



Mesa I Complex – East Side Recommended Removal Alternative Proposed Plan Fact Sheet

U.S. Environmental Protection Agency

Region 9

San Francisco, CA

May 2026

The U.S. Environmental Protection Agency (USEPA) is proposing a plan to address **mining-impacted material** at abandoned uranium mines within the **Lukachukai Mountains Mining District (LMMD) Site**. This **proposed plan** fact sheet presents the LMMD regional **Engineering Evaluation/Cost Analysis (EE/CA)** approach and describes the alternatives that were considered in the **Recommended Removal Alternative** report for the Mesa I Complex – East Side. This fact sheet also describes the details and rationale for USEPA's recommended removal action alternative along with opportunities for public involvement in the decision-making process. **Bold text** indicates terms defined in the glossary near the end of this fact sheet.

PUBLIC INVOLVEMENT OPPORTUNITIES:

A 60-day public comment period will begin on May 30, 2026, and end on July 30, 2026.

Find information:

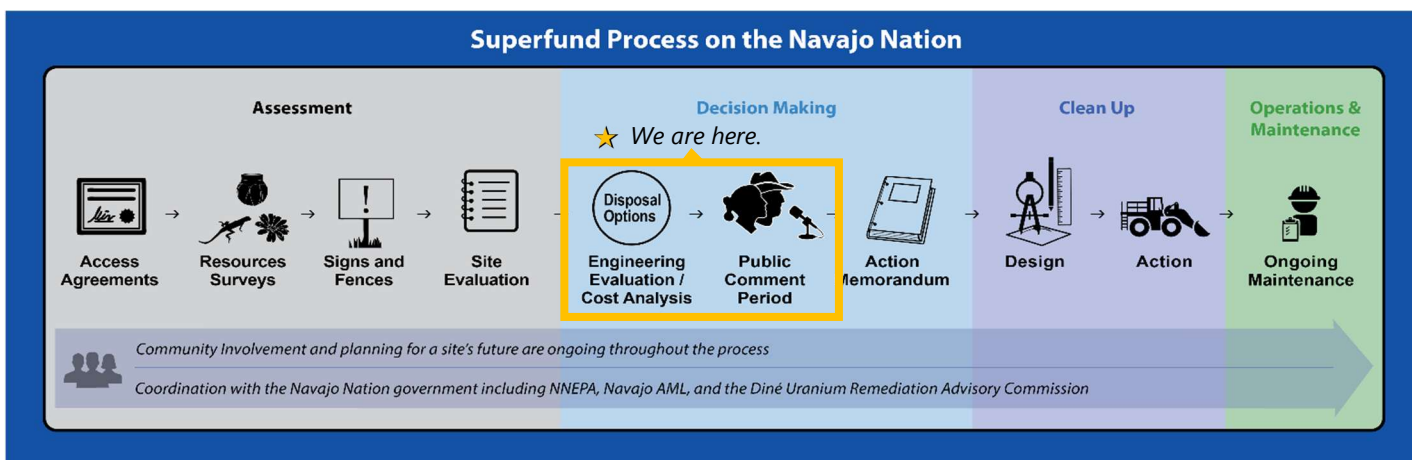
1. **Hard copies:** Reports and fact sheets are available for review at Chapter Houses in LMMD
2. **Electronic reports:**
<https://www.epa.gov/navajo-nation-uranium-cleanup/lukachukai>
3. **Administrative Record:**
<https://www.epa.gov/navajo-nation-uranium-cleanup/administrative-records>

Submit comments:

- At the May 30, 2026 public meeting
- Email: brown.krista@epa.gov
- Post mail:
U.S. Environmental Protection Agency
2255 N. Gemini Drive
Flagstaff, AZ 86001-1637
- Toll-Free voicemail:
(833) 484-4384

After the 60-day public comment period, USEPA will review all public comments on the recommended alternative for the **removal action**. The final decision for conducting the removal action will be announced in the **Action Memorandum** that will contain responses to comments received during the public comment period. Both the Action Memorandum and the responses to comments become part of the **Administrative Record**.

WHERE ARE WE IN THE CLEANUP PROCESS?



WHAT IS AN EE/CA?

- Provides information about mining history, contaminants, and potential impact on human health and the environment from abandoned uranium mines
- Identifies cleanup goals, mine areas, and mine features and estimates where and how much mining-impacted material needs to be addressed
- Is consistent with Diné Fundamental Law and Superfund
- Develops, evaluates, compares, and recommends potential cleanup alternatives that are:
 - Protective of human health and the environment
 - Effective, implementable, and cost effective (see **Table 1** for details)
 - Considers community and stakeholder input

LMMD REGIONAL EE/CA AND MINE-SPECIFIC RECOMMENDED REMOVAL ALTERNATIVE APPROACH

USEPA established a regional EE/CA approach for mines within the LMMD Site to get to the cleanup phase faster and improve consistency in the decision-making process between mines. The regional EE/CA approach is a two-step process that uses the similarities in topography, mining practices, and mining contamination to improve consistency, efficiency, and transparency of cleanup decisions for all mines in the LMMD Site.

- Step one: The **LMMD regional EE/CA** identifies, evaluates, and compares the full range of cleanup alternatives based on shared characteristics of the 88 mines within the LMMD Site.
- Step two: The mine-specific recommended removal alternative report provides a detailed evaluation of the recommended alternatives from the regional EE/CA, recommends an alternative for each area of a mine site, and describes how cleanup would be accomplished.

Rather than evaluating every possible option for each mine, the LMMD regional EE/CA identifies the cleanup alternatives that best address mining-impacted areas with similar characteristics, contamination, and mining practices. The three common types of mining-impacted areas observed in LMMD are:

- Mesa tops where exploratory drilling occurred
- Mesa side slopes where mining occurred and mining-impacted material was dumped downslope
- Drainages where mining-impacted material was transported and deposited downstream

The LMMD regional EE/CA evaluates seven alternatives and identifies the four best cleanup alternatives for further mine-specific consideration. A detailed evaluation of the best cleanup plan for the Mesa I Complex – East Side is presented in a recommended removal alternative report.

MESA I COMPLEX – EAST SIDE BACKGROUND INFORMATION

- The Mesa I Complex – East Side has three underground mines: Mesa I Mine 10, Mesa I Mine 13, and Mesa I Mine 15. All three mines, downslope areas, and the Cove Wash Middle 3F and Middle 3G drainages have mining-impacted material. Mesa I Mine 15 has burial cells where some mining-impacted material was moved and covered in a previous Navajo reclamation action through the Navajo Abandoned Mine Lands Reclamation Department.
- The mining-impacted material contains radium-226, arsenic, selenium, uranium, and vanadium at levels that may pose a risk to people or the environment.
- The cleanup will remove contaminants to levels that will protect humans and the environment.
- Some rock and soil are naturally radioactive and were not exposed or impacted by mining. Those materials will not be cleaned up.

- The Mesa I Complex – East Side has about 13,960 cubic yards of mining-impacted material requiring cleanup as follows:
 - Mesa I Mine 10 has 890 cubic yards of mining-impacted material
 - Mesa I Mine 13 has 8,101 cubic yards of mining-impacted material
 - Mesa I Mine 15 has 4,491 cubic yards of mining-impacted material
 - Other areas around the mines have 478 cubic yards of mining-impacted material
- Some mining-impacted material is on steep slopes and cannot be reached by heavy equipment. This mining-impacted material will be stabilized by attaching a geogrid, constructing rock walls, and covering the material with native soil and plants to help natural recovery.
- Some areas with mature vegetation have surface soil contamination that may pose a risk to people or the environment. Removal of this mining-impacted material would destroy mature vegetation and cause additional erosion and damage to downslope areas and drainages. This mining-impacted material will be kept in place and stabilized to limit movement and promote vegetation.
- New, native vegetation will take 3 to 10 years to establish on disturbed areas.

What Is a Cubic Yard?

Picture a bale of hay that is 3 feet by 3 feet—this is 1 cubic yard. A standard dump truck can hold about 10 to 15 cubic yards.

The removal action area at the Mesa I Complex – East Side is shown on **Figure 1**.

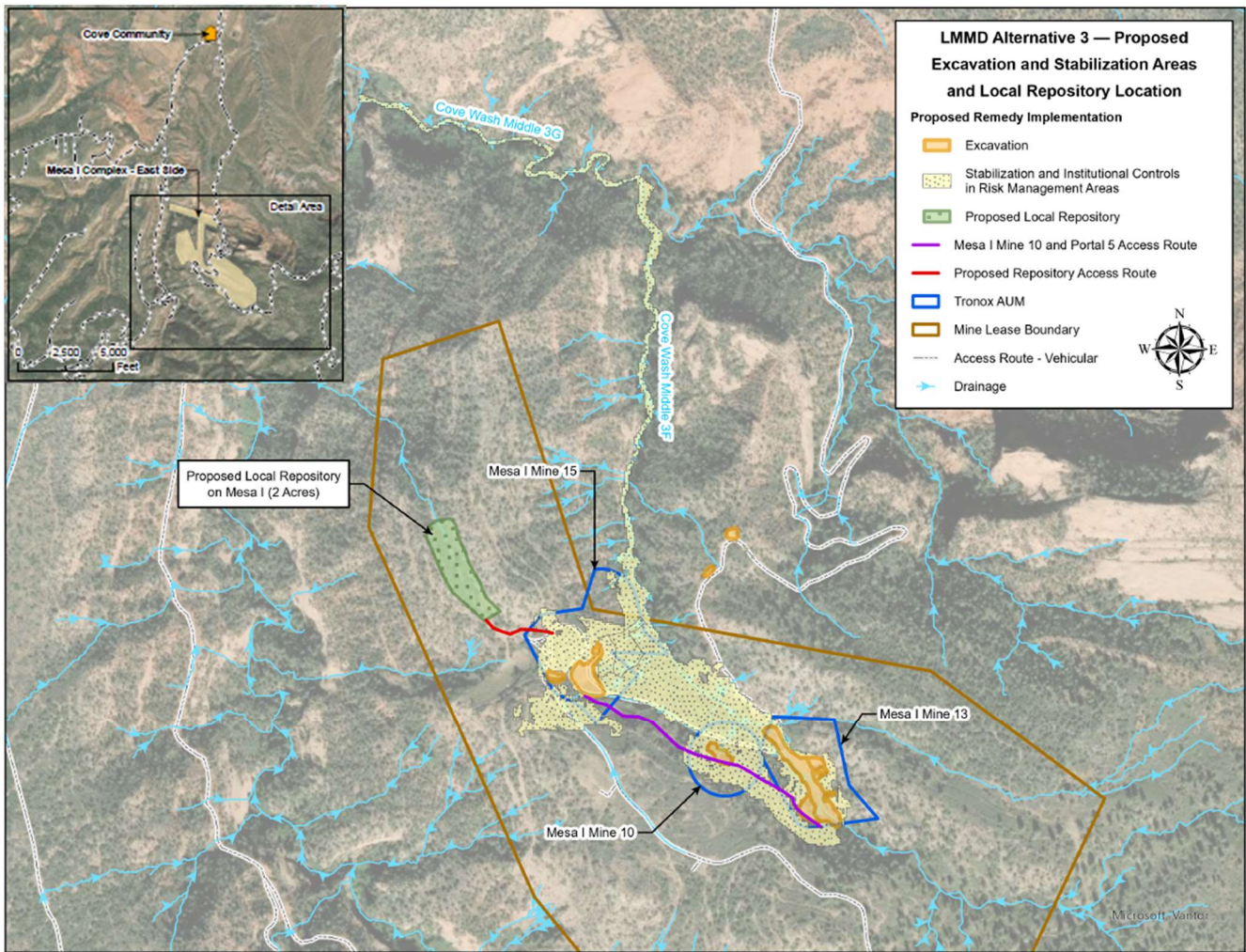


Figure 1. Removal Action Areas at the Mesa I Complex – East Side

EVALUATED LMMD RECOMMENDED CLEANUP ALTERNATIVES

The LMMD regional EE/CA looks at effectiveness, implementability, and cost to evaluate cleanup alternatives that address the typical types of mining-impacted material at mines in the LMMD Site, including the Mesa I Complex – East Side. **Table 1** describes the criteria used to analyze and compare each cleanup alternative. The mine-specific recommended removal alternative report looks at the same evaluation criteria for the LMMD recommended cleanup alternatives (**Table 2**) when considering mine-specific conditions at the Mesa I Complex – East Side.

Table 1. Engineering Evaluation/Cost Analysis Evaluation Criteria

Effectiveness	Implementability	Cost
<p>Effectiveness is how well the cleanup alternative works. It must:</p> <ul style="list-style-type: none"> Protect human health and the environment Meet federal and state laws Protect workers and the community during construction (low short-term risk) Be reliable once completed (low long-term risk) 	<p>Implementability includes how easy it would be to complete the cleanup alternative. For this, U.S. Environmental Protection Agency looks at:</p> <ul style="list-style-type: none"> Technical feasibility: <ul style="list-style-type: none"> If it can be done Available material (such as soil and clay to build a cap) Available workforce Administrative feasibility <ul style="list-style-type: none"> Regulatory requirements Scheduling limits 	<p>Cost is an estimate of the total financial and other resources the cleanup alternative will require, including:</p> <ul style="list-style-type: none"> Planning and designing the cleanup alternative Conducting the cleanup alternative Maintaining the cleanup alternative

Table 2. Recommended LMMD Cleanup Alternatives Evaluated for the Mesa I Complex – East Side

Alternative	Alternative Name	Description
2A	Manage on Site – Capping in Place	Caps mining-impacted material with an ET cap or improves existing covers to limit movement of and direct contact with mining-impacted material.
2B	Manage on Site – Excavation, Consolidation, and Capping on Mine Site	Excavates mining-impacted material from various areas and consolidates and caps the material in one or more locations. Constructs an ET cap to limit movement of and direct contact with mining-impacted material.
3	Excavation and Disposal at Local Repository	Excavates, hauls, and consolidates mining-impacted material in a proposed local repository that will hold mining-impacted material from several mines located on the same mesa. Constructs an ET cap to limit movement of and direct contact with mining-impacted material.
4	Excavation, Hauling, and Disposal at Regional Repository within the LMMD Site	Excavates, hauls, and consolidates mining-impacted material in a proposed regional repository within the LMMD Site designed to hold mining-impacted material from multiple LMMD mines. Constructs an ET cap to limit movement of and direct contact with mining-impacted material.

Notes:

Alternative 3 is the recommended removal action alternative for Mesa I Complex - East Side.

Alternatives 2A, 2B and 4 are not recommended for Mesa I Complex - East Side.

ET Evapotranspiration

LMMD Lukachukai Mountains Mining District

After analyzing the alternatives against the evaluation criteria, USEPA is proposing Alternative 3 as the recommended cleanup action for the Mesa I Complex – East Side. This alternative removes and consolidates mining-impacted material into an about 2-acre, single local **repository** proposed to be constructed northwest of Mesa I Mine 15 within the Koley Black Lease 8667 Parcel No. 1 (**Figure 1**).

Alternative 3 offers the most effective means for protecting human health and the environment, is easy to implement and maintain over the long term, and is similar to or lower in cost compared with other alternatives. Alternative 3 was preferred over Alternatives 2A and 2B because maintenance of one capped area is more effective and less costly than maintaining two or more capped areas, especially with the steep slopes at the Mesa I Complex – East Side. Alternative 3 offers the same long-term advantages as Alternative 4 but poses fewer impacts in the short term by reducing the threat of haul truck accidents, road use restrictions, and disturbance of sensitive species with shorter travel and avoiding hauling through communities.

Table 3 describes the recommended cleanup action for the Mesa I Complex – East Side, and **Figure 2** shows some of the post-construction stabilization and restoration activities. Alternative 3 is expected to take 105 working days to complete over a field season at a total cost of \$13.8 million, including both construction and long-term inspection and maintenance costs.

Table 3. Mesa I Complex – East Side Recommended Cleanup Action

<p>Mining-impacted Material Excavation and Disposal at Local Repository on Mesa I</p> <ul style="list-style-type: none"> • Excavates accessible mining-impacted material from Mesa I Mine 10, Mesa I Mine 13, and Mesa I Mine 15 • Consolidates and caps all excavated waste in a proposed local repository northwest of Mesa I Mine 15 within the Koley Black Lease 8667 Parcel No. 1 <p>Stabilization of Unexcavated Areas</p> <ul style="list-style-type: none"> • Stabilizes mining-impacted material on steep slopes and well-vegetated areas downslope from mines using nailed geogrid, rock walls, and hand planting with native species (see Figure 2 for examples) • Constructs stormwater diversion controls up- and downslope of stabilization areas • Adds native plants to existing vegetation to help reduce erosion • Stabilizes mining-impacted material in the Cove Wash Middle 3F drainage upstream of Mesa I Mine 13 using tree weirs and small rock check dams, energy reduction structures, and retention structures to capture sediment and reduce erosion <p>Restoration of Excavated Areas</p> <ul style="list-style-type: none"> • Restores excavated areas at Mesa I Mine 10, Mesa I Mine 13, and Mesa I Mine 15 using backfill, nailed geogrids, rock walls, and hand planting with native species • Constructs stormwater diversion controls up- and downslope of restoration areas • Places biodegradable erosion control products and hand planting native species on excavated or disturbed areas not otherwise covered with geogrid • Constructs an evapotranspiration cap over consolidated waste in the proposed local repository northwest of Mesa I Mine 15, plants native vegetation, and temporarily restricts access using range fencing to allow for successful revegetation • Constructs small rock check dams within the excavated Cove Wash Middle 3F drainage at and downstream of Mesa I Mine 13 to stabilize the channel, a drop structure and retention basin at the haul road, nailed geogrid on excavated channel banks below the haul road crossing, and a retention structure above the Cove Wash Middle 3F and Middle 3G confluence • Closes or improves closure of seven mine portals and one prospect at Mesa I Mine 10, Mesa I Mine 13, and Mesa I Mine 15 • Requires institutional controls for the capped area to restrict activities that could damage the cap and inspections and long-term maintenance to verify that the cap remains effective

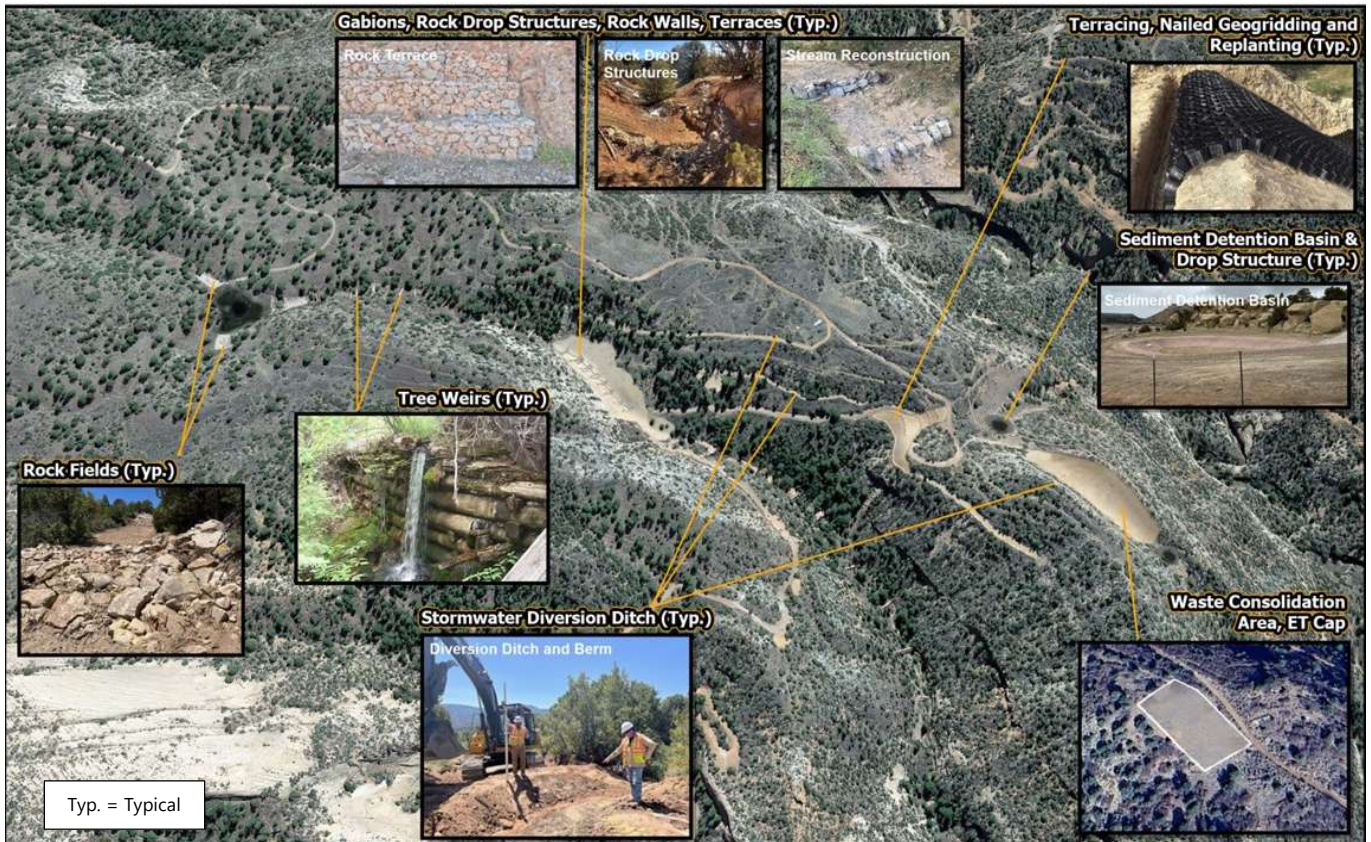


Figure 2. Post-Construction Stabilization and Restoration Activities

COMMUNITY INVOLVEMENT

The alternatives presented in the LMMD regional EE/CA and the mine-specific recommended removal alternative report reflect public feedback received to date. USEPA worked closely with the surrounding communities to gather input on the cleanup alternatives for the Mesa I Complex – East Side, including:

- Fall 2021 to present: Monthly meetings with the Cove community
- Spring 2023 to present: Regular meetings with the Navajo Nation Environmental Protection Agency
- August 12, 2018: Presentation to the Cove community on the site investigations
- March 19, 2019: Presentation to the Cove community on the **removal site evaluation** results
- March 8, 2024: Presentation to the Cove community on the EE/CA alternatives
- August 21 and 22, 2024: Presentations to the Cove, Round Rock, and Lukachukai communities on the LMMD community involvement plan
- March 5 and 6, 2026: Presentations to the Cove, Round Rock, and Lukachukai communities on the regional EE/CA approach and alternatives

USEPA will continue to engage with the community throughout all steps of the recommended removal alternative report decision-making and cleanup process, including the mine-specific design and construction processes.

GLOSSARY

Terminology	Definition
Action Memorandum	A concise written record of the selection and approval of a removal action. Describes the site's history, current activities, and human health and environmental threats; and outlines the action, cleanup levels, and costs.
Administrative Record	A document, or collection of documents, that forms the basis for USEPA's decision; in this case, the selection of a response action at a Superfund site.
Engineering evaluation/cost analysis (EE/CA)	A report that describes the mine site characteristics and evaluates and compares cleanup alternatives that are capable of addressing the contamination at the mine site. The alternative evaluation criteria include effectiveness/protectiveness, implementability, and cost.
Evapotranspiration (ET) cap	ET caps consist of clean soil placed over mining-impacted material to keep water from reaching the material. ET caps store water from rainfall and snowmelt until drier or warmer weather evaporates the water, or until the water is taken in by plant roots and released to the air as water vapor through the leaves and stems (this process is called "transpiration").
Institutional controls	Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and protect the integrity of a remedy by limiting land or resource use.
Lukachukai Mountains Mining District (LMMD) Site	The LMMD Site is a Superfund site located primarily in the Cove, Round Rock, and Lukachukai Chapters of the Navajo Nation in northeast Arizona. Past uranium and vanadium mining in the Lukachukai Mountains created more than 100 piles of mine waste rock.
LMMD regional EE/CA	A report that generally describes the characteristics of mines within the LMMD Site; identifies technologies; develops, analyzes, and compares multiple removal action alternatives; and identifies a list of recommended removal alternatives for evaluation in each mine-specific recommended removal alternative(s) report.
Mining-impacted material	Mining-impacted material includes soil, rock, and sediment containing chemicals of concern for human or ecological (plants and animals) health that were released or disturbed by mining activities.
Proposed plan	A report that presents the suggested method of cleanup to be considered and accepted.
Recommended removal alternative	A report that describes mine-specific conditions, uses a standardized decision process from the LMMD regional EE/CA to streamline evaluation of the list of removal action alternatives, and recommends removal alternative(s) suitable for each mine.
Repository	A repository is a secure, permanent, engineered consolidation area for mining-impacted material.
Removal action	The cleanup or removal of released hazardous substances, pollutants, or contaminants that may present an imminent and substantial danger.
Removal site evaluation	A report that presents the investigation results for a mine or group of mines, including past investigations, sampling results, risk assessment, and proposed removal action extent.

ADDITIONAL PUBLIC INFORMATION

The intent of this proposed plan fact sheet is to provide a summary of the LMMD regional EE/CA approach, the alternatives evaluated in the recommended removal alternative report and present the recommended alternative. The public is encouraged to consult the Administrative Record, which contains all pertinent materials, including the LMMD regional EE/CA, the Mesa I Complex – East Side recommended removal alternative report, fact sheets, and other reports that form the basis for the recommended alternative selection.

The Administrative Record for this action will be available during the public comment period at the following Information Repository locations:

Cove Chapter House

Indian Route 33
Red Valley, Arizona 86544
Phone: (928) 653-5806

Kinyaa'áanii Charlie Benally Library

Diné College, Main Campus
One Circle Drive and Indian Route 12
Tsaile, Arizona 86556
Phone: (928) 724-6757

Senator John Pinto Library

Diné College, Shiprock South Campus
US Highway 64 and Indian Route 570
Shiprock, New Mexico 87420
Phone: (505) 368-3646

Additional information can be found at:

<https://www.epa.gov/navajo-nation-uranium-cleanup/administrative-records>

For digital copies online:

<https://www.epa.gov/navajo-nation-uranium-cleanup/cove-area-mines>

HOW CAN YOU LEARN MORE?

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Ways to provide input:

- At the May 30, 2026 public meeting
- Email: brown.krista@epa.gov
- Post mail:
U.S. Environmental Protection Agency
2255 N. Gemini Drive
Flagstaff, Arizona 86001-1637
- Toll-Free voicemail:
(833) 484-4384