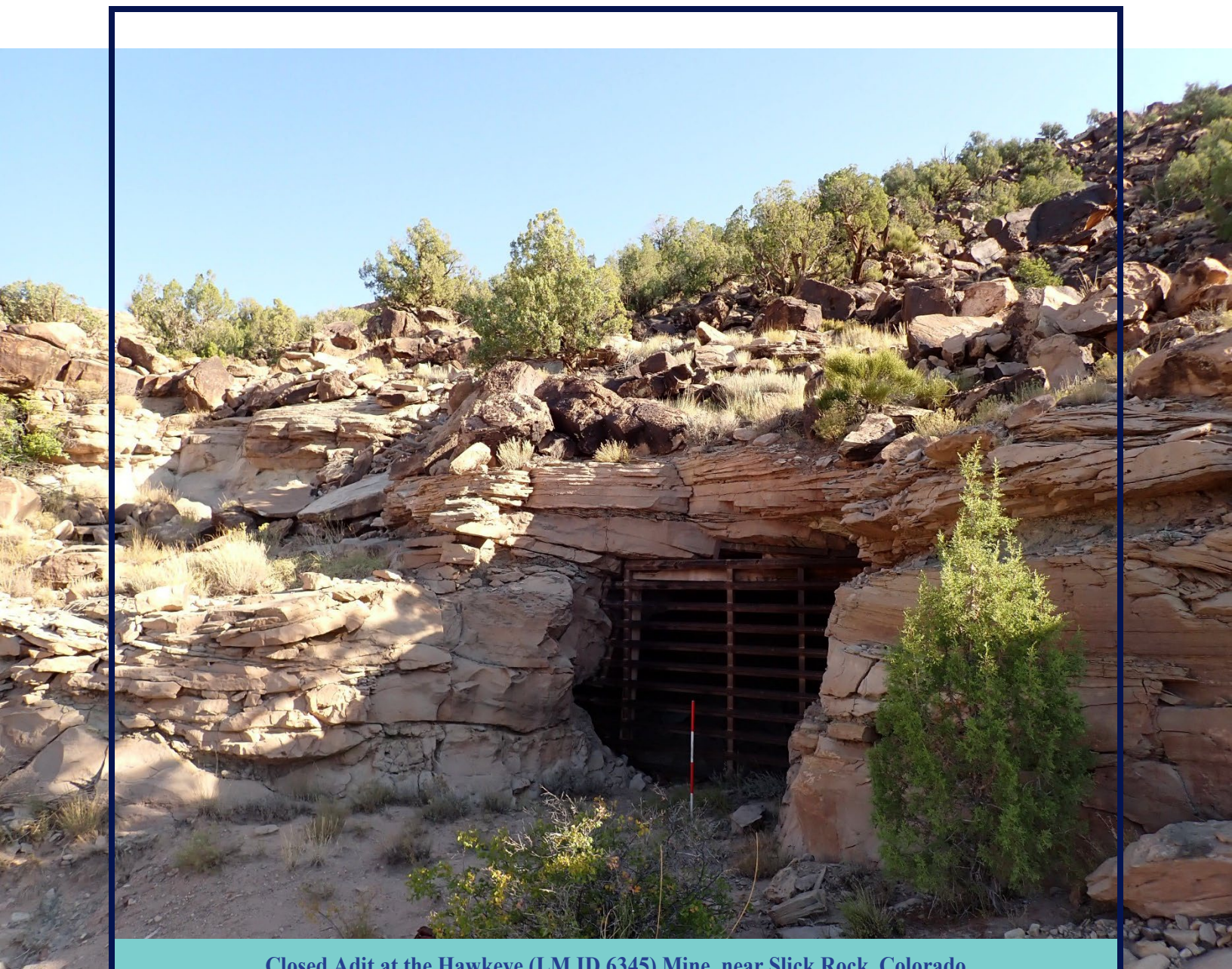




Closed Adit at the Hawkeye (LM ID 6345) Mine, near Slick Rock, Colorado

DRUM PROGRAM ANNUAL PROGRESS REPORT

January 1–December 31

2024

Table of Contents

Purpose	3
Background	3
Program Mission, Objectives, Scope, and Methods	4
V&V Summary	5
Campaigns 1, 2, and 3—Mixed-Ownership Progress, Public Portion.....	8
Campaigns 1, 2, and 3—Mixed-Ownership Progress, Private Portion	40
Programmatic Accomplishments	45
Risk Screening.....	50
Safeguarding	51
Return on Investment.....	52
Strategic Partnerships.....	55
2025 Planned Activities	56
Program Plans.....	57
Abbreviations List	59
Additional Information	60
References.....	60

Purpose

This annual progress report for the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Defense-Related Uranium Mines (DRUM) Program provides details on 2024 program activities and accomplishments and project plans for 2025. Additional information on the program is available in other documents and through the contact information provided at the end of this document. The information presented in this report is stored in a continually updated database and presents data that were queried on January 2, 2025.

Background

The 2014 *Defense-Related Uranium Mines Report to Congress* (DOE 2014b) (Report to Congress) identified 4225 uranium purchase records in 19 states, revealing an unknown degree of liability from a unique set of abandoned uranium mines (AUMs) (mines) in the United States. These mines provided uranium ore to the U.S. Atomic Energy Commission (AEC) for defense-related activities from 1947 to 1970. Using the list of 4225 mines as a starting point, mine reconciliation efforts correlated each mine with a specific geographic location and production size. Subsequent evaluation resulted in a reduction of the total number of reconciled mines to 3472. This adjustment was based on many factors but was primarily due to resolution of duplicate mine records and the addition of new mine records. Table 1 summarizes the results of the DRUM Program’s reconciliation efforts.

Table 1. Summary of DRUM Program Reconciliation as of December 31, 2024

Total mine records ^a	4225
Duplicate records removed	(1126)
New mine records ^b	373
Mines with no V&V visit required ^c	(390)
Mines requiring V&V visits	3082
Field V&V visits to complete ^d	3223

Notes:

^a Number of mine records identified in the 2014 Report to Congress.

^b This includes 39 EPA “orphan” mines added to the list of DRUM mines.

^c This includes sites regulated under CERCLA, sites with active mining permits, unconventional sites, and unlocatable mine records.

^d This includes sites that have mixed ownership (public and private, public and tribal, and tribal and private) and require more than one field visit to complete V&V activities for the entire mine.

Abbreviations:

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

EPA = U.S. Environmental Protection Agency

V&V = verification and validation

In response to the Report to Congress, LM initiated DRUM Program Campaign 1 in 2017 to conduct field verification and validation (V&V) activities at 2354 mines (including mixed-ownership mines) on public land administered by federal and state agencies. Field V&V work for Campaign 2, which addresses 211 DRUM sites (including mixed-ownership mines) on tribal lands began in fiscal year (FY) 2022, and field V&V work for Campaign 3, which addresses 658 DRUM sites (including mixed-ownership mines) on private property, began in FY 2024.

Program Mission, Objectives, Scope, and Methods

The DRUM Program mission is to identify DRUM sites that pose potentially unacceptable risks to human health and the environment and improve strategies for the allocation of government resources to address these risks. More specifically, the DRUM Program mission includes the following: (1) correlating individual mines with ore production and location information, (2) inventorying mine features and completing screening level sampling of mine sites, (3) providing risk screening information to help prioritize any potential future actions, and (4) identifying potential environmental or physical concerns.

The DRUM Program supports LM's strategic goal of "protect[ing] 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 2020a).

In support of its mission and goals, the objectives of the DRUM Program are as follows:

- Sharing existing information and collecting site-specific data at each mine to identify physical safety hazards or human health and environmental risks
- Performing program-specific risk scoring and ranking of these mine hazards
- Improving the data quality and content of the DRUM Program database and partner agency databases
- Exchanging program results and information with federal, tribal, and state governments
- Quantifying the resources necessary to mitigate the physical hazards posed by these sites and working with partner agencies to leverage resources to address mines with priority physical safety hazards

The V&V process comprises the following three sequential steps to achieve program objectives: (1) reconciliation, (2) field inventory and environmental sampling, and (3) technical report preparation.

During the reconciliation step, DRUM personnel review available data to assess the location, ownership, land management status, and production of the mines. 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 DRUM personnel can find additional data.

The reconciliation process ensures that the most accurate location data are available to field teams before they conduct field V&V activities. As mines in designated geographic areas are reconciled, they are compiled into Field Operations Plans (FOPs) used by land management agencies and field teams to coordinate field activities.

In the field inventory and environmental sampling step, field teams locate each 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 posed by each feature, evaluating ecological and environmental hazards, and assessing ease of public access and signs of recreational use. Field teams collect environmental samples

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 a gamma radiation survey of the mechanically disturbed area of the mine. Field data and observations are used to perform risk rankings for each mine. Field teams collect and record data electronically and conduct a rigorous quality assurance/quality control process before data are considered finalized and the reporting phase begins.

In the report preparation step, DRUM personnel develop a V&V report that summarizes the following for each mine: (1) current conditions and location; (2) information associated with mine features such as adits, shafts, and waste rock piles; and (3) primary hazard rankings for physical hazards and potential risks to human health and the environment. Each V&V report also includes factors that influence risk rankings, such as ease of public access, suitability for camping, and hazard complexity. Following the submission of individual V&V reports, the DRUM team conveys risk-screening information to partner agencies or tribal or private landowners via risk roll-up reports (Campaign 1) and hazard summaries (Campaigns 2 and 3). An outgrowth of these activities is the safeguarding of physical mine hazards identified during V&V field activities.

After completing the V&V steps, LM and its partner agencies collaborate to safeguard physical hazards posed by remnant mining-related features at DRUM sites. Safeguarding involves the construction of barricades designed to prohibit public access to hazardous adits, shafts, subsidences, hazardous highwalls, and other excavated mine features. It may also involve securing dilapidated structures.

V&V Summary

This section presents a summary of 2024 V&V activities and accomplishments. In 2024, DRUM teams completed 202 field visits for Campaigns 1, 2, and 3 (including designating six mines complete where access was denied and three mines complete that were inaccessible) and completed 211 V&V reports. Since the program's inception, 2437 V&V reports have been completed. Table 2 presents a summary of DRUM Program progress for all three campaigns.

Lessons learned from the 2023 field season identified areas where field staff needed extra support and led to improvements in the 2024 field inventory methodology and refinements to V&V protocols to ensure consistency in program data collection. Some of these improvements included increased ownership and training on Pause/Stop Work procedures, updates to onboarding guidance and job reference documents, improved land access and travel planning, fieldwork cross-training, data cross-training, and improved standardization. The DRUM team also completed extensive training to prepare for the 2024 field season.

The *DRUM Program Midyear Progress Report, January 1–June 30, 2024* (DOE 2024II) presented additional analysis of the project's status and its progress.

The following sections and the associated tables describe each V&V campaign's progress in greater detail by land ownership and FOP. Tables organized by FOP indicate the total number of V&V visits completed and yet to be completed within each FOP, and the summary sections that follow describe the field activities conducted within each FOP visited in 2024.

Table 2. DRUM Program Progress by Campaign

DRUM Program Progress by Campaign						
Campaign	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024 ^a	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
Campaign 1	2214	50	2213	1	80	2180
Campaign 1 portion of mixed public and private ownership ^{b,c,d}	139 ^b	36	137 ^b	2	30	119 ^b
Campaign 3 portion of mixed public and private ownership ^{b,c,d}	139 ^b	41	50 ^b	89	33 ^b	33 ^b
Campaign 1 portion of mixed public and tribal ownership ^c	1	1	1	0	0	0
Campaign 2 portion of mixed public and tribal ownership ^c	1	1	1	0	0	0
Campaign 2 portion of mixed tribal and private ownership ^c	1	0	0	1	0	0
Campaign 3 portion of mixed tribal and private ownership ^c	1	0	0	1	0	0
Campaign 2	209	45	108	101	54	91
Campaign 3	518	28	31	487	14	14
Totals for all campaigns	3223^e	202^e	2541^e	682^e	211^e	2437^e

Note:

^a Includes 15 mines deemed inaccessible and 10 mines where a stakeholder has denied access (both cases are considered V&V complete).

^b Includes one unconventional site that was field evaluated by request and was counted as a Campaign 1 and 3 mixed-ownership mine.

^c Mixed public and private ownership, mixed public and tribal ownership, and mixed tribal and private ownership mines are displayed separately for tracking purposes. Due to access restrictions, the field teams may visit one portion of the mine at a different time than the other.

^d Ongoing V&V work has identified land ownership discrepancies at some private DRUM mines, affecting the number of Campaign 1 and Campaign 3 mixed-ownership mines.

^e The total includes both portions of mixed public and private ownership, mixed public and tribal ownership, and mixed tribal and private ownership mines.

Campaign 1 Progress

Campaign 1 field activities began in FY 2017. As of December 31, 2024, V&V field visits have been conducted at over 99% of identified Campaign 1 mines. V&V progress by land management agency for mines solely in Campaign 1 is presented in Table 3. V&V progress for the public portions of mines with mixed public and private ownership is presented in Table 4, and progress for the public portions of mines with mixed public and tribal ownership is presented in Table 5. Field V&V visits by FOP are presented in Table 6.

Table 3. Campaign 1 Progress—Mines on Public Land

Campaign 1—Mines on Public Land						
Land Management Agency	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
BLM	1567	19	1567	0	42	1560
USBR	2	0	2	0	0	2
DOD	1	0	1	0	0	1
Local municipality	3	3	3	0	0	0
NPS	35	0	35	0	2	35
State	84	9	83	1	7	74
USFWS	2	0	2	0	0	2
USFS	306	16	306	0	23	294
Mixed public ownership	214	3	214	0	6	212
Total	2214	50	2213	1	80	2180

Abbreviations:

BLM = U.S. Bureau of Land Management
DOD = U.S. Department of Defense
NPS = National Park Service
USBR = U.S. Bureau of Reclamation
USFS = U.S. Forest Service
USFWS = U.S. Fish and Wildlife Service

Campaigns 1, 2, and 3—Mixed-Ownership Progress, Public Portion

Table 4. Campaign 1 Progress—Mines on Both Public Land and Private Property

Campaigns 1 and 3—Mines on Mixed-Ownership Land						
Campaign	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025 ^a	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024 ^a	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024 ^a
Campaign 1 portion of mixed public and private ownership	139	36	137	2	30	119

Note:

^a Includes one unconventional site that was field evaluated by request and counted as a Campaign 1 and 3 mixed-ownership mine.

Table 5. Campaign 1 Progress—Mines on Both Public Land and Tribal Lands

Campaigns 1 and 2—Mines on Mixed-Ownership Land						
Campaign	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
Campaign 1 portion of mixed public and tribal ownership	1	1	1	0	0	0

Table 6. Summary of V&V Activities for Campaign 1 by FOP

FOP	Field V&V Visits Completed Before 2024	Field V&V Visits Completed in 2024	Field V&V Visits Remaining
Arizona	46	3	0
Arapaho-Roosevelt National Forest	13	0	0
Black Hills and Northern Rockies	116	4	0
Buckmaster Draw	37	0	0
Bull Canyon – Tres Rios	124	0	0
Bull Canyon – Uravan-Paradox	37	0	0
California	9	13	0
Remaining Sites in Colorado (Colorado Cleanup)	6	3	1
Gateway	201	0	0
Grants	37	3	1
Green River	26	0	0
Gypsum Valley	95	0	0
Henry Mountains	123	0	0
Idaho	0	6	0
Manti-La Sal ^a	88	0	0
Moab	42	0	0
Monticello	200	0	0
Northern Montrose County	91	1	0
National Park Service	37	0	0
Nevada	17	1	0
New Jersey	0	1	0
New Mexico Statewide	21	9	0
Northern Slick Rock	102	1	0
Northern AUM Region ^b	0	1	0
Oregon	1	0	0
Pilot Mines	41	0	0
Red, White, and Fry Canyons and Deer Flats	77	0	0
San Rafael Swell	124	0	0
Southern Slick Rock	131	2	0
Southwestern Colorado Private ^c	0	13	NA ^d
Thompson Phase I	53	0	0
Thompson Phase II	18	0	0
UFO	80	0	0
Umetco ^c	0	9	NA ^d
USFS Region 2	95	6	0
Remaining Sites in Utah (Utah Cleanup)	42	0	0
Utah Statewide	43	0	0
Washington Public Lands	0	3	0
Wyoming Public Lands	91	8	1
Total	2264	87	3

Table 6. Summary of V&V Activities for Campaign 1 by FOP (continued)

Notes:

^a Includes one unconventional site that was field evaluated by request and counted as a Campaign 1 and 3 mixed-ownership mine under this FOP.

^b Includes the public portion of a Campaign 1 and 2 mixed-ownership mine assigned to a Campaign 2 FOP.

^c Includes the public portions of Campaign 1 and 3 mixed-ownership mines assigned to a Campaign 3 FOP.

^d Ongoing V&V work has identified land ownership discrepancies at some private DRUM mines, affecting the number of Campaign 1 and Campaign 3 mixed-ownership mines. Therefore, the remaining number of V&V visits to complete on the public portions of these mines is unknown and not included in the total remaining.

Abbreviations:

NA = not applicable

UFO = Uncompahgre Field Office

USFS = U.S. Forest Service

Arizona

Arizona FOP: 0 Mines Remaining

This project area includes a total of 57 mines and covers the state of Arizona (Figure 1). Mines in this FOP are on U.S. Forest Service (USFS)-administered land, U.S. Bureau of Land Management (BLM)-administered land, state land, U.S. Bureau of Reclamation (USBR)-administered land, or mixed-ownership land (i.e., BLM-administered and state-administered land, USBR-administered and state-administered land, or state-administered land and private property). DRUM field teams conducted V&V activities at three mines in this FOP in 2024, closing out the FOP. Eight of the mines in this FOP are regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and will not be visited.



Figure 1. Mines in the Arizona FOP

California

California FOP: 0 Campaign 1 Mines Remaining; 1 Campaign 3 Mine Remaining

This project area includes a total of 24 mines and covers the state of California (Figure 2). Mines in this FOP are on USFS-administered land, BLM-administered land, mixed-ownership land (i.e., BLM-administered and state-administered land), or private property. DRUM field teams conducted V&V activities at 13 mines in this FOP in 2024. DRUM field teams will address one mine on private property during Campaign 3. One mine in this FOP is regulated under CERCLA and will not be visited.



Figure 2. Mines in the California FOP

Colorado

Remaining Sites in Colorado (Colorado Cleanup) FOP: 1 Mine Remaining

This project area includes 10 mines in southern and central Colorado (Figure 3). Mines in this FOP are on BLM-administered land, USFS-administered land, mixed-ownership land (i.e., USFS-administered land and private property), or public locally administered land managed by the City and County of Denver and Jefferson County. DRUM field teams conducted V&V activities at three mines in this FOP in 2024. DRUM field teams are planning to visit the one remaining mine in 2025 and will address the private portions of two mines in Campaign 3.

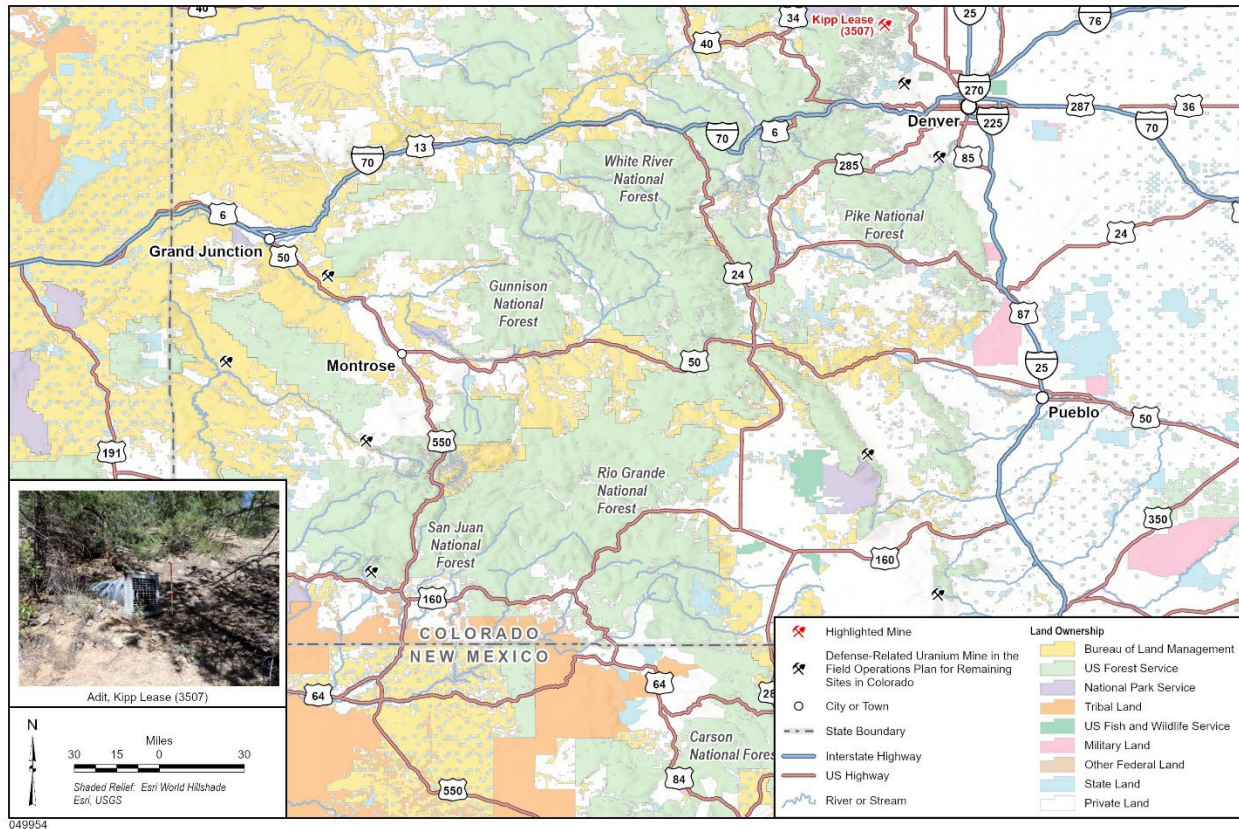


Figure 3. Mines in the Remaining Sites in Colorado (Colorado Cleanup) FOP

USFS Region 2 FOP: 0 Mines Remaining

This project area includes 101 mines in western and central Colorado (Figure 4). Mines in this FOP are on USFS-administered land, BLM-administered land, state land, U.S. Department of Defense land, or mixed-ownership land (i.e., BLM-administered land and USFS-administered land or BLM-administered land and private property). DRUM field teams conducted V&V activities at six mines in this FOP in 2024, closing out the FOP. DRUM field teams will address the private portions of five mines in Campaign 3.

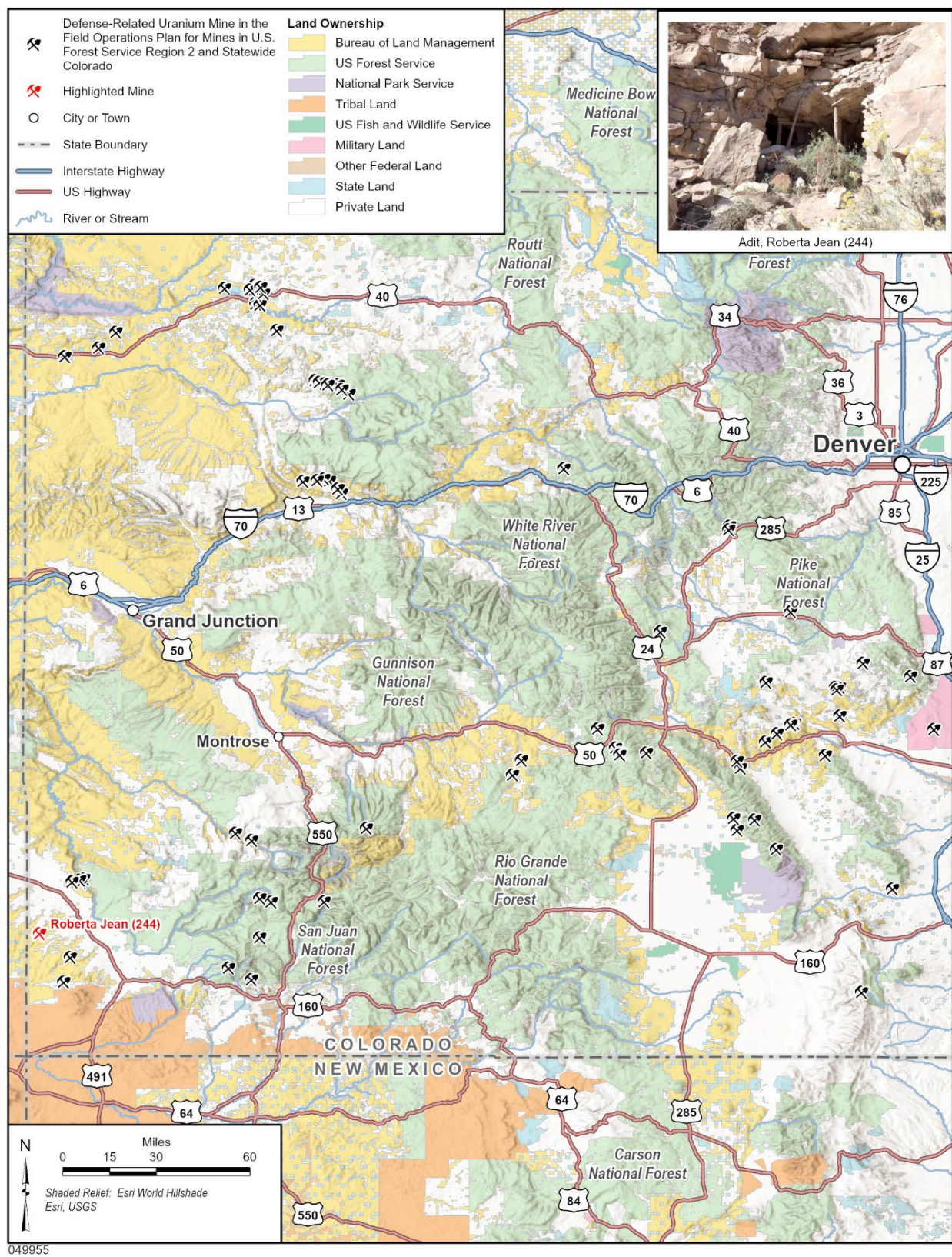


Figure 4. Mines in the USFS Region 2 FOP

Northern Slick Rock FOP: 0 Mines Remaining

This project area includes 103 mines in western Colorado (Figure 5). Mines in this FOP are on BLM-administered land and mixed-ownership land (i.e., BLM-administered land and private property). DRUM field teams conducted V&V activities at one mine in this FOP in 2024, closing out the FOP. DRUM field teams will address the private portions of five mines in Campaign 3.

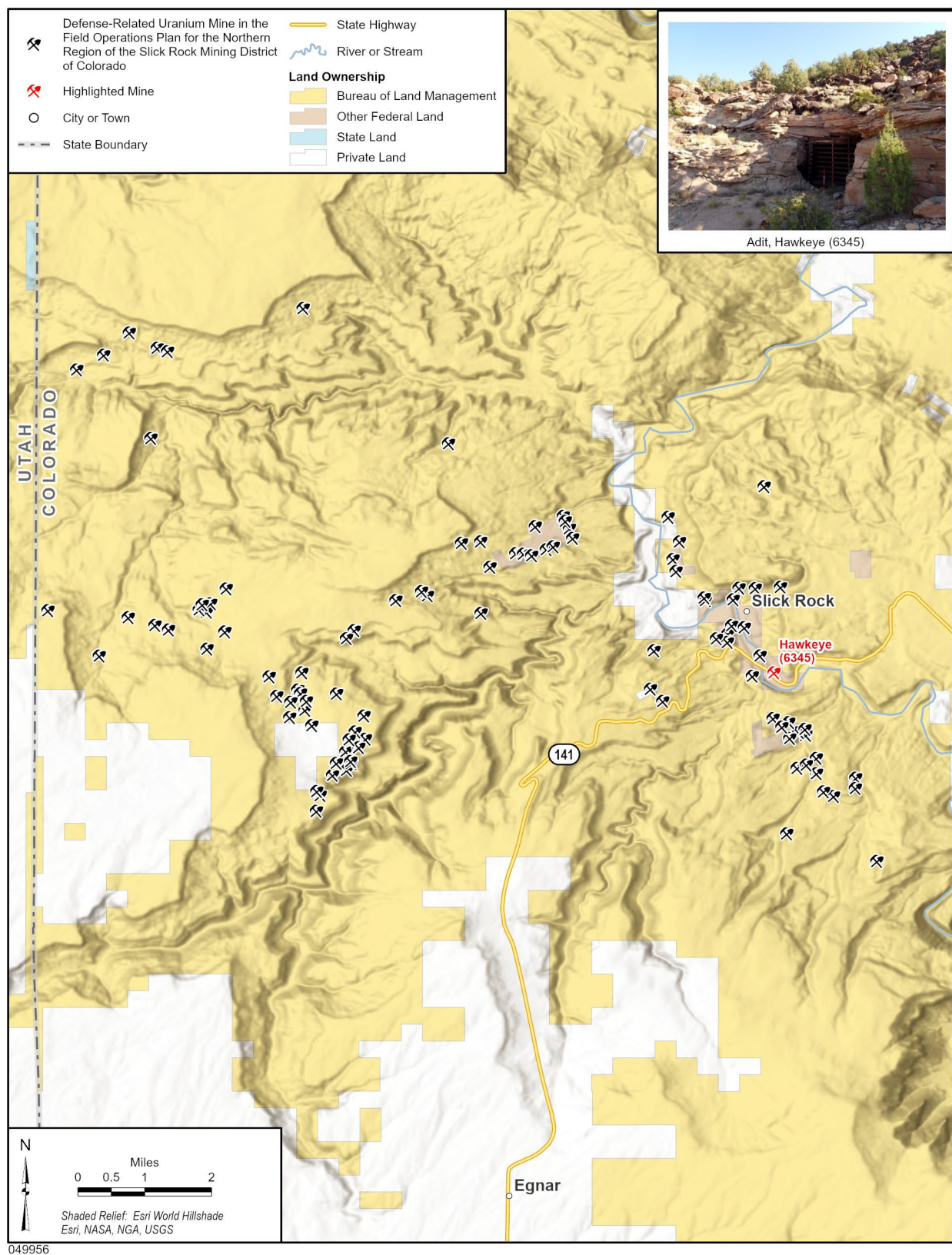


Figure 5. Mines in the Northern Region of the Slick Rock Mining District FOP

Southern Slick Rock FOP: 0 Mines Remaining

This project area includes 133 mines in western Colorado (Figure 6). Mines in this FOP are on BLM-administered land or mixed-ownership land (i.e., BLM-administered land and private property). DRUM field teams conducted V&V activities at two mines in this FOP in 2024, closing out the FOP. DRUM field teams will address the private portions of two mines in Campaign 3.

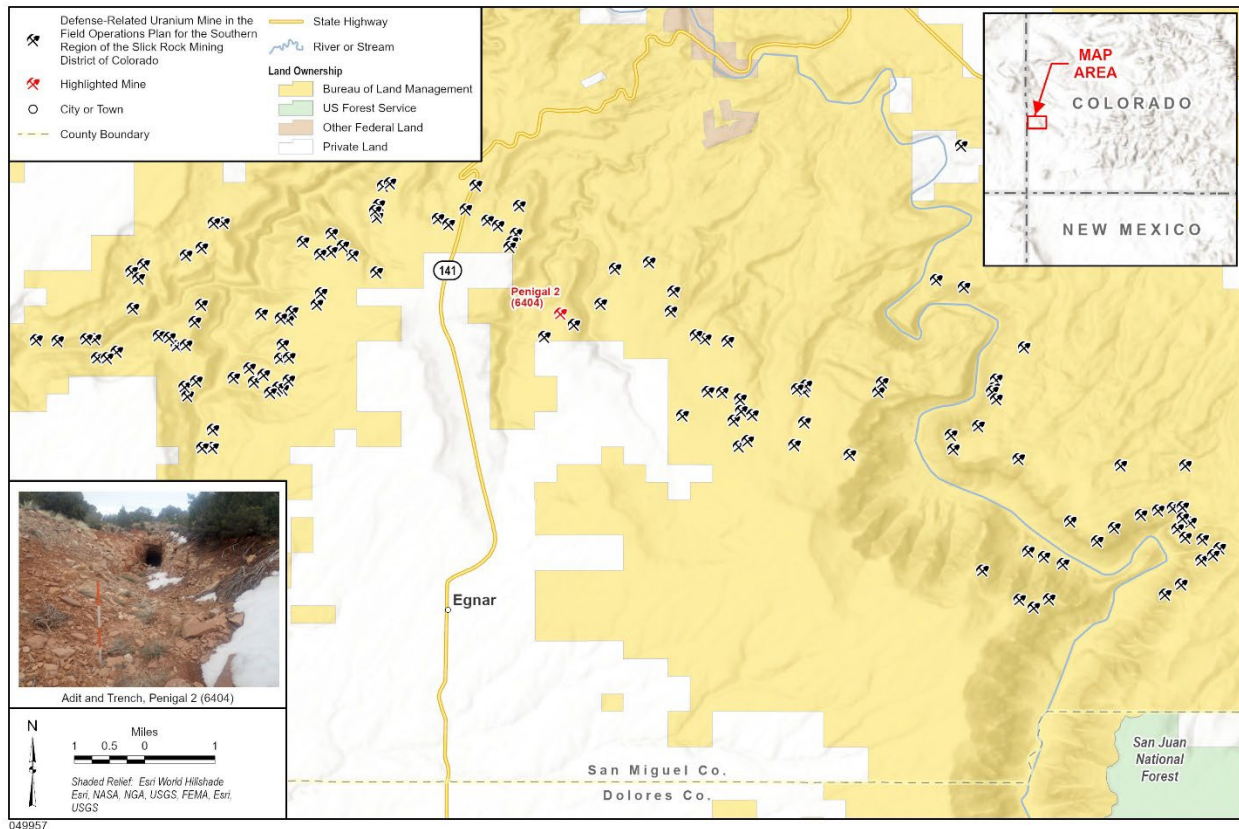


Figure 6. Mines in South Region of the Slick Rock Mining District FOP

Idaho

Idaho FOP: 0 Mines Remaining

This project area includes six mines in Idaho (Figure 7). Mines in this FOP are on USFS-administered land and mixed-ownership land (i.e., BLM-administered land and private property). DRUM field teams conducted V&V activities at six mines in this FOP in 2024, closing out the FOP. DRUM field teams will address the private portion of one mine in Campaign 3.

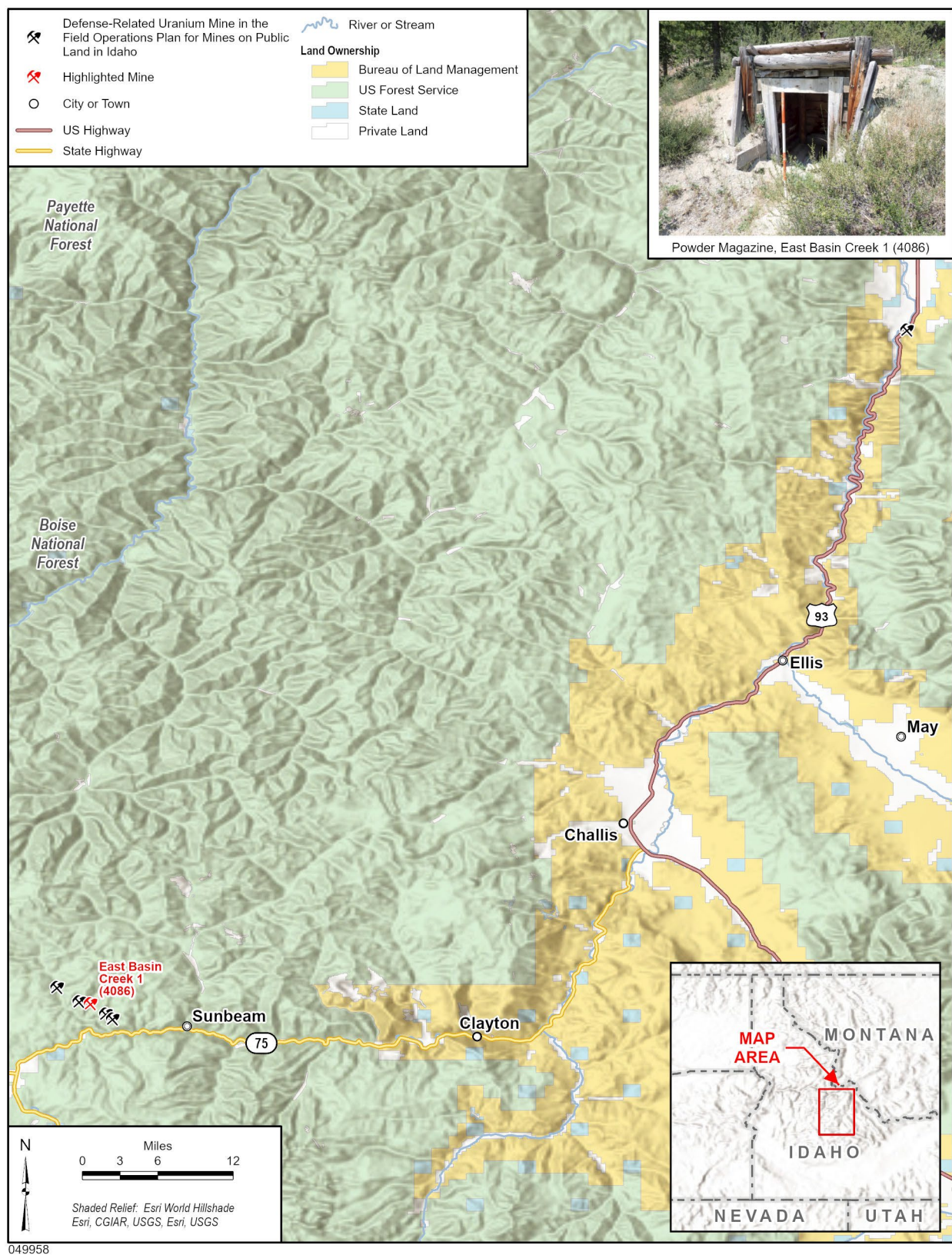


Figure 7. Mines in the Public Land in Idaho FOP

New Jersey

New Jersey FOP: 0 Mines Remaining

This project area includes one mine and covers the state of New Jersey (Figure 8). The mine in this FOP is on state-administered land. DRUM field teams conducted V&V activities at the one mine in this FOP in 2024, closing out the FOP.

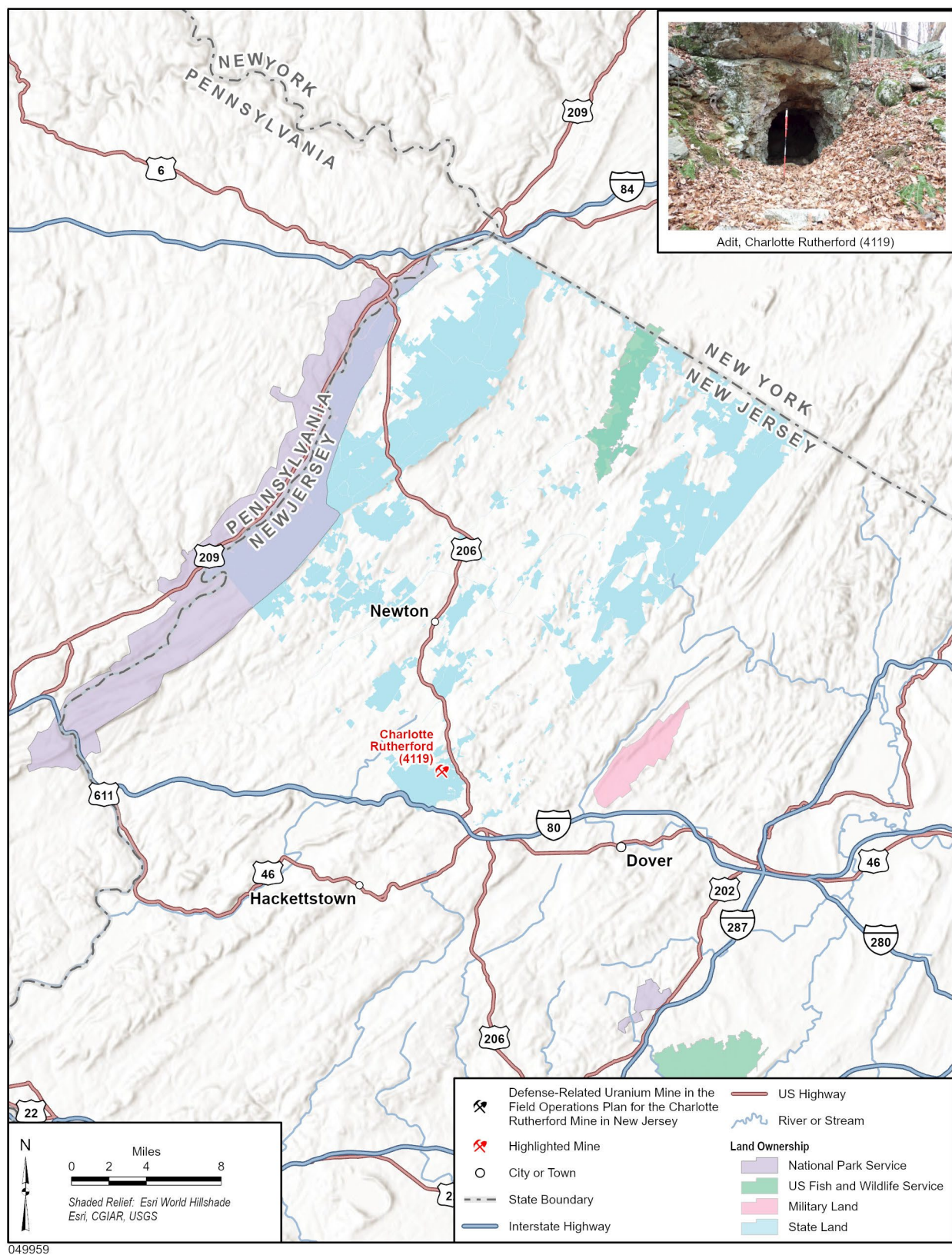


Figure 8. Mine in the Public Land in New Jersey FOP

New Mexico

Grants FOP: 1 Mine Remaining

This project area includes 42 mines in western New Mexico (Figure 9). Mines in this FOP are on USFS-administered land, BLM-administered land, state land, or mixed-ownership land (i.e., state-administered land and private property or BLM-administered land and private property). DRUM field teams conducted V&V activities at three mines in this FOP in 2024 and are planning to visit the one remaining mine in 2025. One mine in this FOP is regulated under CERCLA and will not be visited. DRUM field teams will address the private portions of 14 mines in Campaign 3.

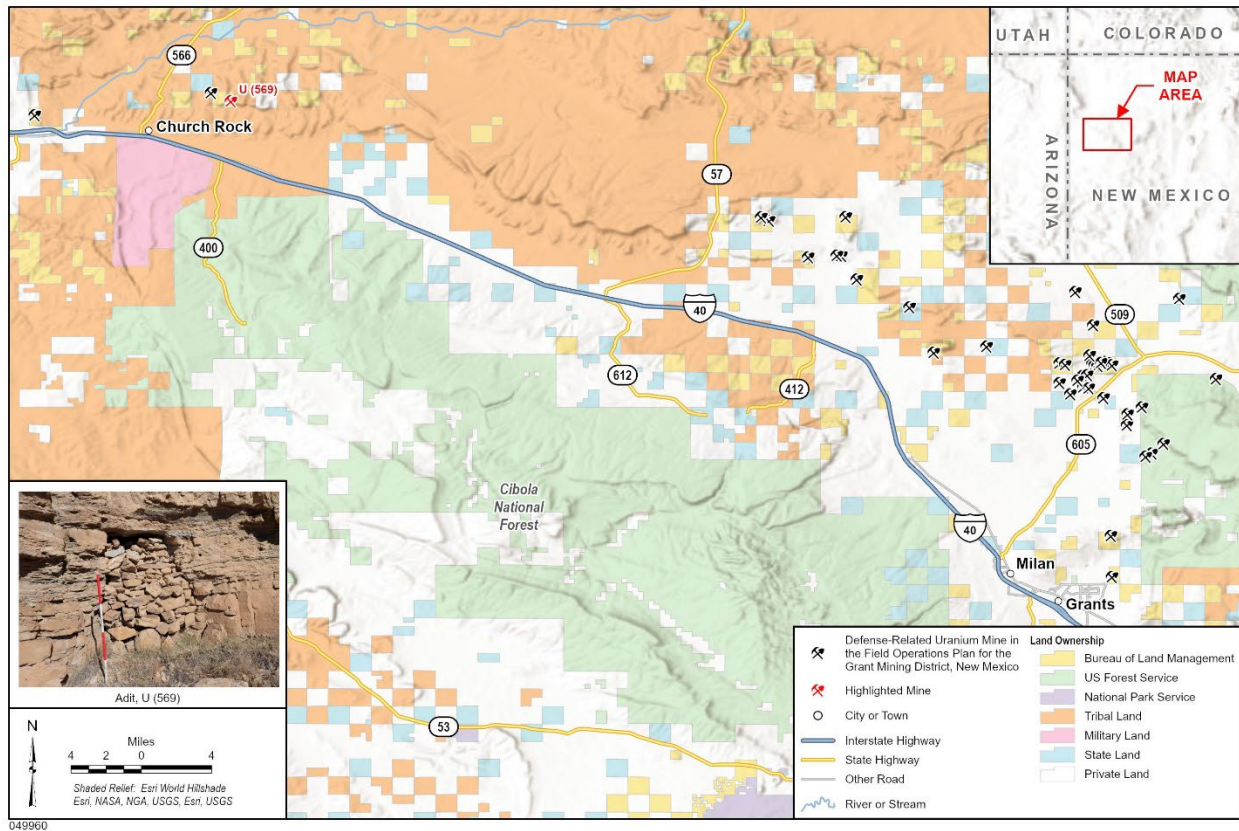


Figure 9. Mines in the Grants Mining District FOP

New Mexico Statewide FOP: 0 Mines Remaining

This project area includes 30 mines in eastern and central New Mexico (Figure 10). Mines in this FOP are on USFS-administered land, BLM-administered land, state land, U.S. Fish and Wildlife Service-administered land, or mixed-ownership land (i.e., state land and private property, BLM-administered land and private property, or BLM-administered land and state land). DRUM field teams conducted V&V activities at nine mines in this FOP in 2024, closing out the FOP.

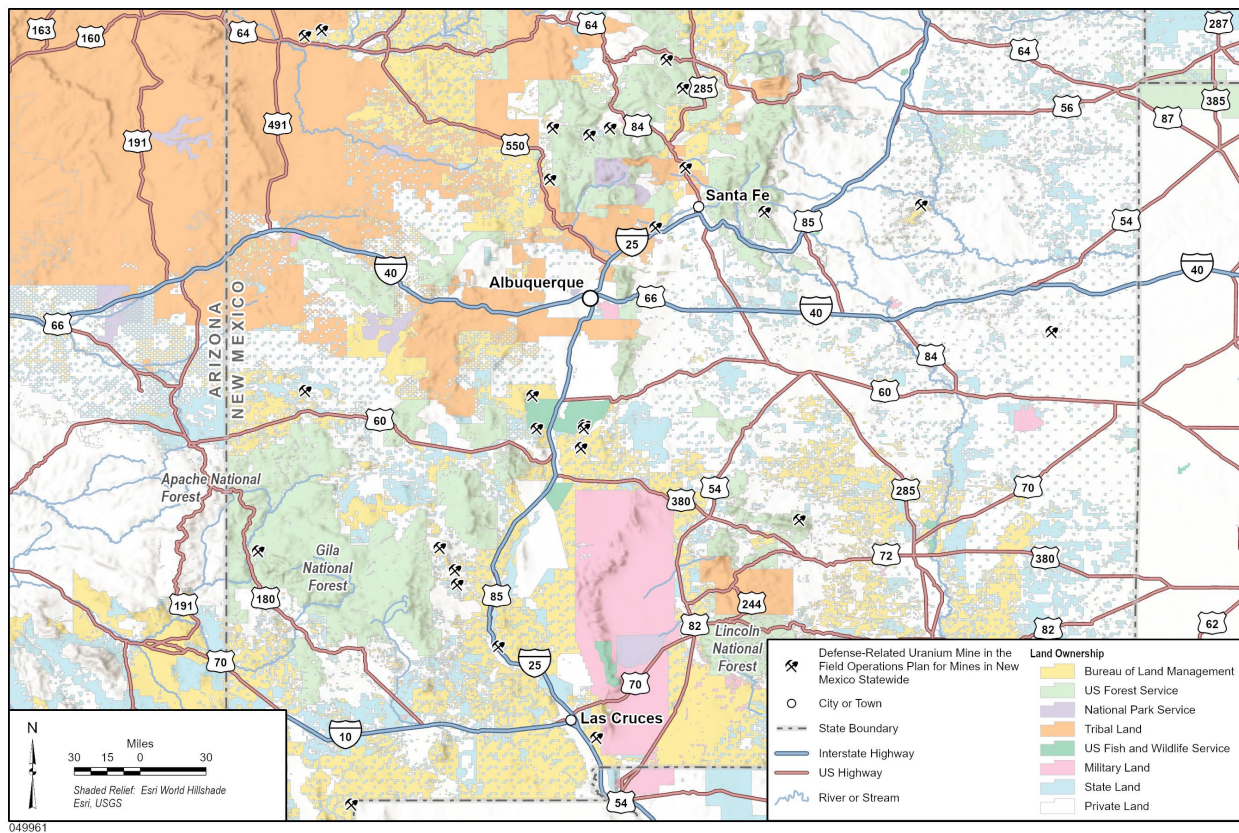


Figure 10. Mines in the New Mexico Statewide FOP

Nevada

Nevada FOP: 0 Campaign 1 Mines Remaining; 3 Campaign 3 Mines Remaining

This project area includes a total of 21 mines and covers the state of Nevada (Figure 11). Mines in this FOP are on USFS-administered land, BLM-administered land, or private property. DRUM field teams conducted V&V activities at one mine in this FOP in 2024. DRUM field teams will address the three mines on private property during Campaign 3.

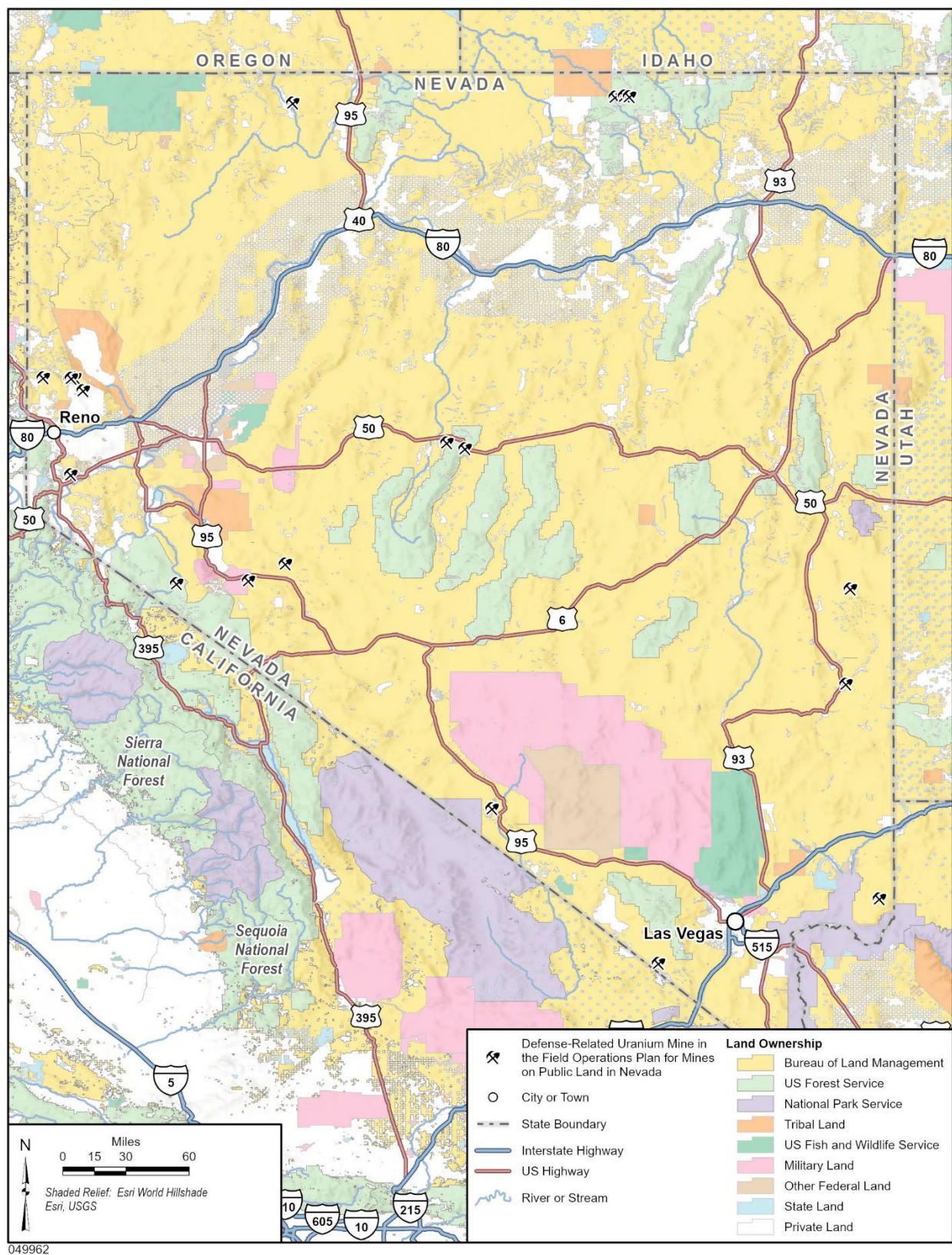


Figure 11. Mines in the Nevada FOP

Montana, South Dakota, North Dakota, and Wyoming

Black Hills and Northern Rockies Region FOP: 0 Mines Remaining

This project area includes a total of 121 mines and covers South Dakota, North Dakota, and portions of Montana and Wyoming (Figure 12). Mines in this FOP are on USFS-administered land, BLM-administered land, public land managed by the State of North Dakota, or mixed-ownership land (i.e., private property and USFS-administered land or private property and BLM-administered land). DRUM field teams conducted V&V activities at four mines in this FOP in 2024. One mine in this FOP will not be visited due to pending litigation related to the Tronox Inc. settlement. DRUM field teams will address the private portions of three mines in Campaign 3.

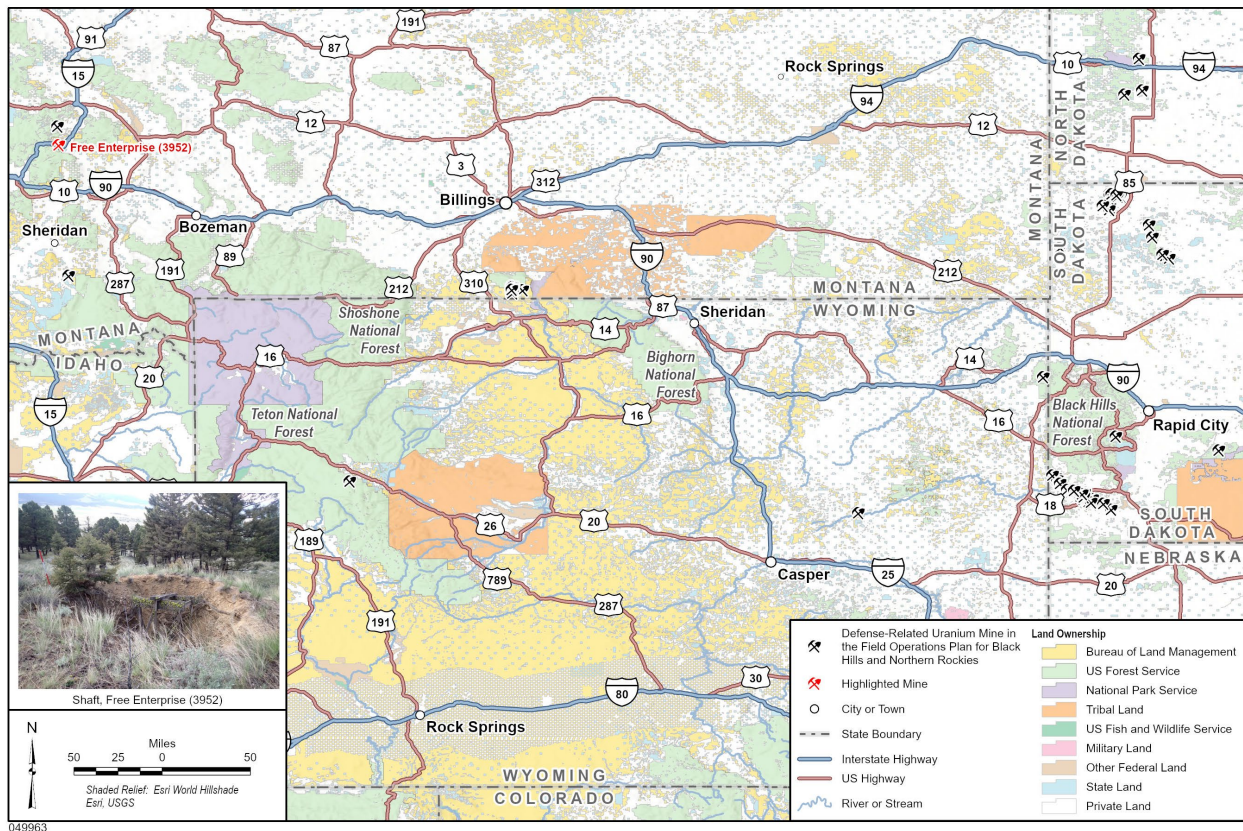


Figure 12. Mines in the Black Hills and Northern Rockies Region FOP

Wyoming

Wyoming Public Lands FOP: 1 Campaign 1 Mine Remaining

This project area includes 113 mines in the state of Wyoming (Figure 13). Mines in this FOP are on BLM-administered land, state land, public locally administered land managed by the City of Rawlins, or mixed-ownership land (i.e., BLM-administered land and private property; BLM-administered and National Park Service (NPS)-administered land; BLM-administered and state-administered land; BLM-administered land, state-administered land, and private property; or state-administered land and private property). DRUM field teams conducted V&V activities at eight mines in this FOP in 2024. DRUM field teams will visit one remaining mine in 2025 and will address the private portions of 13 mines in Campaign 3. The FOP includes 12 mines that have active mining permits and one mine that has active remediation occurring; these mines will not be visited.

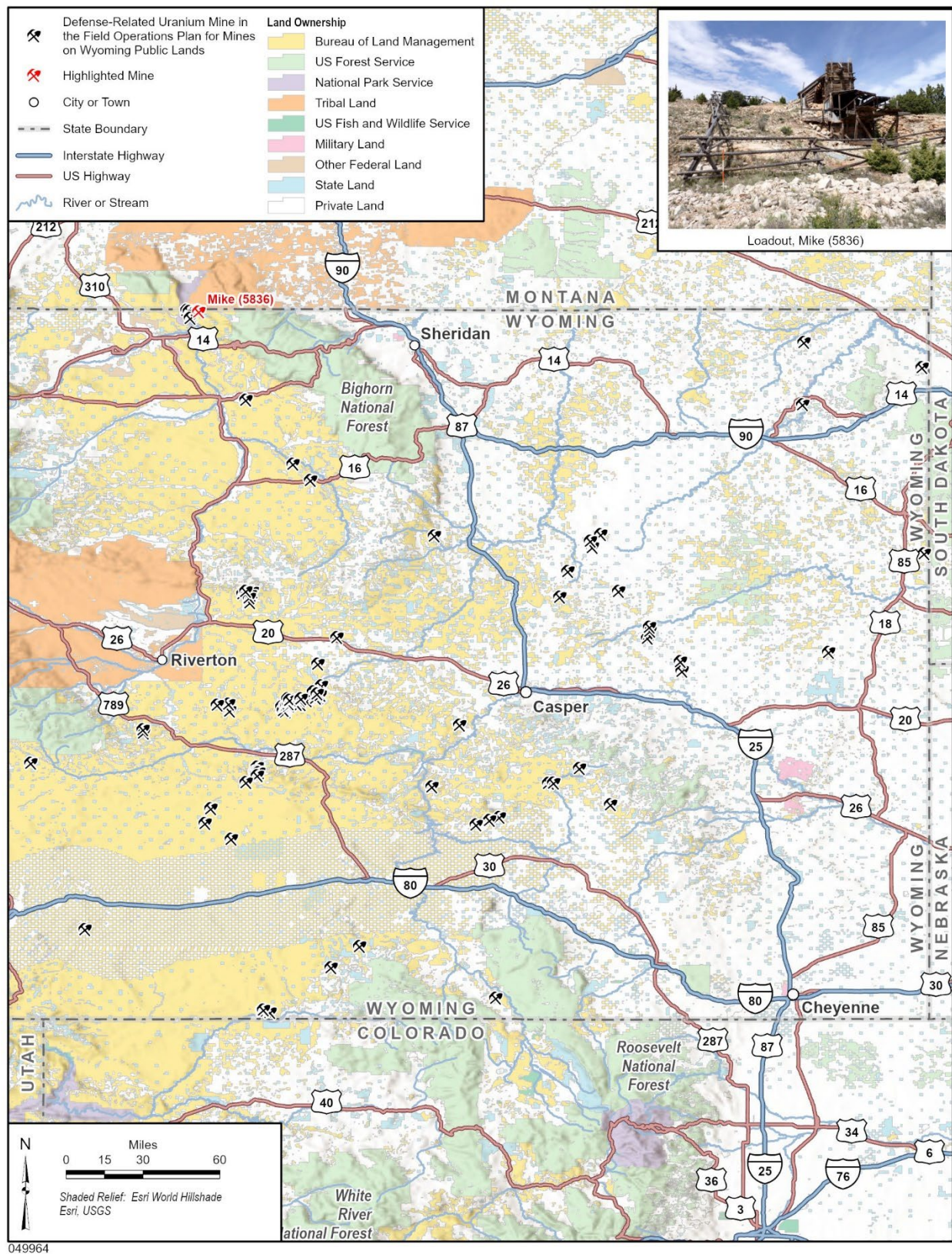


Figure 13. Mines in the Wyoming Public Lands FOP

Washington

Washington Public Lands FOP: 0 Campaign 1 Mines Remaining

This project area covers the northeastern part of Washington (Figure 14) and includes a total of three mines. Mines in this FOP are on USFS-administered land. DRUM field teams conducted V&V activities at three mines in this FOP in 2024, closing out the FOP.



Figure 14. Mines in the Washington Public Lands FOP

Campaign 2 Progress

Campaign 2 field activities began in FY 2022. V&V field visits were conducted at three mines on Laguna Pueblo land in August 2022. Field activities at mines on Navajo Nation land began in FY 2023 (October 2022). The estimated completion date for Campaign 2 field activities is September 30, 2027. V&V progress for mines in Campaign 2 is presented in Table 7, Table 8, and Table 9. Field V&V visits by FOP are presented in Table 10.

Table 7. Campaign 2 Progress—Mines on Tribal Lands

Campaign 2—Mines on Tribal Lands							
Land Management Agency	Local Management Office	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
BIA	Navajo Nation	196	45	103	93	54	86
BIA	Hualapai	1	0	0	1	0	0
BIA	Pueblo of Laguna	3	0	3	0	0	3
BIA	Spokane	2	0	2	0	0	2
BIA	Tohono O’odham	1	0	0	1	0	0
BIA	Uintah and Ouray	1	0	0	1	0	0
BIA	Pueblo of Zia	1	0	0	1	0	0
BIA	Pueblo of Zuni	1	0	0	1	0	0
Mixed ^a	Navajo Nation and state	1	0	0	1	0	0
Private ^b	NA	2	0	0	2	0	0
Total		209	45	108	101	54	91

Notes:

^a There are a total of three mixed-ownership mines associated with the Navajo Nation. The mine with Navajo Nation and state mixed ownership is currently categorized as a Campaign 2 mine only. The other two are Campaign 1 and 2 mixed-ownership and Campaign 2 and 3 mixed-ownership mines. Those mines are included in Table 8 and Table 9 below.

^b The total number of private mines includes two mines that are categorized as Campaign 2 due to pending discussions of ownership transfer to the Navajo Nation as of December 31, 2024.

Abbreviations:

BIA = U.S. Bureau of Indian Affairs

NA = not applicable

Table 8. Campaign 2 Progress—Mines on Both Tribal Lands and Public Land

Campaigns 1 and 2—Mines on Mixed-Ownership Land						
Campaign	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
Campaign 2 portion of mixed public and tribal ownership	1	1	1	0	0	0

Table 9. Campaign 2 Progress—Mines on Both Tribal Lands and Private Property

Campaigns 2 and 3—Mines on Mixed-Ownership Land						
Campaign	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
Campaign 2 portion of mixed private and tribal ownership	1	0	0	1	0	0

Table 10. Summary of V&V Activities for Campaign 2 by FOP

FOP	Field V&V Visits Completed Before 2024	Field V&V Visits Completed in 2024	Field V&V Visits Remaining
Northern AUM Region, Navajo Nation ^a	58	9	3
Central AUM Region, Navajo Nation	0	0	5
Eastern AUM Region, Navajo Nation ^b	0	0	20
North Central AUM Region, Navajo Nation ^c	0	37	7
Southern AUM Region, Navajo Nation	0	0	5
Western AUM Region, Navajo Nation ^b	0	0	57
Pueblo of Laguna	3	0	0
Pueblo of Zia	0	0	1
Pueblo of Zuni	0	0	1
Hualapai Indian Reservation, Hualapai Tribe	0	0	1
Tohono O'odham Indian Reservation, Tohono O'odham Nation	0	0	1
Uintah and Ouray Reservation, Ute Indian Tribe	0	0	1
Spokane Indian Reservation	2	0	0
Total	63	46	102

Notes:

^a Includes the tribal portion of a Campaign 1 and 2 mixed-ownership mine assigned to a Campaign 2 FOP.

^b Includes mines that are under private ownership or mixed ownership but only categorized as Campaign 2.

^c Includes the tribal portion of a Campaign 2 and 3 mixed-ownership mine assigned to a Campaign 2 FOP.

Arizona, New Mexico, and Utah

Northern AUM Region, Navajo Nation FOP: 3 Mines Remaining

This project area includes 70 mines in the northern portion of the Navajo Nation, which shares geography with parts of Arizona, New Mexico, and Utah (Figure 15). Mines in this FOP are on Navajo Nation-administered land or mixed-ownership land (i.e., BLM-administered and Navajo Nation-administered land). DRUM field teams conducted V&V activities at nine mines in this FOP in 2024. DRUM field teams are planning to visit the remaining three mines in 2025.

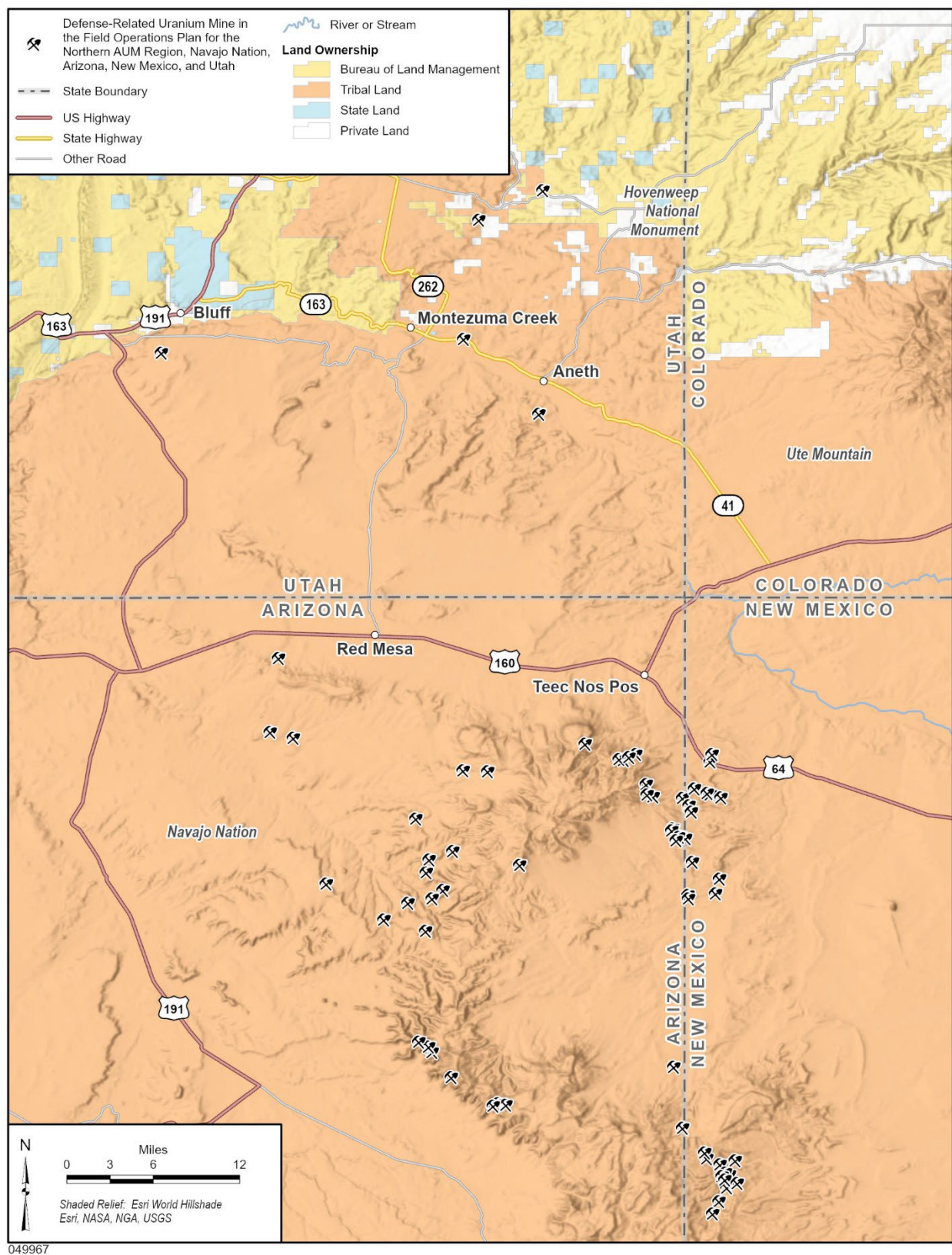


Figure 15. Mines in the Northern AUM Region, Navajo Nation FOP

North Central AUM Region, Navajo Nation FOP: 7 Mines Remaining

This project area includes 44 mines in the northern central portion of the Navajo Nation, which shares geography with parts of Arizona and Utah (Figure 16). Mines in this FOP are on Navajo Nation-administered land or mixed-ownership land (i.e., private property and Navajo Nation-administered land). DRUM field teams conducted V&V activities at 37 mines in this FOP in 2024. DRUM field teams are planning to visit the remaining seven mines in 2025.

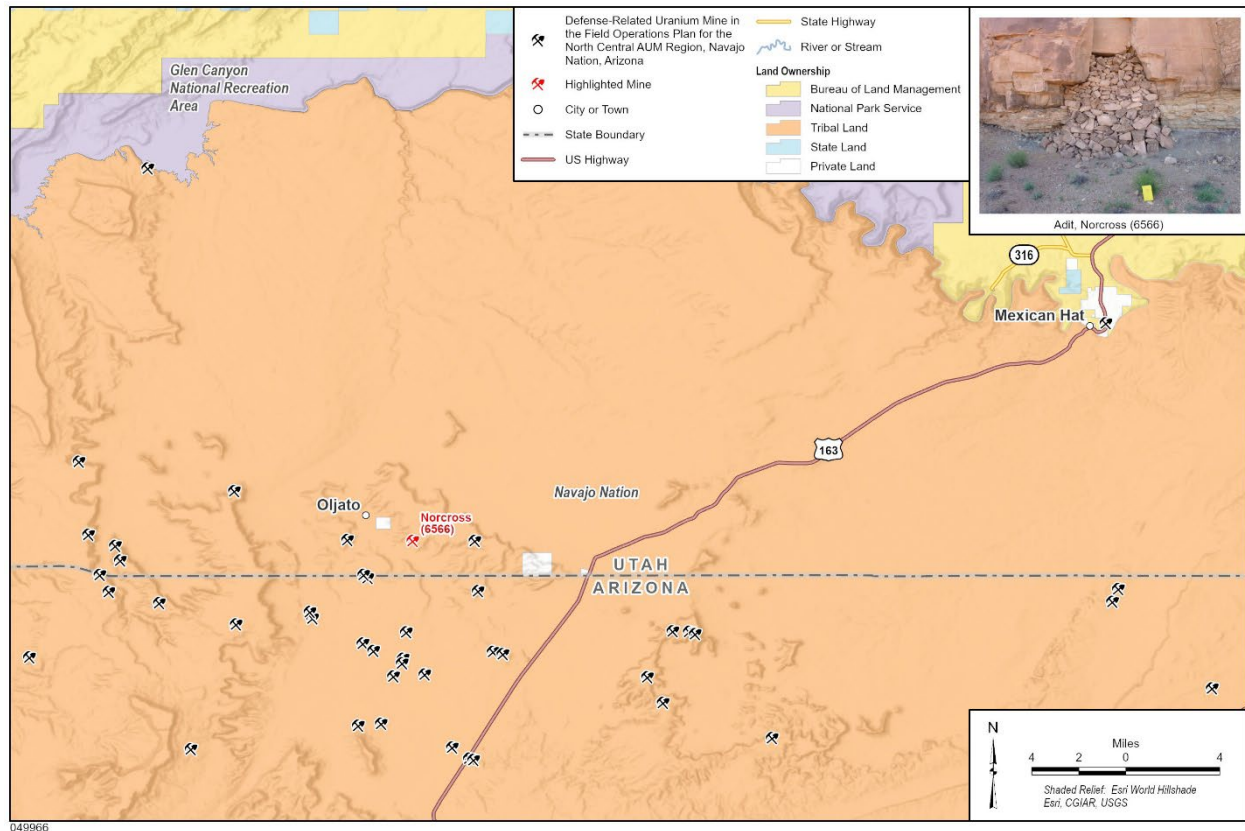


Figure 16. Mines in the North Central AUM Region, Navajo Nation FOP

Campaign 3 Progress

V&V work at Campaign 3 mines officially began on March 4, 2024. However, V&V field visits were conducted at mines on private property early in the DRUM Program; seven were completed in Utah under a potential land donation agreement between the landowner and BLM in 2019 and 2020. The mines were never transferred to public ownership and have since been designated as Campaign 3 mines. V&V activities on the private portions of two mines were completed in 2020 and 2021 at the same time as the public portions. V&V activities on the private portion of the Burro Tunnel (LM ID 2542) mine were completed in 2022 at the same time as the public portion after the landowner granted access permission while in the field with the team. Access to one mine in Arizona was denied in 2023, and the mine was marked V&V complete. The estimated completion date for Campaign 3 field activities is September 30, 2028. V&V progress for mines in Campaign 3 is presented in Table 11, Table 12, and Table 13. Field V&V visits by FOP are presented in Table 14.

Table 11. Campaign 3—Mines on Private Property

Campaign 3—Mines on Private Property						
Land Management Agency	Reconciled Mines Identified for V&V Field Visits as of December 31, 2024	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
Private	516	26	29	487	14	14
Mixed (DOE and private) ^a	2	2	2	0	0	0
Total	518	28	31	487	14	14

Note:

^a The total number of mixed-ownership mines includes two mines on DOE land and private property that are categorized as Campaign 3 mines as of December 31, 2024.

Campaigns 1, 2, and 3—Mixed-Ownership Progress, Private Portion

Table 12. Campaign 3 Progress—Mines on Both Public Land and Private Property

Campaigns 1 and 3—Mines on Mixed-Ownership Land						
Campaign	Reconciled Mines Identified for V&V Field Visits as of December 31, 2024 ^a	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024 ^a	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024 ^a	V&V Reports Completed as of December 31, 2024 ^a
Campaign 3 portion of mixed public and private ownership	139	41	50	89	33	33

Note:

^a Includes one unconventional site that was field evaluated by request and counted as a Campaign 1 and 3 mixed-ownership mine.

Table 13. Campaign 3 Progress—Mines on Both Private Property and Tribal Lands

Campaigns 2 and 3—Mines on Mixed-Ownership Land						
Campaign	Reconciled Mines Identified for V&V Field Visits as of January 1, 2025	V&V Field Visits Completed January 1–December 31, 2024	Total V&V Field Visits Completed Through December 31, 2024	V&V Field Visits Remaining as of December 31, 2024	V&V Reports Completed January 1–December 31, 2024	V&V Reports Completed as of December 31, 2024
Campaign 3 portion of mixed private and tribal ownership	1	0	0	1	0	0

Table 14. Summary of V&V Activities for Campaign 3 by FOP

FOP	Field V&V Visits Completed Before 2024	Field V&V Visits Completed in 2024	Field V&V Visits Remaining ^a
Arizona Private ^b	1	0	9
Black Hills and Northern Rockies ^c	0	1	0
California	0	0	1
Colorado Private ^b	0	0	56
Remaining Sites in Colorado ^c	0	0	2
Idaho ^c	0	0	1
Montana Private ^b	0	0	5
Nevada	0	0	3
New Mexico Private ^b	0	2	71
North and South Dakota Private ^b	0	0	39
North Central AUM Region, Navajo Nation ^d	0	0	1
Manti-La Sal ^{c,e}	1	0	0
Pennsylvania Private	0	0	1
Southwestern Colorado Private ^b	1	23	93
Texas and Oklahoma Private	0	0	29
Umetco ^b	9	38	61
USFS Region 2 ^c	0	0	1
Utah Private ^b	0	0	50
Washington Private	0	0	9
Wyoming Private ^b	0	2	43
Wyoming Public ^c	0	2	1
Wyoming Powder River Basin ^b	0	1	101
Total	12	69	577

Notes:

^a The number of field V&V visits remaining will fluctuate depending on mine access.

^b Includes the private portions of Campaign 1 and Campaign 3 mixed-ownership mines assigned to a Campaign 3 FOP.

^c Includes the private portions of Campaign 1 and Campaign 3 mixed-ownership mines assigned to a Campaign 1 FOP.

^d Includes the private portion of a Campaign 2 and Campaign 3 mixed-ownership mine assigned to a Campaign 2 FOP.

^e Includes one unconventional site that was field evaluated by request and counted as a Campaign 1 and 3 mixed-ownership mine.

Colorado

Southwestern Colorado Private FOP: 93 Mines Remaining

This project area includes 117 mines in the southwestern portion of Colorado (Figure 17). Mines in this FOP are on private property or mixed-ownership land (i.e., BLM-administered land and private property). DRUM field teams conducted V&V activities at 23 mines in this FOP in 2024. DRUM field teams are planning to continue V&V activities for the remaining 93 mines in 2025.

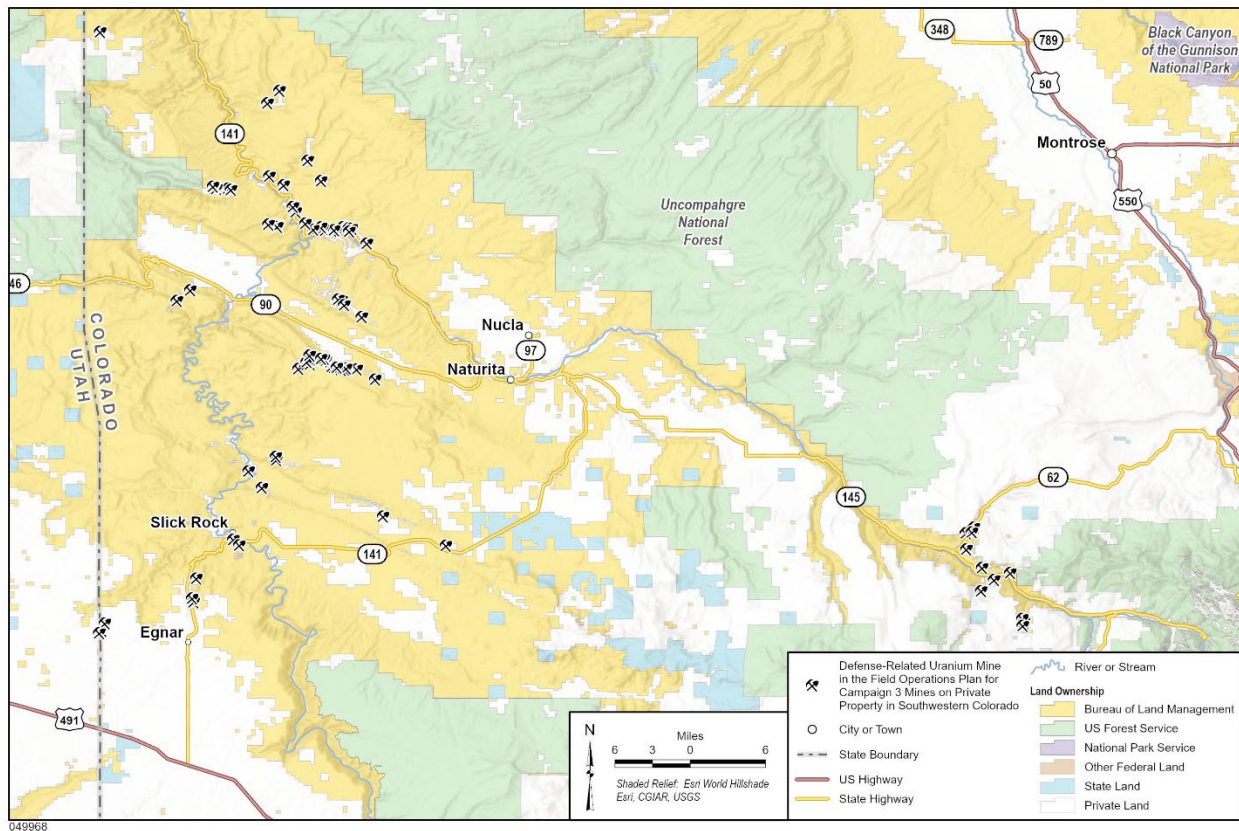


Figure 17. Mines in the Southwestern Colorado Private FOP

Colorado, Utah, and Wyoming

Umetco FOP: 61 Mines Remaining

This project area includes a total of 108 mines in the eastern portion of Utah, southwestern Colorado, and central Wyoming (Figure 18) owned by Umetco Minerals Corporation. Mines in this FOP are on private property or mixed-ownership land (i.e., BLM-administered land and private property or USFS-administered land and private property). DRUM field teams conducted V&V activities at 38 mines in this FOP in 2024. DRUM field teams are planning to continue V&V activities for the remaining 61 mines in 2025.

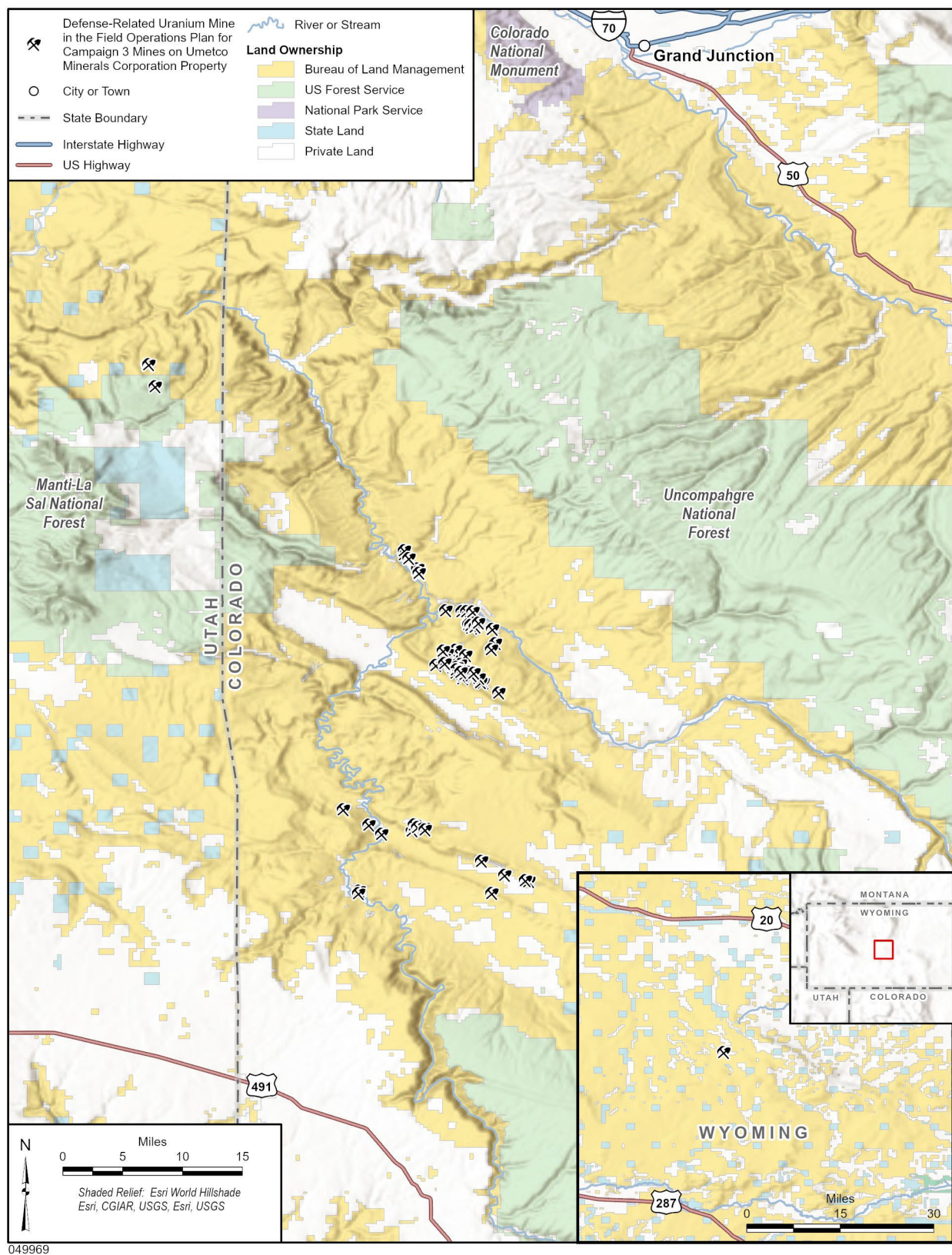


Figure 18. Mines in the Umetco FOP

Programmatic Accomplishments

The DRUM Program had a very successful year. Every facet of the program—including management, reconciliation, field and report staff, data and records management, environmental compliance, safety and health, quality assurance, stakeholder engagement, business services (e.g., technical editing), project services (e.g., analytical laboratory), and realty services—contributed to its success. With the DRUM Program, LM has created a “center of excellence” providing 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.

The DRUM Program accomplished the following programmatic activities in calendar year 2024 (listed by fiscal month rather than calendar month):

January 2024

- Participated in safeguarding planning meetings with Bat Conservation International (BCI), the Colorado Division of Reclamation, Mining, and Safety (DRMS), or BLM for projects in Colorado and Utah.
- Received data from the completed Carpenter Flats/Carpenter Ridge safeguarding project and successfully uploaded the data to the DRUM Program database.
- Prepared and submitted risk roll-up reports for the mines in:
 - The eastern portion of the Black Hills National Forest (nine mines) in South Dakota on USFS-administered land (DOE 2024l).
 - The central portion of the Black Hills National Forest (15 mines) in South Dakota on USFS-administered land (DOE 2024k).

February 2024

- Completed the contract deliverable, “Produce and maintain a master schedule, using the ‘Critical Path Method’ (CPM), which shows, at minimum, the schedule for each Campaign and FOP, and the overall campaign targets as listed in section 3.13. The schedule shall also include the major tasks in preparation for and in direct support to field V&V activities, such as, but not limited to, V&V Workplans, Field Operations Plans, obtaining access agreements.”
- Completed the contract deliverable, “Produce Field Operations Plans needed for the calendar years 2024, 2025, and 2026 field seasons.”
- Completed the contract deliverable, “Submit draft final DRUM Annual Report covering January-December for the calendar year,” for 2023 (DOE 2024kk).
- Conducted additional spring training in preparation for the upcoming field season. Training topics included field training, DRUM lessons learned, training wrap-up, and summary. A DRUM 2024 field season readiness review was also completed.
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, BLM, or the Wyoming Department of Environmental Quality for projects in Colorado, Utah, Wyoming, and Montana.

- Revised the FOPs for mines in Arizona statewide (DOE 2020b), mines on public land in Wyoming (DOE 2019), mines on private property owned by Umetco Minerals Corporation (DOE 2023d), mines on private property in southwestern Colorado (DOE 2023c), mines on private property in New Mexico (DOE 2024f), and the remaining sites in Colorado (DOE 2022).
- Prepared and submitted a risk roll-up report for the mines in Glen Canyon National Recreation Area (11 mines) in southern Utah and northern Arizona on NPS-administered land (DOE 2024s).
- Conducted Navajo Nation Cultural Sensitivity training and Biological Resources of Significant Cultural and Sacred Value training.

March 2024

- Started the 8th year of conducting V&V field visits to mines on public land on March 5 in Arizona and California.
- Started the 3rd year of conducting V&V field visits to mines on tribal lands on March 7 on the Navajo Nation in Arizona and Utah.
- Started the 1st year of conducting V&V field visits to mines on private property on March 25 in Colorado.
- Completed the contract deliverable, “Review and update the DRUM V&V Work Plans for Campaign 2.”
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, BLM, and NPS for projects in Colorado, Utah, and Montana.
- Prepared and revised the FOPs for mines on the Hualapai Indian Reservation (DOE 2024a), mines on Pueblo of Zia land (DOE 2024b), mines on Pueblo of Zuni land (DOE 2024c), mines on the Tohono O’odham Indian Reservation (DOE 2024d), and the mine on the Ute Indian Tribe Uintah and Ouray Reservation (DOE 2024e).
- Prepared and submitted a risk roll-up report for the mines in Bighorn Canyon National Recreation Area (four mines) in southern Montana and northern Wyoming on NPS-administered land and BLM-administered land (DOE 2024j).
- Completed the DRUM Program Campaign 3 fact sheet.

April 2024

- Completed the contract deliverable, “Submit a letter confirming the status of all Campaign 1 V&V field visits.”
- Completed an ad hoc request to prepare an export of DRUM features in Colorado, including field notes.
- Completed an ad hoc request to prepare a V&V reports package for the New Mexico Energy, Minerals and Natural Resources Department.
- Completed an ad hoc request to create a figure showing all DRUM mines in the state of North Dakota.
- Completed an ad hoc request to identify DRUM mines that may be on the land within the boundaries of the Berryessa Snow Mountain National Monument.

- Completed an ad hoc request to compare existing risk roll-up reports within the state of Utah to safeguarding projects already completed to assist in identifying areas where projects have not been planned.
- Completed an ad hoc request to create new DOE DRUM webpage graphics for Campaign 3 progress and safeguarding progress.
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, BLM, and NPS for projects in Colorado and Utah.
- Prepared and submitted risk roll-up reports for the mines in:
 - The northern central portion of the Black Hills National Forest (eight mines) in South Dakota on USFS-administered land (DOE 2024n).
 - The eastern central portion of the Black Hills National Forest (14 mines) in South Dakota on USFS-administered land (DOE 2024m).
- Completed an ad hoc request to prepare a version of a DRUM risk roll-up report (hazard summary) that consists of a spreadsheet with features and map of an area of Navajo Nation.
- Completed an ad hoc request to prepare a list of mines that are pending access approval in the Northern AUM and North Central AUM FOPs.

May 2024

- Completed an ad hoc request to prepare DRUM Program data about reclamation and remediation for DRUM-related sites as compared to non-DRUM sites for LM to present to the DOE Office of the General Counsel.
- Completed all V&V reports for the 2023 field season, which included 201 reports in total.
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, or BLM for projects in Colorado.
- Completed final updated DRUM V&V Work Plans for Campaign 1, Campaign 2, and Campaign 3.
- Prepared a risk roll-up report for the mines in Canyonlands National Park (nine mines) in Utah on NPS-administered land and BLM-administered land (DOE 2024p).

June 2024

- Completed an ad hoc request to estimate the number of DRUM mines that will remain to be visited on the Navajo Nation at the end of the 2024 and 2025 field seasons.
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, and BLM for projects in Colorado, Utah, and Montana.
- Prepared and submitted risk roll-up reports for the mines in:
 - Utah western field offices (nine mines) on BLM-administered land (DOE 2024gg).
 - Coronado National Forest (five mines) in central Arizona on USFS-administered land (DOE 2024q).
 - The western central portion of the Black Hills National Forest (11 mines) in South Dakota on USFS-administered land (DOE 2024o).
 - Fremont and Trachyte Localities (17 mines) in central Utah on BLM-administered land (DOE 2024r).

- Marysville Locality (eight mines) in central Utah on BLM-administered land (DOE 2024y).
- North Belfield and South Belfield Localities (three mines) in western North Dakota on USFS-administered land and state-administered land (DOE 2024dd).
- South San Rafael Locality and remaining Price Field Office (15 mines) in southern Utah on BLM-administered land (DOE 2024ee).

July 2024

- Completed an ad hoc request to upload V&V reports and geographic information system data for USBR to the electronic file transfer site.
- Completed an ad hoc request to identify outstanding V&V reports, risk roll-up reports, and FOPs to be submitted to the BLM Utah State Office.
- Completed an update to the *Defense Related Uranium Mines Program Management Plan* (DOE 2024g) (Program Management Plan).
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, and BLM for safeguarding projects in Colorado, Utah, and Montana.
- Completed an ad hoc request to provide team access information and map screenshots in the safeguarding feature tracker for the Penigal (LM ID 2528), Penigal 2 (LM ID 6404), and Lucky Day (LM ID 6405) mines for Colorado DRMS for the creation of mine site field forms.
- Completed the National Environmental Policy Act (NEPA) Categorical Exclusion and accompanying *Environmental Review Form* (LM-Form-4-20.3-4.0) for DRUM safeguarding on private property in Monogram Mesa, Colorado, with Colorado DRMS.
- Prepared and submitted risk roll-up reports for the mines in:
 - Lisbon Valley Locality north (13 mines) in eastern Utah on BLM-administered land (DOE 2024w).
 - Indian Creek Locality (15 mines) in Utah on BLM-administered land (DOE 2024t).
 - Lisbon Valley Locality south (14 mines) in Utah on BLM-administered land (DOE 2024x).
 - Thompson Mining District (13 mines) in eastern Utah on BLM-administered land (DOE 2024ff).
 - Montezuma Canyon Locality south (21 mines) in Utah on BLM-administered land (DOE 2024bb).
 - Inter-River Locality east (11 mines) in Utah on BLM-administered land (DOE 2024u).
 - Inter-River Locality west (11 mines) in Utah on BLM-administered land (DOE 2024v).
- Completed the Navajo Nation Northern AUM hazard summary, the first Campaign 2 equivalent of a risk roll-up for mines on the Navajo Nation.

August 2024

- Participated in safeguarding planning meetings with BCI, Colorado DRMS, and BLM for safeguarding projects in Colorado, Utah, and Montana.
- Completed an ad hoc request to prepare a GeoPackage containing data for the Penigal (LM ID 2528), Penigal 2 (LM ID 6404), Lone Peak (LM ID 2616), and Lucky Day (LM ID 6405) mines.
- Completed the contract deliverable, “Submit a draft-final DRUM Mid-year Progress Report covering January-June for the calendar year.”
- Prepared and submitted risk roll-up reports for the mines in:
 - Montezuma Canyon Locality central (13 mines) in Utah on BLM-administered land (DOE 2024z).
 - Montezuma Canyon Locality west (seven mines) in Utah on BLM-administered land (DOE 2024cc).
 - Montezuma Canyon Locality north central (11 mines) in Utah on BLM-administered land (DOE 2024aa).
- Completed the “Defense-Related Uranium Mines Program on the Navajo Nation” fact sheet.

September 2024

- Completed the contract deliverable, “Submit an updated DRUM Program Reconciliation Report.”
- Participated in safeguarding planning meetings with BCI, Colorado DRMS, and BLM for safeguarding projects in Colorado and Utah.
- Conducted a demonstration of DRUM V&V activities in Yellow Cat, Utah, for the DOE Voluntary Protection Program audit team.
- Completed the contract deliverable, “Prepare an update to the final draft DRUM Report to Congress.”
- Completed the contract deliverable, “Provide a summary of ad hoc program requests.”
- Completed the contract deliverable, “Submit a letter confirming all the data management tasks have been completed at the end of the performance period.”
- Completed the final *Defense-Related Uranium Mines Program Outreach Communications Plan Campaign 2, Navajo Nation* (DOE 2024h).

October 2024

- Participated in safeguarding planning meetings with BCI, Colorado DRMS, and BLM for safeguarding projects in Colorado, Utah, and Montana.
- Completed an ad hoc request to gather V&V reports, risk roll-up reports, and spatial access data for an upcoming bat survey in Glen Canyon National Recreation Area and Capitol Reef National Park.

- Completed an ad hoc request to provide a table that highlights medium or high physical hazards and sites that surpass the new 2024 chemical and radiological level values for all Navajo Nation sites that have been surveyed.
- Completed an ad hoc request for more background information on the Charlotte Rutherford (LM ID 4119) mine in New Jersey.

November 2024

- Participated in safeguarding planning meetings with BCI, Colorado DRMS, BLM, and the Navajo Abandoned Mine Lands Reclamation Department (NAMLRD) for safeguarding projects in Colorado, Utah, Montana, or the Navajo Nation.
- Completed an ad hoc request to upload 385 V&V reports for the BLM Utah State Office and a review of risk roll-up reports still needed for completed mines in Utah not currently in risk roll-up reports.
- Completed an ad hoc request on behalf of the State of New Mexico to investigate the V&V status of mines on public land and private property in the Beacon Hill Area of New Mexico.

December 2024

- Participated in safeguarding planning meetings with BCI, Colorado DRMS, BLM, NPS, and NAMLRD for safeguarding projects in Colorado, Utah, Montana, or the Navajo Nation.
- Completed an ad hoc request to investigate the water sample status for the C Group (LM ID 778) mine.
- Supported LM in a NEPA review safeguarding meeting for the Spring Creek, Long Park Adjacent, Placerville Private project in Colorado.
- Supported LM in a NEPA review safeguarding meeting for the Wildsteer/Monogram Mesa project in Colorado.
- Completed an ad hoc request to compile gamma radiation survey data for mines on the Navajo Nation according to the U.S. Environmental Protection Agency's (EPA's) request.
- Completed an ad hoc request to add chapter house and elevation data to the Northern AUM hazard summary.

Risk Screening

To date, for Campaign 1, program results indicate that physical hazards (e.g., open shafts and adits) pose the greatest risk to the public, with roughly 52% of the mines ranked “high” or “medium” for physical hazards, whereas only 2% of the mines were ranked “high” and “medium” for radiological hazards, and 8% were ranked “high” or “medium” for chemical hazards. These estimates reflect mining-related physical hazards associated with uranium ore-extraction operations and suggest the need for future safeguarding to mitigate the risk presented by physical features. Structures, another category of hazardous features that was previously included in evaluations of physical risks, were not considered and were ranked separately. This adjustment was made to ensure that earthen mine features (e.g., open shafts, adits) would be the main priority for safeguarding while also documenting risks related to structures. LM will address the handling of structures individually with each land management agency because each agency addresses structures differently, if at all.

The DRUM team prepared V&V reports for each mine and Campaign 1 risk roll-up reports for groups of mines in the same area (e.g., mining district, national forest) so land management agencies can set priorities for that region and develop potential physical hazard safeguarding projects.

Safeguarding

The DRUM Program assisted land management agencies with safeguarding physical hazards posed by some mine features at 10 different project areas in western Colorado and Utah. These hazards were primarily open adits, prospects, trenches, shafts, and subsidence features.

Table 15 summarizes the 2024 safeguarding projects and lists the cooperating land management agencies and state abandoned mine lands (AML) offices. These safeguarding projects demonstrate the collaborative relationships between the DRUM Program, cooperating state AML offices, and land management agencies.

Table 15. 2024 Safeguarding Projects

State	Project Area	Features Safeguarded	Cooperating AML Office	Cooperating Land Management Agency
Colorado	Colorado - Freeport	51	Freeport McMoRan Inc.	NA
Colorado	Radium Hill 10 (on ULP Least Tract C-WM-17)	1	Colorado DRMS	BLM Tres Rios Field Office
Colorado	DRUM San Juan	8	Colorado DRMS	USFS San Juan National Forest
Colorado	East Calamity	49	Colorado DRMS	BLM Grand Junction Field Office
Colorado	Monogram Mesa private and Bitter Creek	9	Colorado DRMS	Private and BLM Uncompahgre Field Office
Utah	Utah - Freeport	56	Freeport McMoRan Inc.	NA
Utah	East Henry Mountains Phase 1	100	Utah AMRP	BLM Richfield Field Office
Utah	East Henry Mountains Part 2 - Freeport	11	Freeport McMoRan Inc.	BLM Richfield Field Office
Utah	East Henry Mountains Part 3 - Freeport	3	Freeport McMoRan Inc.	BLM Richfield Field Office
Utah	East Henry Mountains Phase 2	91	Utah AMRP	BLM Richfield Field Office
Wyoming	WDEQ	3	WDEQ	BLM Rawlins and Worland Field Offices
Total Safeguards Installed		379^a		

Note:

^a The total number of safeguards for 2024 does not include the WDEQ project. The WDEQ project was completed in calendar year 2023, but closure data were not received until 2024.

Abbreviations:

AMRP = Abandoned Mine Reclamation Program

NA = not available

ULP = Uranium Leasing Program

WDEQ = Wyoming Department of Environmental Quality

Return on Investment

The 2014 Report to Congress identified 4225 potential uranium mines on federal, state, and tribal lands and private property. The report determined that there were 2515 mines on public land, 453 mines on tribal lands, and 1257 mines of unknown ownership or on nonfederal and nontribal lands. Although the Report to Congress did not describe all the potential liabilities related to uranium mines, it estimated that 80% of the mines would require safeguarding (referred to as “reclamation” in the report), and 20% would require environmental remediation. Safeguarding involves lessening mining-related physical hazards, generally by building barriers at entries to underground mines so people cannot access them. Reclamation is the process of restoring essential geomorphic functions at previously mined locations. This process may include reshaping waste rock piles and other mining-related disturbances to reduce potential erosion and blend the mine site with the bordering undisturbed landscape. AUM remediation typically involves isolating contaminants or pollutants from the surrounding environment, generally by consolidating waste materials and performing environmental restoration work.

The 2014 Report to Congress estimated that mines posing threats to human safety would require an average of three safeguards each at an estimated cost of \$18,000 per constructed safeguard, or an average unit cost of \$54,000 per affected mine. It also estimated that mines requiring remediation under CERCLA may require an average unit cost of \$1,300,000 per mine based on Table 4 of the *Defense-Related Uranium Mines Cost and Feasibility Topic Report* (DOE 2014a). The maximum remediation cost for each mine size category was multiplied by the percentage of mines in that size category to derive the estimated cost per mine of \$1,300,000 (rounded).

Implementation of DRUM Campaign 1 (field V&V activities at mines on public land) in FY 2017, DRUM Campaign 2 (field V&V activities at mines on tribal lands) in FY 2022, and DRUM Campaign 3 (field V&V activities at mines on private property) in FY 2024 has substantially reduced the potential costs of reclamation and remediation in two ways: (1) by removing duplicate mining records from the DRUM Program database, thereby decreasing the estimated total number of existing mines and (2) by reducing the estimated number of physical hazards and environmental risks by applying risk scoring assessments based on observed mine conditions.

As of December 31, 2024, the DRUM Program database identified 2354 mines on public land (2214 Campaign 1 mines plus the public portions of 139 Campaign 1 and 3 mixed-ownership mines and one Campaign 1 and 2 mixed-ownership mine), 211 mines on tribal lands (209 Campaign 2 mines plus the tribal portions of one Campaign 1 and 2 mixed-ownership mine and one Campaign 2 and 3 mixed-ownership mine), and 658 mines on private property (518 Campaign 3 mines plus 139 Campaign 1 and 3 mixed-ownership mines and one Campaign 2 and 3 mixed-ownership mine). These numbers will fluctuate until the public land, tribal lands, and private property campaigns are completed. Analysis of the risk scoring assessments completed to date shows that approximately 63% of mines on public land, 14% of mines on tribal lands, and 2% of mines of private property will require safeguarding of physical hazards compared to the 80% estimated in the 2014 Report to Congress. However, DRUM Program field inventory data generally validate the 2014 Report to Congress estimate that an average of three safeguards will be required per mine where hazardous entries are identified. These updated estimates result in safeguarding cost reductions of approximately \$27,432,000 for public land (Table 16), \$17,949,600 for tribal lands (Table 17), and \$53,568,000 for private property (Table 18).

Whereas the 2014 Report to Congress estimated that 20% of mines would require further evaluation via the CERCLA process, DRUM fieldwork completed to date reduces this estimate to 12% on public land. When implemented, the CERCLA process will be handled by the appropriate land management agencies. If this trend continues, the resulting potential remediation scope will be reduced from 500 mines (the 2014 Report to Congress estimate) to approximately 218 mines, representing an approximate cost reduction of \$366,600,000 (Table 16).

Unlike mines on public land, for which long-term chemical and radiological risks are assessed using a scoring process, mines on tribal lands and private property are not scored for chemical and radiological risks. Instead, chemical and radiological data are provided to tribal land agencies, U.S. government agencies, or private property owners to allow sufficient flexibility to establish priorities based on needs, requirements, and budgets. Due to this difference in risk assessment and scoring, it is difficult to determine which mines will require additional evaluation under CERCLA. This estimate of mines potentially requiring additional evaluation is complicated by the wider variety of exposure scenarios on tribal lands and private property compared to public land. Tribal lands exposure scenarios include recreational, livestock rancher, residential, and Navajo Nation surrogate residential exposure scenarios. Private property exposure scenarios include recreational, livestock rancher, and residential exposure scenarios. Additionally, there have been changes to EPA regional screening levels (RSLs) for chemical and radiological constituents since the 2014 Report to Congress. For example, in 2023, EPA changed the RSLs for lead (reduced by 75%), cadmium (reduced by 90%), and nickel (reduced by 7%).

For the purpose of estimating the number of mines to be subjected to additional CERCLA evaluation, any mine on tribal lands or private property with at least one constituent exceeding the lowest applicable residential screening level (ResSL) will be counted. DRUM fieldwork completed to date suggests that 26% of mines on tribal lands and 6% of mines on private property have at least one ResSL exceedance. If this trend continues, the resulting potential remediation scope will be reduced from 91 mines to 55 mines on tribal lands, representing an approximate cost reduction of \$46,800,000 (Table 17), and reduced from 251 mines to 41 mines on private property, representing an approximate cost of reduction of \$273,000,000 (Table 18). For FYs 2017 through 2023, the DRUM Program's total expended costs were approximately \$39,690,000, or about \$5,670,000 per year. The total projected program expenditure of \$62,370,000 (an average of \$5,670,000 per year for FYs 2017 through 2027) has the potential to reduce costs by \$785,349,600, a return on investment of over 13:1.

**Table 16. Estimated Versus Projected DRUM Program Actions and Expenditures
at Mines on Public Land**

	2014 Report to Congress Estimates	Program Estimates as of December 31, 2024 ^a	Difference
Total number of mines	2,500	2,353 ^b	147 mines
Estimated percentage of mines requiring safeguards	80%	63%	17%
Estimated number of mines to safeguard	2,000	1,492	508 mines
Estimated safeguard construction cost per mine	\$54,000	\$54,000	\$0
Estimated cost to complete safeguards	\$108,000,000	\$80,568,000	\$27,432,000
Estimated percentage of mines requiring CERCLA remediation	20%	12%	8%
Estimated number CERCLA-eligible mines	500	218	282 mines
Estimated CERCLA remediation cost per mine	\$1,300,000	\$1,300,000	\$0
Estimated cost to complete CERCLA remediation	\$650,000,000	\$283,400,000	\$366,600,000
Estimated total safeguarding and CERCLA remediation cost	\$758,000,000	\$363,968,000	\$394,032,000

Notes:

^a This is the total number of mines that have been identified for V&V work as of December 31, 2024.

^b Excludes one unconventional site that was field evaluated by request and counted as a mixed-ownership mine (Campaigns 1 and 3).

**Table 17. Estimated Versus Projected DRUM Program Actions and Expenditures
at Mines on Tribal Lands**

	2014 Report to Congress Estimates	Program Estimates as of December 31, 2024 ^a	Difference
Total number of mines	453	211	242 mines
Estimated percentage of mines requiring safeguards	80%	14%	66%
Estimated number of mines to safeguard	362	30	332 mines
Estimated safeguard construction cost per mine	\$54,000	\$54,000	\$0
Estimated cost to complete safeguards	\$19,569,600	\$1,620,000	\$17,949,600
Estimated percentage of mines requiring CERCLA remediation	20%	26%	NA
Estimated number CERCLA-eligible mines	91	55	36 mines
Estimated CERCLA remediation cost per mine	\$1,300,000	\$1,300,000	\$0
Estimated cost to complete CERCLA remediation	\$118,300,000	\$71,500,000	\$46,800,000
Estimated total safeguarding and CERCLA remediation cost	\$137,869,600	\$73,120,000	\$64,749,600

Note:

^a This is the total number of mines that have been identified for V&V work as of December 31, 2024.

Abbreviation:

NA = not applicable

Table 18. Estimated Versus Projected DRUM Program Actions and Expenditures at Mines on Private Property

	2014 Report to Congress Estimates	Program Estimates as of December 31, 2024 ^a	Difference
Total number of mines	1,257 ^b	658	599 mines
Estimated percentage of mines requiring safeguards	80%	2%	78%
Estimated number of mines to safeguard	1,006	14	992 mines
Estimated safeguard construction cost per mine	\$54,000	\$54,000	\$0
Estimated cost to complete safeguards	\$54,324,000	\$756,000	\$53,568,000
Estimated percentage of mines requiring CERCLA remediation	20%	6%	14%
Estimated number CERCLA-eligible mines	251	41	210 mines
Estimated CERCLA remediation cost per mine	\$1,300,000	\$1,300,000	\$0
Estimated cost to complete CERCLA remediation	\$326,300,000	\$53,300,000	\$273,000,000
Estimated total safeguarding and CERCLA remediation cost	\$380,624,000	\$54,056,000	\$326,568,000

Notes:

^a This is the total number of mines that have been identified for V&V work as of December 31, 2024.

^b This is the total number of mines with unknown ownership plus mines on nonfederal and nontribal lands reported in the 2014 Report to Congress. This number was decreased to the actual number of mines of private property through the removal of duplicate mining records during the reconciliation process.

Abbreviation:

NA = not applicable

Strategic Partnerships

LM strives to maintain and encourage collaborative partnerships with BLM, USFS, NPS, and the States of Colorado, Montana, New Mexico, South Dakota, North Dakota, Utah, Wyoming, Nevada, Oregon, Arizona, and California. LM also collaborates with EPA Regions 6 and 9 on program V&V assessment and risk-screening methods on tribal lands. LM continues to revise partnership agreements among various federal, state, and nonprofit entities to safeguard physical hazards at these AUMs. Most notably, DOE has a Cooperative Agreement with BCI that provides long-term access to the spectrum of project development, environmental review (including NEPA documentation), and design and construction services needed to safeguard mines on public land.

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

In 2024, the DRUM Program continued V&V work on the tribal lands campaign and started V&V work on the private property campaign.

2025 Planned Activities

At the end of 2024, LM has completed V&V fieldwork at nearly 100% of the mines in Campaign 1. Campaign 1 V&V fieldwork remains to be completed for three mines in 2025. LM reconciled all DRUM locations at the end of 2021 and will continue into 2025 as the program crosswalks mine lists with EPA and tribal AML programs. LM will continue to expand its partnerships with states and agencies for field activities scheduled through 2025. Included in the implementation of Campaign 1 is LM's plan to leverage resources to assist partner agencies in addressing priority physical hazards identified by the program. Through a process of collaboration and concurrence, with hazards defined during V&V activities, LM and partner agencies determine priorities and optimize available resources for safeguarding physical hazards.

V&V Field Operations

The field teams will visit several locations during the 2025 field season, which lasts from March through December, as weather allows. The teams are scheduled to perform field V&V activities at DRUM sites in the following locations:

- Black Hills, Wind River Basin, Laramie, Washakie Basin, Shirley Basin, and Powder River Basin Mining Districts, Wyoming
- Western AUM Region, Navajo Nation, Arizona
- Ute Indian Tribe Uintah and Ouray Reservation, Utah
- Front Range, Uravan, Paradox, Bull Canyon, Gypsum Valley, Rifle, Slick Rock, Gateway, and Placerville Mining Districts, Colorado
- Moab, Salt Lake, Monticello, White Canyon, Thompson, San Rafael, Henry Mountains, and Uinta Mining Districts, Utah

For each project, a FOP will provide coordination instructions to the teams for the inventory and environmental sampling activities so that fieldwork is conducted efficiently. FOPs convey to LM and partner agencies information pertinent to the V&V activities 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 weather (e.g., late seasonal snow) or a natural disaster (e.g., smoke from a wildland fire) may affect field teams, they will have other options, allowing them to safely continue fieldwork.

Campaign 1

Campaign 1 field V&V activities began in FY 2017 and will continue through 2025 until work at the three remaining Campaign 1 mines (one Campaign 1 mine and two public portions of Campaign 1 and 3 mixed-ownership mines) is complete.

Campaign 2

Campaign 2 field V&V activities began in FY 2022 and will continue with plans for completion in 2027.

Campaign 3

Campaign 3 field V&V activities began in 2024 and will continue through 2025, subject to obtaining approved access by private landowners.

Safeguarding Program

In 2025, safeguarding projects are planned in Colorado, Utah, and Montana. In Colorado, an estimated 125 hazardous mine features will be safeguarded on land managed by BLM's Tres Rios and Uncompahgre Field Offices, and 14 hazardous mine features will be safeguarded on private property in the Wildsteer Mesa, Monogram Mesa, Spring Creek, and Placerville Localities. In Utah, projects are planned to safeguard nine hazardous features in the eastern Henry Mountains, 147 features in the Kane Creek and Brumley Ridge Areas, and 11 features in the Cottonwood Creek Area. In Montana, a safeguarding project is planned in the Pryor Mountains Locality to safeguard 25 hazardous features. In total, 331 hazardous mine features are scheduled for safeguarding in 2025.

Safeguarding projects are initiated as a follow-up to the DRUM Program's risk roll-up reports, which document physical hazards presented by individual features at mines. LM works with affected land management agencies as they concur with the need to safeguard specific mine features in designated geographic areas. Land management agencies, state AML offices, LM, and BCI will collaborate to complete environmental reviews, develop designs and construction specifications, and contract and manage safeguard construction.

Program Plans

DRUM Program activities are represented in the following documents that provide specific guidance and direction for successful completion:

- The Program Management Plan (DOE 2024g)
- The V&V Work Plans
- The *Defense-Related Uranium Mines Quality Assurance Program Plan* (DOE 2024i) (QAPP)
- The *Defense-Related Uranium Mines Safety Plan* (DOE 2023e) (DRUM Safety Plan)
- FOPs
- The *Defense-Related Uranium Mines Data Management Plan* (DOE 2023a) (Data Management Plan)
- The Safeguarding Program Management Plan

A summary of each plan is provided below.

Program Management Plan

The Program Management Plan is the primary guiding program document and defines how LM will execute the DRUM Program, set goals, and effectively communicate program strategies and objectives to the partner agencies. It was revised in July 2024 to address V&V activities for all three DRUM campaigns, including physical hazard safeguarding. It describes how LM, the Legacy Management Support (LMS) contractor, and partner agencies work as a cohesive team to execute the DRUM Program. The next revision is scheduled for July 2026.

V&V Work Plans

The V&V Work Plans provide data objectives, direction, and methodologies regarding how LM and partner agencies collect, store, and report information gathered during V&V activities at mines on public and tribal lands and private property. Field V&V activities described include inventorying mining-related features using digital technology, collecting radiological data, soil and water sampling (if required), photo documentation of mining-related features, in-field and office-based data quality assurance procedures, and reporting. In addition to developing the Campaign 1 V&V Work Plan (2024hh), LM developed separate Campaign 2 V&V Work Plans for the Navajo Nation (DOE 2024ii) and the Pueblo of Laguna, as well as a V&V Work Plan for Campaign 3 mines (DOE 2024jj). LM updates and reviews each V&V Work Plan annually.

QAPP

The QAPP describes the procedure for ensuring that environmental data collected during field V&V activities will be of sufficient quantitative and qualitative value to determine whether objectives are being met. The data provided to partner agencies will be used to supplement existing documentation of mine conditions. It was revised in February 2024 to address updated terminology, organizational changes, and instrument specification. The next revision to the QAPP is scheduled for February 2026.

DRUM Safety Plan

The DRUM Safety Plan defines the requirements of the LMS Worker Safety and Health Program and the Integrated Safety Management System. These programs establish parameters for how the LMS contractor safely performs program activities. The DRUM Safety Plan replaced the previous *Defense-Related Uranium Mines Health and Safety Plan* in spring 2020 and is updated as necessary.

FOPs

FOPs detail activities to be performed on lands administered by partner agencies within discrete operational areas. Each FOP provides contact information for the relevant personnel from LM, the LMS contractor, and partner agencies; identifies the mines where DRUM personnel will perform V&V activities; 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 direction to access the *Supplemental Emergency Response Information (SERI)* form (LMS 1415) for emergency contacts and locations of medical facilities near planned V&V activities. Each FOP is updated as necessary.

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 into quality control checks, capabilities, and queries related to the DRUM Program database.

Safeguarding Program Management Plan

LM issued the Safeguarding Program Management Plan in 2021 to address how LM, in collaboration with land management agencies, state and tribal AML offices, the LMS contractor, and BCI, implements safeguarding projects. The next revision to this plan is scheduled for June 2025.

Abbreviations List

AEC	U.S. Atomic Energy Commission
AML	abandoned mine lands
AUM	abandoned uranium mine
BCI	Bat Conservation International
BLM	U.S. Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
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
LM	Office of Legacy Management
LMS	Legacy Management Support
NAMLRD	Navajo Abandoned Mine Lands Reclamation Department
NEPA	National Environmental Policy Act
NPS	National Park Service
QAPP	Quality Assurance Program Plan
ResSL	residential screening level
RSL	regional screening level
USBR	U.S. Bureau of Reclamation
USFS	U.S. Forest Service
V&V	verification and validation

Additional Information

Additional information about the DRUM Program, including the 2014 Report to Congress, other program documents, ongoing projects, and updates, is 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:

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