date	2019	Project to Date	2019	Project to Date
Colorado	53	292	64	307	117	599
Utah	128	338	211	444	339	782
Arizona	8	11	-	-	8	11
Wyoming	-	77	38	38	38	115
New Mexico	-	41	4	61	4	102
South Dakota	26	26	26	26	52	52
Texas	-	1	-	-	-	1
California	4	4	-	-	4	4
Nevada	2	2	-	-	2	2
Montana	-	4	-	-	-	4
Other States[d]	7	7	-	-	7	7
Total	228	803	343	876	571	1679

Notes:

[a] **Duplicates Removed** is the process of eliminating redundant (duplicate) records from the DRUM database, when more than one record references the same mine. Non-DRUM sites, when removed from the database, are included in the count of duplicate records. In 2019, 1096 mine records were reviewed; 228 of these (21%) were duplicate records. Since program inception, 3438 mine records have been reviewed; 803 of these (23%) were duplicate records.

[b] **Field V&V Complete** is the number of mine site visits accomplished.

[c] **Total V&V Complete** is the number of field V&V completed added to the number of duplicate mines eliminated from the database.

[d] **Other States** include North Dakota, Idaho, Oregon, Oklahoma, Alaska, Florida, New Jersey, and Pennsylvania.

Lessons learned from the 2018 field season led to improvements in field inventory methodology and refinements to mine V&V protocols to ensure consistency in application of program data collection standards. The *Defense-Related Uranium Mines Verification and Validation Work Plan* (April 2019) (V&V Work Plan) was updated to incorporate these changes.

A fifth field team was hired and trained in 2019. The addition of a fifth field team was a risk-mitigation strategy that increased the number of field V&V evaluations that could be completed while maintaining the highest data quality and safety standards. Two technical writers were also staffed, which increased the number of mine reports that could be completed, keeping pace with the field teams' output.

Field V&V operations are organized into logical project areas. The project areas are termed Field Operations Plan (FOP) areas for ease of reference. The following is a summary of the status of FOP activities by state.

Colorado

Uncompahgre Field Office (UFO) FOP: This project area is in southwestern Colorado. It includes mines on U.S. Bureau of Land Management (BLM)–administered land, mixed-ownership land, and private property. Field V&V work on public property, except for those mines located on DOE Uranium Leasing Program (ULP) tracts, is complete in this project area. No field activities occurred during the 2019 field season. Field activities at mines located on ULP tracts may be resumed in 2020. BLM anticipates safeguarding 25 features inventoried during previous field V&V efforts.

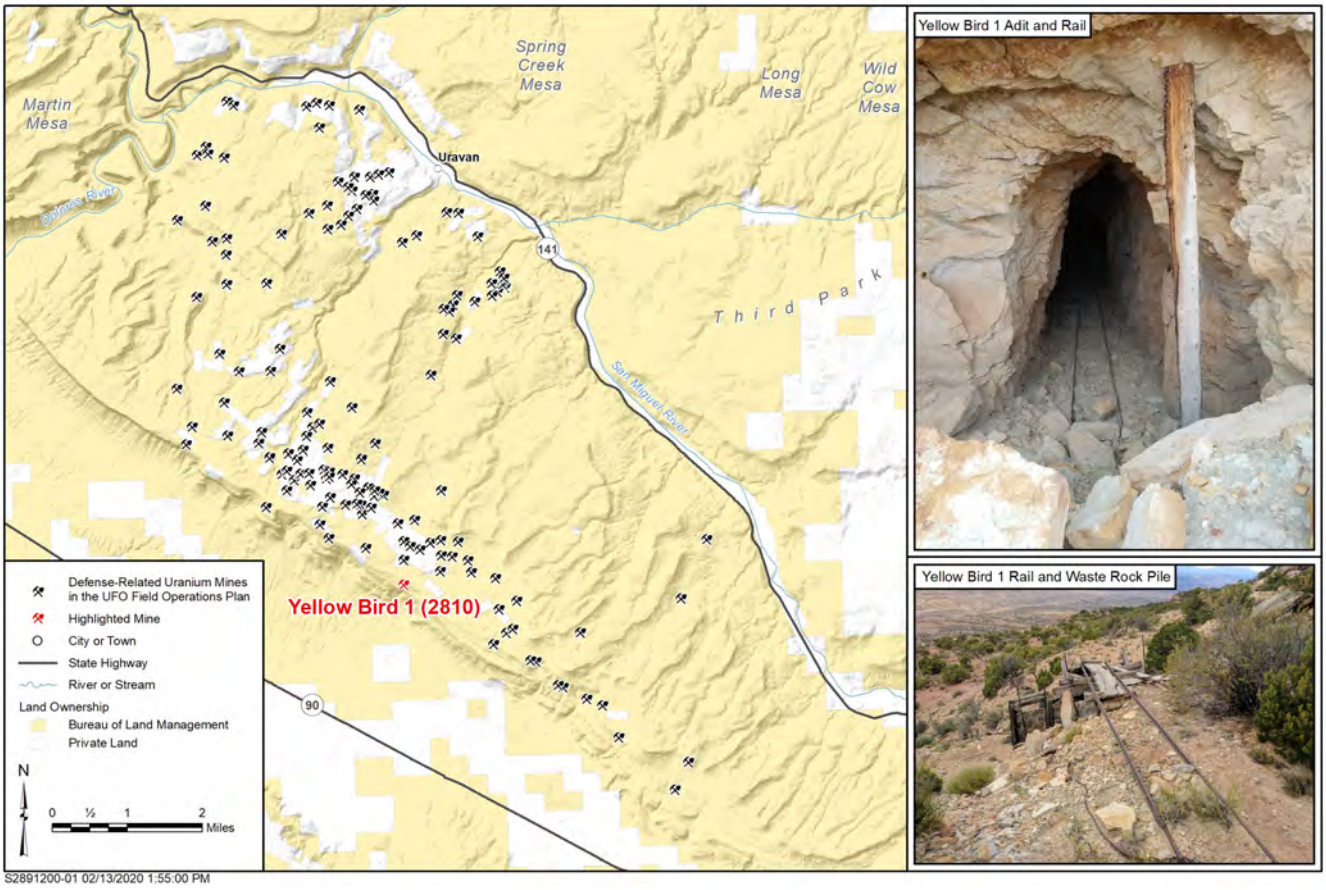

Figure 1. Map and Photos, Yellow Bird Number 1 mine; Uncompahgre Field Office FOP

Arapaho-Roosevelt National Forest FOP: This project area is in north-central Colorado. It includes mines on U.S. Forest Service (USFS)–administered land in the Arapaho-Roosevelt National Forest, BLM-administered land, public lands administered by the State of Colorado, Boulder County Parks & Open Space land, mixed-ownership land, and private property. Field activities are substantially complete in this project area. Several of the hazardous mine features inventoried during field V&V work are scheduled to be safeguarded by the Colorado Division of Reclamation, Mining, and Safety (DRMS) in 2020.

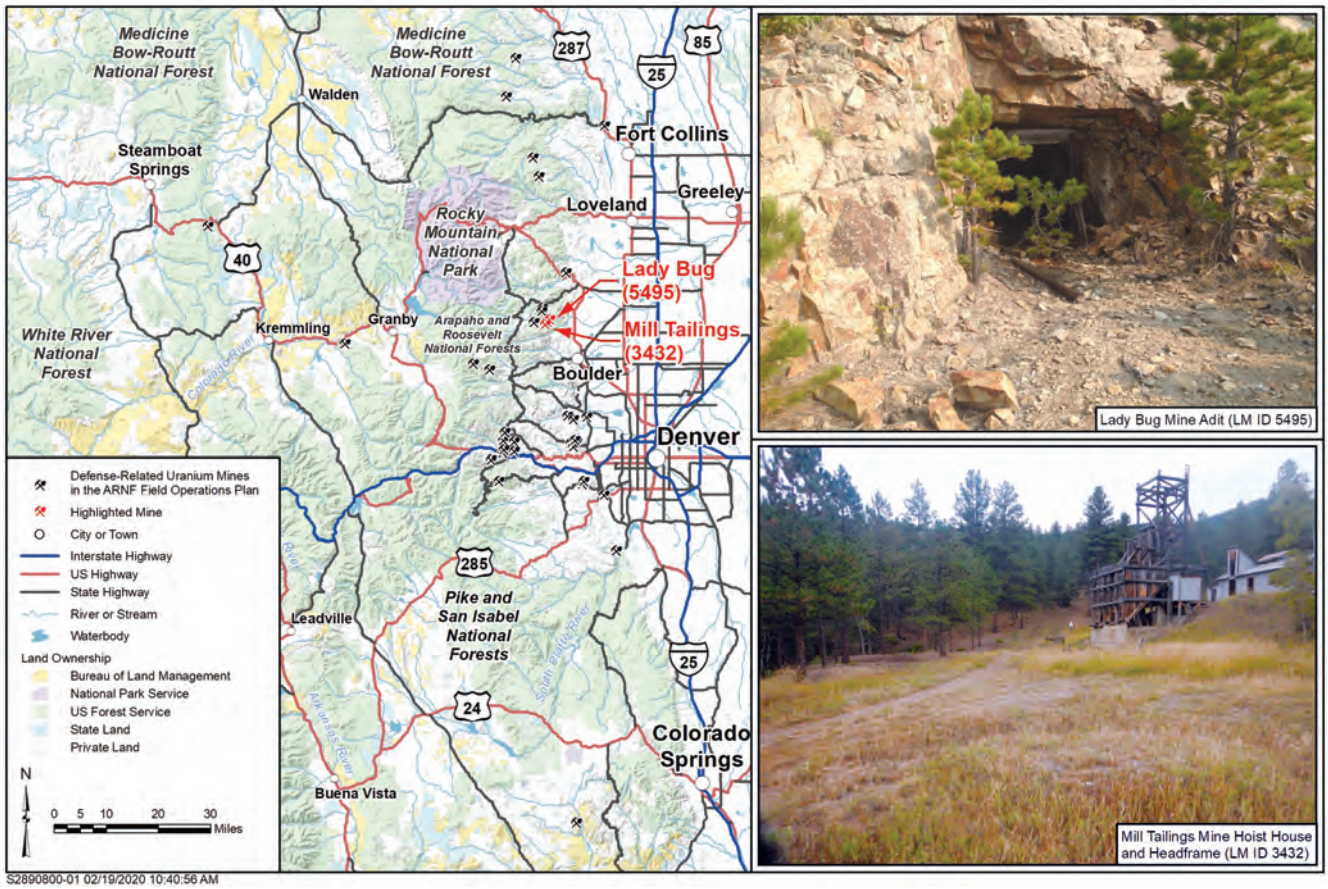

Figure 2. Map and photos Lady Bug mine adit; Mill Tailings mine headframe; Arapaho-Roosevelt National Forest FOP

USFS Region 2 and Statewide Colorado FOP: This project area generally consists of areas in Colorado outside of the Uravan Mineral Belt and the northern Front Range. It includes mines on BLM-administered land, USFS-administered land, public lands administered by the State of Colorado, U.S. Department of Defense–administered land, mixed-ownership land, and private property. Field activities have been completed at approximately three quarters of the mines located on publicly administered lands in this project area. Access to the remaining public mines is limited due to seasonal weather conditions at these high-elevation mines. These mines will be visited as ground and weather conditions permit in 2020. Several of the hazardous mine features inventoried in Pike National Forest during field V&V work are scheduled to be safeguarded by Colorado DRMS in 2020.

Northern Montrose County FOP: This project area is in southwestern Colorado. It includes mines on BLM-administered land, mixed-ownership land, and private property. Field activities on public lands are complete.

Gateway FOP: This project area is in southwestern Colorado near the UFO FOP project area. It includes mines on BLM-administered land, mixed-ownership land, and private property. A significant number of field visits are planned for this area in 2020.

Pilot Mines FOP: This project area covers portions of western Colorado and eastern Utah. It includes mines in the Bull Canyon, Moab, Paradox, Thompson, and Uravan Mining Districts of Colorado and Utah, where mines are found on public land managed by BLM, USFS in the Manti-La Sal National Forest, and on private land. The mines included in this FOP are those where the initial DRUM procedures were evaluated and refined in 2016 and early 2017. As a result, the initial data collection techniques were not comparable to those subsequently used for other DRUM mines. The pilot mines were revisited, and field V&V activities were completed at all but one of the pilot mines in 2019 in order to ensure that all DRUM Program mines are evaluated using the same dataset criteria. The remaining mine will be revisited in 2020.

New Mexico

Grants FOP: This project area is in the Grants Mining District along the south edge of the San Juan Basin in west-central New Mexico. It includes mines on BLM-administered land, USFS-administered land, public lands administered by the State of New Mexico, mixed-ownership land, and private property. Field activities on public lands are substantially complete in this project area.

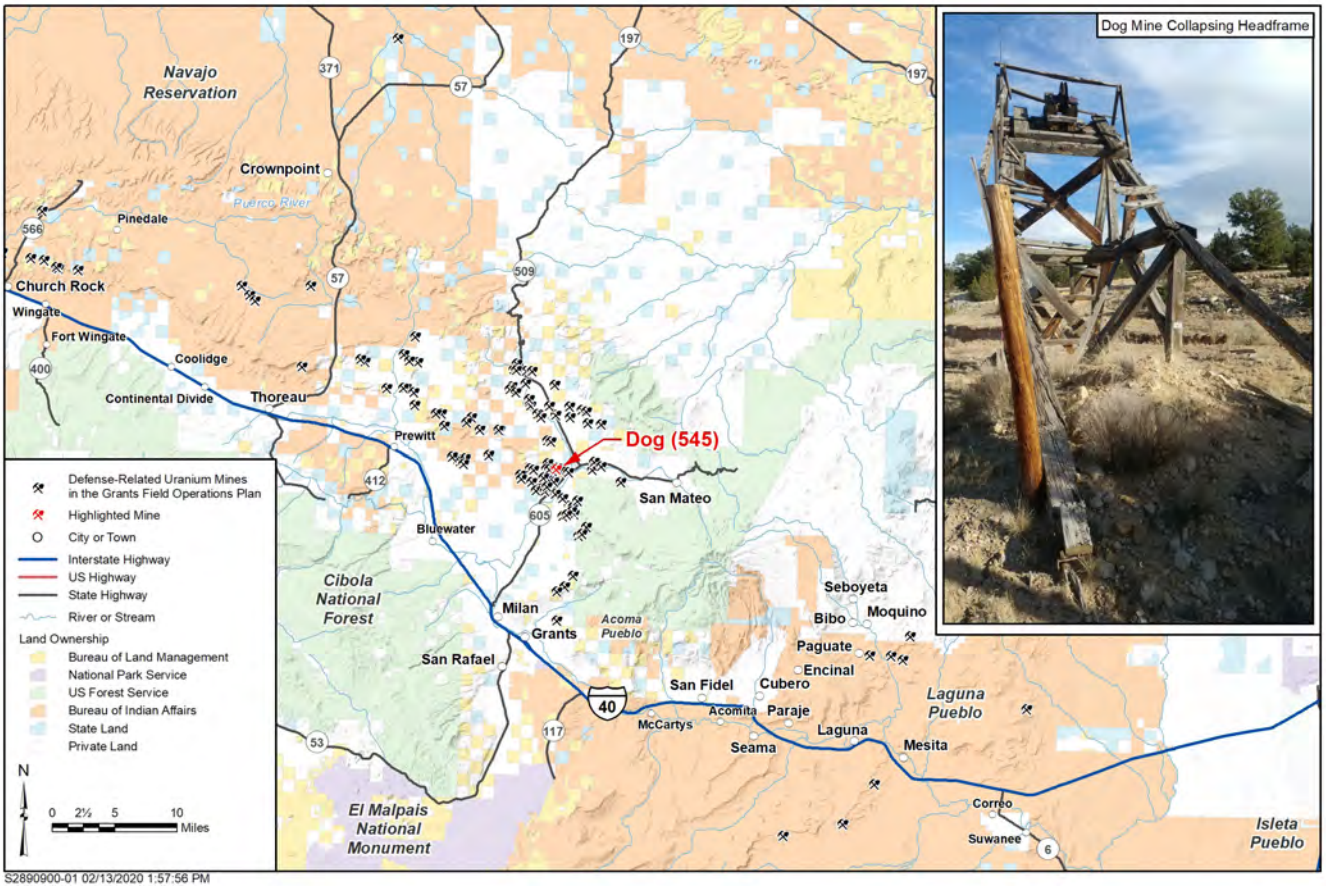

Figure 3. Map and photo, Dog mine collapsing headframe; Grants FOP

New Mexico Statewide FOP: This project area consists of areas in New Mexico outside of the Grants Mining District. It includes mines on BLM-administered land, USFS-administered land, public lands administered by the State of New Mexico, U.S. Fish and Wildlife Service–administered land, mixed-ownership land, and private property. Field activities on public lands are substantially complete in this project area. Access issues need to be resolved before field work on the remaining mines located on public lands can be completed.

Utah

Thompson Phases 1 and 2 FOPs: These combined project areas are in east-central Utah in and near the Yellow Cat Mining District, north of Arches National Park. They include mines on BLM-administered land and public lands administered by the State of Utah. Field activities on public lands are complete in these project areas.

Red, White, Fry Canyons and Deer Flat Districts FOP: This project area is in southeastern Utah. It includes mines on BLM-administered land, USFS-administered land, public lands administered by the State of Utah, and mixed-ownership land. Field activities on public property are complete in this project area. In the fall of 2019, BLM in conjunction with the Utah Abandoned Mine Reclamation Program completed safeguarding of 60 hazardous mine entries located on DRUM sites in Red and Fry Canyons. More safeguards are anticipated to be constructed in the spring of 2020 at White Canyon and the following fall at nearby Deer Flat Mining District.

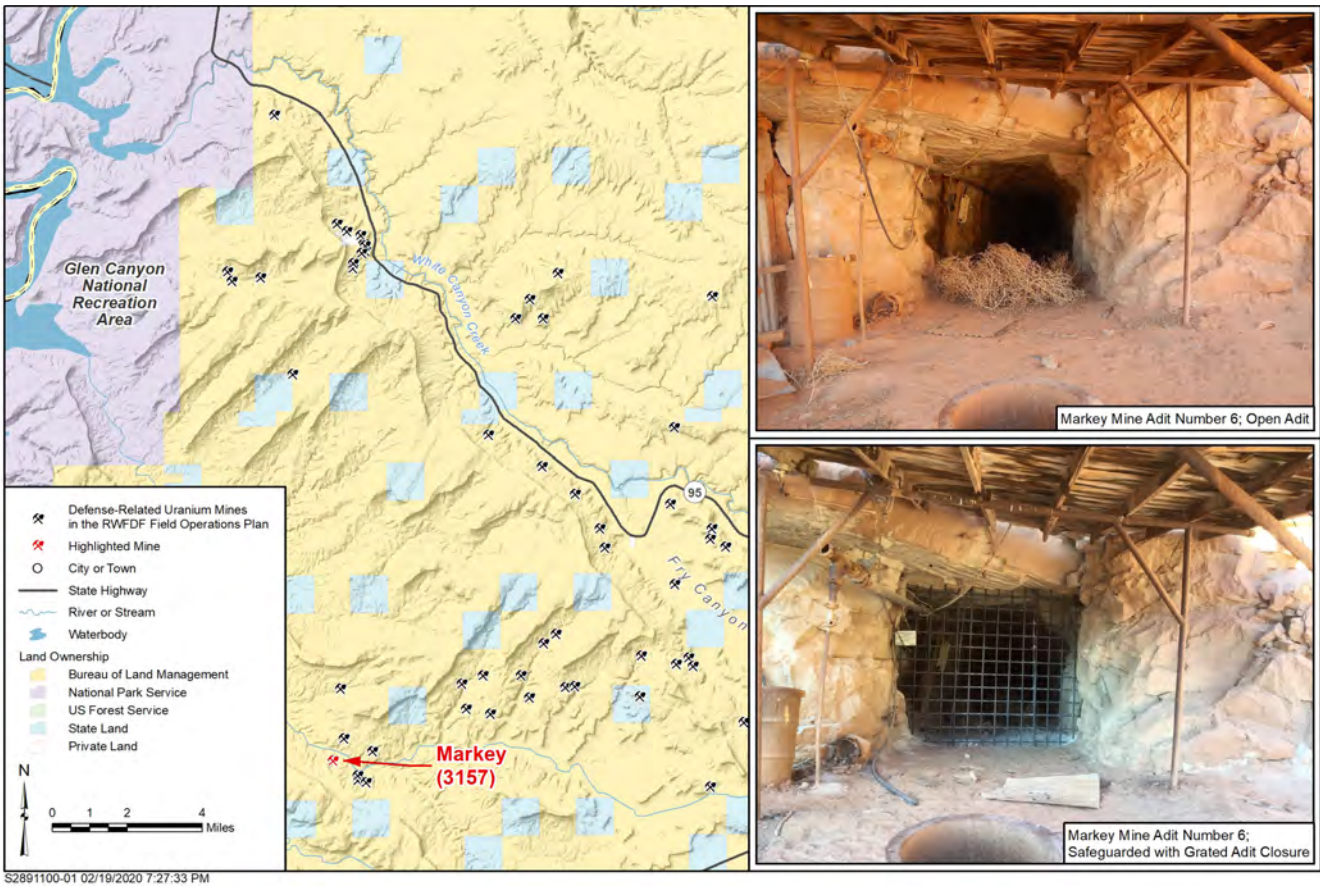

Figure 4. Map with before and after safeguard construction photos of Markey mine adit number 6; Red, White, Fry Canyons and Deer Flat Districts FOP

Buckmaster Draw FOP: This project area is in east-central Utah, approximately 15 miles west of the city of Green River, Utah. It includes mines on BLM-administered land and mixed-ownership land. Field activities are complete in this project area.

Manti-La Sal National Forest FOP: This project area is in southeast Utah. It includes mines on USFS-administered lands in the Moab and Monticello Ranger Districts, adjacent BLM-administered lands, public lands administered by the State of Utah, and mixed-ownership land. Field activities are substantially complete in this project area. Several mines remain to be visited as a result of updates to reconciled locations and mine access limitations. Additional field activities are planned for 2020.

Moab Mining District FOP: This project area is in southeast Utah, generally near Moab, Utah. V&V activities are being conducted on mines located on BLM-administered land, public lands administered by the State of Utah, mixed-ownership land, and private property. Field activities on public lands are substantially complete in this project area. However, additional field activities are planned in 2020.

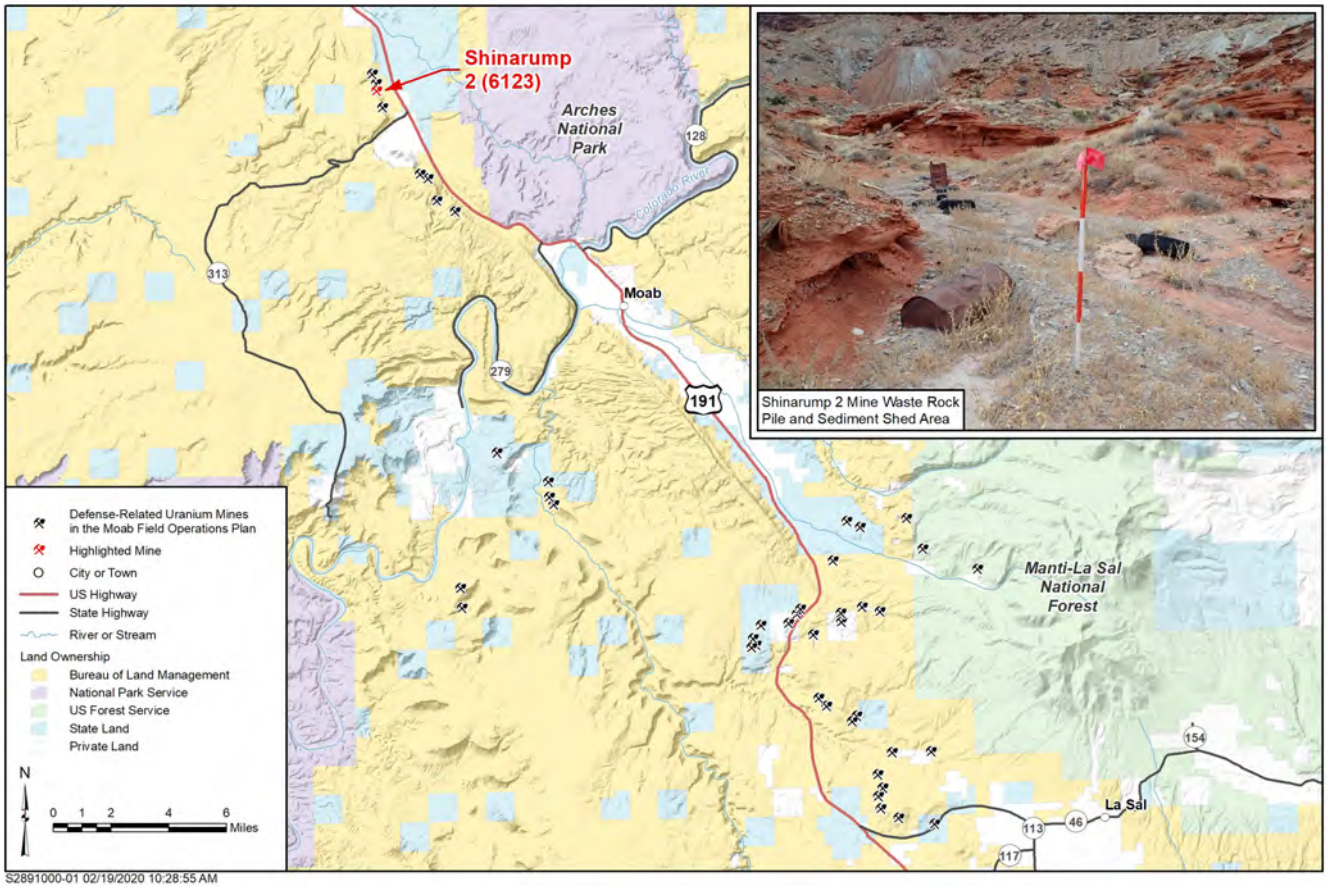

Figure 5. Map and photo, Shinarump 2 mine; Moab Mining District FOP

San Rafael FOP: This project area is in east-central Utah, west of the city of Green River, Utah. It includes mines on BLM-administered land, public lands administered by the State of Utah, and mixed-ownership land. Field activities are substantially complete in this project area. Field work in this FOP area is limited to the spring and fall due to the intense desert heat in the summer. Additional field activities are planned for 2020.

Wyoming

Wyoming Public Lands FOP:
This project area encompasses mines in Wyoming, including those in the Wind River/Bighorn Basin District, the High Plains District, and the High Desert District. The project area includes mines on BLM-administered land, public lands administered by the State of Wyoming, and mixed-ownership properties. Field activities in Wyoming are approximately one quarter complete. Some mines in Wyoming, particularly many of those situated in the Gas Hills Mining District, are very large in size. Due to the large areas of land occupied by these mines, innovative data collection techniques are being considered. The use of airborne technology for gamma radiation surveys, anticipated to be implemented in 2020, is one innovative technique which may be utilized for the purpose of optimizing sampling strategies for these larger sites. The distribution of mines in Wyoming are presented in Figure 6.

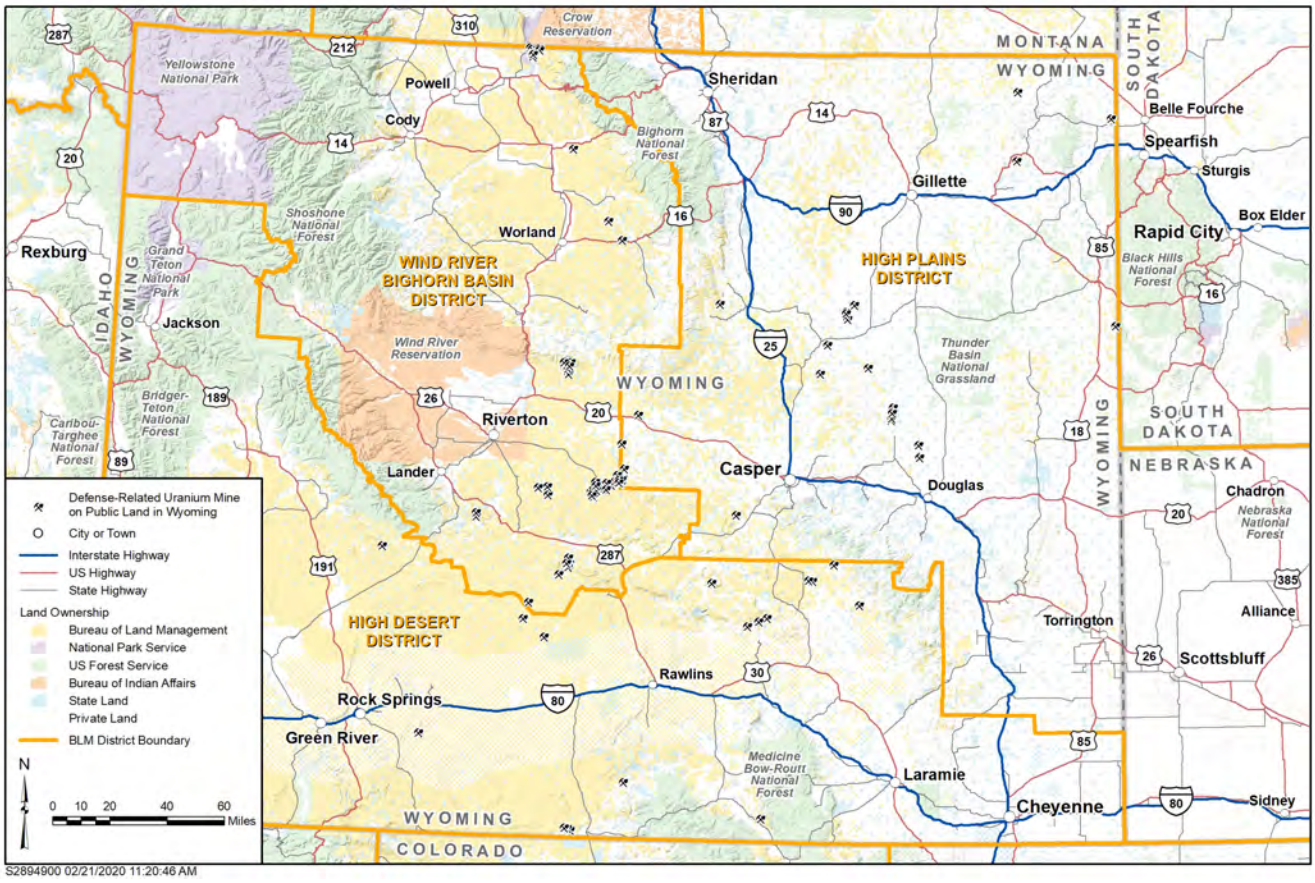

Figure 6. Defense-Related Uranium Mines on Public Lands in Wyoming

Montana, North Dakota and South Dakota

Black Hills and Northern Rockies FOP: This project area is along the southwest margin of the Black Hills Mining District in southwestern South Dakota, the northwest corner of South Dakota, the southwest corner of North Dakota, and the southern portion of Montana. It includes mines on USFS-administered lands, BLM-administered land, public lands administered by the State of North Dakota, and mixed-ownership properties. USFS was very helpful in logistically supporting field teams by providing secure storage for the expensive field equipment. Field activities began in 2019 and are anticipated to resume in 2021.

IV Programmatic Accomplishments

In 2019, the program experienced a banner year due to the concerted efforts of the entire DRUM team (Figure 7). Everyone played an important part in the program's success. Every facet of the program, including management, reconciliation, field and report staff, data and records management, environmental, safety, health and quality assurance, stakeholder engagement, business services (e.g., technical editing), and project services (e.g., analytical laboratory) contributed to the program's success. The DRUM team has essentially built a "center of excellence" that provides thoughtful leadership, best practices and expertise, strategic partnerships and meaningful engagement, research, support, and training for the inventory, assessment, and safeguarding of abandoned defense-related uranium mines.

Figure 7. The DRUM Team

The following programmatic activities were accomplished in calendar year 2019:

- January, 2019:
  - Assisted the U.S. Environmental Protection Agency (EPA) with a National Priorities List determination by identifying DRUM sites within the San Mateo Creek Basin, which is located near Grants, New Mexico. There are 75 mines within the boundary and 14 mines within five miles of the boundary.
  - Assisted the Denver Water Board by locating DRUM sites within the watershed basins for the Colorado River headwaters and South Platte River. There are 63 mines located in these two basins.
  - To provide assistance to the USFS, LM obtained an agreement with Umetco Minerals Corporation to access eight patented claims and one mill site in Utah. This allowed for V&V activities to be completed on these private properties which helped advance USFS decision-making processes.
- February, 2019:
  - Created new collaborative partnerships with various federal agencies including the U.S. Department of Defense and the Black Hills National Forest.
  - Presented a technical briefing and program overview to the USFS representatives in South Dakota.

- March 2019:
  - Completed environmental reviews enabling the performance of V&V activities in Colorado, New Mexico, Wyoming, Utah, and South Dakota.
  - Hosted a meeting of program partners (USFS, BLM, National Park Service [NPS], state Abandoned Mine Land [AML] programs) for the purposes of reporting program status, describing field activities, and explaining the risk ranking and concurrence methodologies.
  - Substantially completed the pilot mines FOP. These mines are located in Colorado and Utah (51 mines) on land administered by BLM and USFS in the Manti-La Sal National Forest. These mines were initially visited during the development stages of the DRUM Program in 2016 and 2017. Since then, inventory, sampling, and other investigative techniques were standardized. Because the criteria of evaluation have evolved substantially since the initial site visits, V&V of these mines is being accomplished according to current V&V Work Plan standards.
- April 2019:
  - Completed a revision of the V&V Work Plan and conducted extensive staff training to ensure that all data are collected and collated efficiently, effectively, and consistently.
  - Assisted the EPA in determining the number of DRUM sites located within the Navajo Nation and the number of DRUM sites located one mile or less outside of the Navajo Nation boundary which are not being addressed under a settlement agreement (e.g., the Tronox Incorporated Bankruptcy Settlement). There are 356 mines meeting this criterion.
- June, 2019:
  - Presented a technical briefing and program overview to the Wyoming Department of Environmental Quality and the BLM Wyoming State Office and Lander Field Office prior to initiating V&V activities in Wyoming. BLM personnel accompanied DRUM teams in the field to observe field data collection techniques.
  - Prepared the first risk roll-up report for 61 mines located on land managed by BLM's Uncompahgre Field Office in Colorado.
  - LM assumed the Chair of the Abandoned Uranium Mines Working Group (AUMWG) from the BLM New Mexico State Office, which had been temporarily acting in this position. AUMWG is a consortium of federal agencies working together to address issues presented by abandoned uranium mines nationwide.
  - Added a fifth field team to conduct inventory and environmental sampling of mine sites. The existing field teams were restructured with a mix of experienced and new team members. Provided extensive training which included mentoring and field demonstrations of inventory and sampling techniques.
- August, 2019:
  - Added technical report staff to ensure report writing capabilities are commensurate with field inventory and sampling work.
  - Prepared the risk roll-up report for 15 mines located in the Arapaho-Roosevelt National Forest in Colorado. The Forest Supervisor provided concurrence on the ranking of the physical hazards and approval for DOE to safeguard these physical safety hazards.

- Presented a technical paper at the Southwest Partnership meeting in Glenwood Springs, Colorado. The Southwest Partnership is a consortium of southwestern federal, state, and non-governmental organization abandoned mine land programs dedicated to the transfer of technical reclamation-related information.
- Prepared the risk roll-up report for 20 mines located in the Red Canyon Locality on land managed by BLM's Monticello Field Office in Utah.

- September, 2019:
  - LM entered a national-level, non-funded Interagency Agreement (IAA) with USFS to conduct activities associated with physical hazard safeguards at DRUM sites located on USFS-administered land.
  - Presented a paper at the National Association of Abandoned Mine Land Programs annual meeting in Pittsburgh, Pennsylvania. The association provides a forum to address current issues, discuss common problems, and share new technologies regarding the reclamation of abandoned mine lands.
  - Presented a technical paper at the Naturally Occurring Radioactive Material IX Symposium. LM joined industry, scientists, regulators, and other stakeholders to discuss naturally occurring radioactive material.
  - Prepared the risk roll-up report for 5 mines located in the Pike and San Isabel National Forests in Colorado. The Forest Supervisor provided concurrence on the ranking of the physical hazards and approval for DOE to safeguard these physical safety hazards.
  - Completed environmental reviews enabling the performance of V&V activities in Arizona, Montana, and North Dakota.
- October 2019:
  - Presented an overview of the DRUM Program to more than 80 Science, Technology, Engineering, Arts, and Mathematics students (fourth and fifth graders) at Tope Elementary School in Grand Junction, Colorado.
  - Prepared the risk roll-up report for 22 mines located in the Grants Mining District on land managed by the BLM Farmington and Rio Puerco Field Offices in New Mexico.
  - Director and DRUM Program staff traveled to Chemnitz, Germany, to collaborate with international colleagues on the long-term stewardship of legacy sites. The group participated in the Wismut International Mining Symposium (WISSYM) and a concurrent International Atomic Energy Agency Uranium Mining Remediation Exchange Group (UMREG) meeting. WISSYM allows attendees to share their diverse experiences in remediation and their strategies for achieving a sustainable future at legacy sites. During the UMREG meeting, LM discussed the implications of oil and gas activities (particularly hydraulic fracturing near LM disposal sites) and presented an overview of the DRUM Program, its accomplishments, future goals, and the program's risk-screening process for abandoned uranium mines.
- November, 2019:
  - The AUMWG met in Denver, Colorado. LM, Chair of the AUMWG, presented technical information regarding the DRUM Program at the meeting.

  - Prepared the risk roll-up report for 20 mines located in Northern Montrose County, Carpenter Flats Locality, on land managed by BLM's Uncompahgre Field Office in Colorado.
  - Supported Colorado DRMS planning activities for safeguarding physical hazards in Bull Canyon Mining District on land managed by BLM's Tres Rios Field Office in Colorado.
  - Prepared the risk roll-up report for 20 mines located in the White River National Forest in Colorado.
  - Signed an IAA with NPS for V&V and safeguarding activities on NPS-administered land.
- Remarkably, DRUM field activities have been safely conducted including over 264,000 accident- free miles driven.

V Risk Screening

To date, program results indicate that physical hazards (e.g., open shafts and adits) at the mines pose the greatest risk to the public, with roughly 25% of the mines ranked "high" for physical hazards. This suggests the need for a future safeguarding action to mitigate the risk presented by these features. Over 55% of the mines ranked "low" or "none" for physical risk. These estimates represent mining-related physical hazards associated with extraction operations. Other hazardous features, such as structures, which have previously been included in evaluations of physical risks, were not considered. However, LM will address the handling of structures individually with each land management agency, since each agency tends to address these differently, if at all.

Mine reports are prepared for each mine, and risk-based summaries are prepared for a group of mines in the same area so land management agencies can set priorities for that region and develop potential physical hazard safeguarding projects.

VI Strategic Partnerships

LM continues to maintain and develop new collaborative partnerships with BLM, USFS, and the States of Colorado, New Mexico, South Dakota, Utah, and Wyoming. In 2019, LM executed an IAA with NPS to accomplish reconciliation, access, and inventory of DRUM sites on NPS-managed land. LM entered a national-level, non-funded IAA with USFS to conduct activities associated with safeguarding physical safety hazards at DRUM sites located on USFS-managed land. LM also collaborated with EPA Regions 6 and 9 on program assessment methods and progress.

Collaboration with a multitude of federal and state entities on the DRUM Program supports a one-government approach with financial agreements that provide access to agency expertise involving managing abandoned mines on public lands and critical input into work plans, schedules, data reviews, conclusions, and safeguarding projects. State AML programs in Colorado, New Mexico, and Utah have been used to inventory private property intermixed with public land and provide valuable planning information needed to support the DRUM Program.

VII 2020 Planned Activities

LM will be nearly finished with Campaign 1 by the end of FY 2022. Reconciliation of mine locations and plans for field visits are currently on schedule. LM will pursue expanding its partnerships with other states and agencies for field activities scheduled through 2022. Included in the implementation of Campaign 1 is LM's plan to leverage resources to assist partner agencies in addressing priority physical hazards that are identified by the program. Through a process of collaboration and concurrence, LM and partner agencies will determine the priority and optimize available resources for safeguarding of identified physical hazards.

Development of Campaign 2, which will address DRUM sites located on tribal land, will be integrated into Campaign 1 starting with tribal outreach in FY 2021. Inter-agency collaboration for Campaign 2 will be designed to augment the ongoing Abandoned Uranium Mine programs of partner agencies with responsibility for these lands (e.g., EPA, Bureau of Indian Affairs, and tribal AML programs).

The field schedule for 2020 has field teams deployed to several locations over the course of the field season, which lasts from March through December. The teams are scheduled to inventory and sample DRUM sites at:

- Bull Canyon Mining District, Colorado
- Gateway Mining District, Colorado
- Henry Mountain Mining District, Utah
- Manti-La Sal National Forest, Utah
- Moab Mining District, Utah
- Monticello Mining District, Utah
- San Rafael Mining District, Utah
- ULP tracts in Colorado
- USFS Region 2 and statewide, Colorado

Figure 8. Abandoned uranium mine shaft with ladder, San Rafael Mining District

The field teams are poised to complete V&V activities on over 500 mines in calendar year 2020. For each project, a FOP will provide coordination instructions to the teams for the inventory and environmental sampling activities so that field work is conducted efficiently. The FOP conveys to LM, the Legacy Management Support (LMS) contractor, and partner agencies information that is pertinent to the V&V activities being undertaken at the specific project area. Also, contingencies are in place to ensure that field teams always have a DRUM site to inventory and assess. Although a field team may be impacted by weather (e.g., late seasonal snow) or a natural disaster (e.g., smoke from a wildland fire), they will have other options allowing them to safely continue field work.

VIII Program Plans

The activities performed by the DRUM Program are covered under multiple plans that provide specific guidance and direction in the performance of a task or project activity. These plans are the *Defense-Related Uranium Mines Program Management Plan* (LMS/DRM/S15809) (Program Management Plan), the V&V Work Plan, the *Defense-Related Uranium Mines Quality Assurance Program Plan* (LMS/DRM/S15867) (QAPP), the *Defense-Related Uranium Mines Health and Safety Plan* (LMS/DRM/S15804), the Field Operations Plans, and the *Defense-Related Uranium Mines Data Management Plan* (LMS/DRM/S19467) (Data Management Plan). A summary of each plan is provided below:

Program Management Plan

The Program Management Plan defines how LM will execute the DRUM Program, set goals, and effectively communicate program strategies and objectives to the partner agencies. A revised Program Management Plan is being created during the spring of 2020. The revised plan will address V&V activities for the three DRUM campaigns. It also addresses safeguarding of physical safety hazards and follow-up monitoring and maintenance activities. It describes how LM, the LMS contractor, and partner agencies will work as a cohesive team to execute the DRUM Program. It is the primary guiding document of the program.

Verification and Validation Work Plan

The V&V Work Plan provides data objectives, direction, and methodologies regarding how LM and partner agencies will collect, store, and report information gathered during V&V activities at mines located on public land. This includes inventorying mine-related features using digital technology, radiological data collection, soil and water sampling, if required, photo documentation of mine-related features, in-field and office-based data quality assurance procedures, and reporting.

Quality Assurance Program Plan

The QAPP ensures that environmental data collected during V&V activities at a mine will be of sufficient quantitative and qualitative value for use in determining whether data-quality objectives are being met. The data provided to partner agencies will be used to supplement documentation of existing mine conditions.

DRUM Health and Safety Plan

The DRUM Health and Safety Plan defines the requirements of the LMS Worker Safety and Health Program and the Integrated Safety Management System. These are high-level programs that encompass DRUM Program worker safety and health and set forth the parameters for how the LMS contractor integrates safety into program activities. The DRUM Safety Plan will replace the existing DRUM Health and Safety Plan in Spring 2020.

Field Operations Plans

The FOPs provide the details of activities to be performed on lands administered by partnering agencies within discreet operational areas. Each FOP provides contact information for the relevant personnel from LM, LMS, and partner agencies; identifies the mines where V&V activities will be performed; provides information pertinent to mine access; describes special circumstances and restrictions that need to be addressed before, during, or after V&V activities; and includes emergency contacts and locations of medical facilities relevant to where V&V activities are being performed.

Data Management Plan

The Data Management Plan describes the tasks, processes, and procedures for managing DRUM Program data. This plan identifies responsibilities, outlines data sources and locations, and provides insight on the quality control checks, capabilities, and queries that can be done in the database.

IX Acronym List

AEC	U.S. Atomic Energy Commission
AML	Abandoned Mine Lands
AUMWG	Abandoned Uranium Mines Working Group
BLM	U.S. Bureau of Land Management
DOE	U.S. Department of Energy
DRMS	Division of Reclamation, Mining and Safety
DRUM	Defense-Related Uranium Mines
EPA	U.S. Environmental Protection Agency
FOP	Field Operations Plan
FY	fiscal year
IAA	Interagency Agreement
LM	Office of Legacy Management
LMS	Legacy Management Support
NPS	National Park Service
QAPP	Quality Assurance Program Plan
UFO	Uncompahgre Field Office
ULP	Uranium Leasing Program
UMREG	Uranium Mining Remediation Exchange Group
USFS	U.S. Forest Service
V&V	verification and validation
WISSYM	WISMUT International Mining Symposium

X Additional Information

Additional information about the DRUM program, including the 2014 Report to Congress, other annual reports and updates, are available at the following DOE website*:*
https://www.energy.gov/lm/defense-related-uranium-mines-program

For more information about the DRUM Program, please contact:

Public Affairs
(866) 559-8316 (toll-free)
DOE Office of Legacy Management
11035 Dover Street, Suite 600
Westminster, Colorado 80021
DRUMinfo@lm.doe.gov

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Defense-Related Uranium Mines Data Management Plan, LMS/DRM/S19467
Defense-Related Uranium Mines Quality Assurance Program Plan, LMS/DRM/S15867
Defense-Related Uranium Mines Health and Safety Plan, LMS/DRM/S15804
Defense-Related Uranium Mines Program Management Plan 2017–2021, LMS/DRM/S15809