

Next Steps in the Cleanup Process

Community Involvement

Community members are encouraged to contact USEPA and NNEPA to participate and stay involved in the removal action planning and process for the Mariano Lake Mine. Residents and local leaders are encouraged to provide input on future land uses at the site, discuss their concerns, and ask questions. Regular updates will be given to the community at the monthly chapter meetings. The agencies will hold public meetings for community discussion and input during the cleanup process.

Planning for the Removal Action

USEPA will get permits and access agreements with the Navajo Nation before the removal action. Federal, state, and Navajo Nation regulations will be identified and incorporated into the removal action design.

Pre-Design Investigation

A study to collect more data will be done to get more information about the site conditions and the amount of contaminated material that needs to be removed. This information will be used to determine the cleanup area and the removal action design.

Removal Action Design

Options for how to do the removal action are being developed. The design phase includes steps to plan the removal action and incorporate feedback from USEPA and NNEPA throughout the process. Important parts of the removal action include:

- Construction details and designs
- Plan for monitoring the site during construction activities
- Plan for transporting waste material, including haul routes
- Plan for site restoration and monitoring after cleanup

Removal Action Implementation

The removal action will include digging up contaminated soils at the Mariano Lake Mine. Then, the soils will be transported to Mac No. 1 Mine, where they will be combined with other waste and covered. During the removal action, the team will control dust, cover trucks with tarps, and prevent contamination from getting into stormwater.

Site Restoration

After the cleanup is done, the land at Mariano Lake Mine and the cap at the Mac No. 1 Mine repository will be planted with native plants to restore the land and support traditional Navajo lifeways. USEPA will ensure the cap design is protective for traditional activities at the site. Native vegetation will be planted to prevent erosion and control stormwater. The future land use for the Mariano Lake Mine following the cleanup will be determined by the Navajo Nation.

Long-Term Maintenance and Post-Removal Site Controls

Maintenance and site inspections will be made regularly at the repository. Access to the repository will be restricted while native vegetation is starting to grow. The cap will be monitored to ensure it remains effective.

How Can You Learn More?

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Mariano Lake Mine: <https://www.epa.gov/navajo-nation-uranium-cleanup/mariano-lake-mine>
Diné Bizaad translations are available upon request.

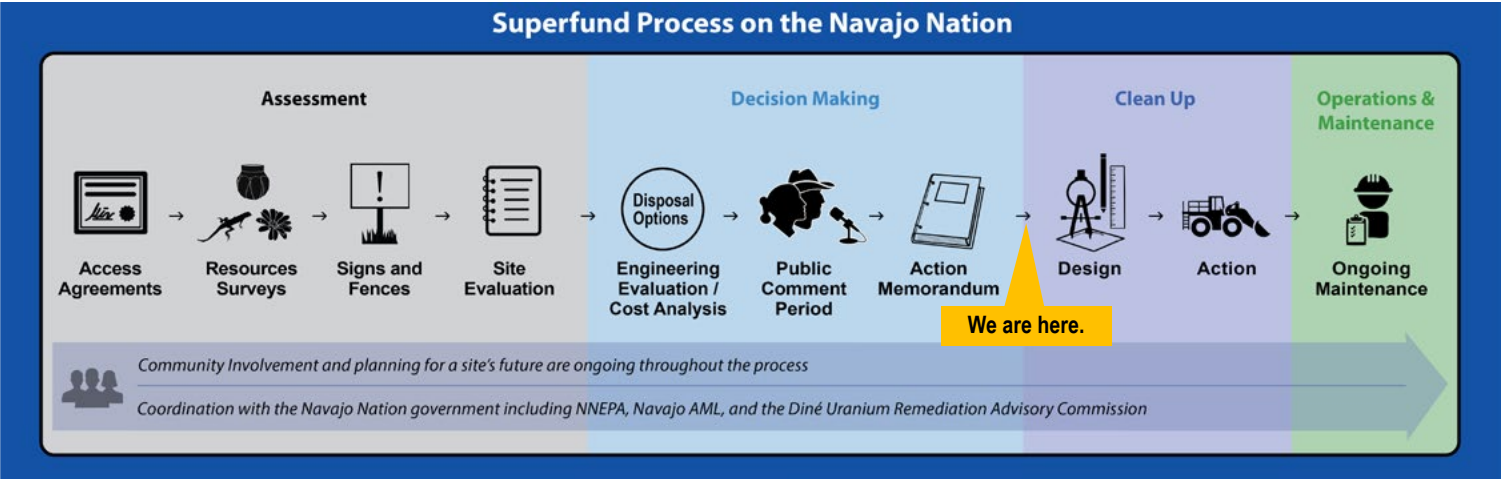


Mariano Lake Mine (Old Gulf Mine)
Removal Action Planning

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The U.S. Environmental Protection Agency (USEPA) has issued an action memorandum for a plan to clean up waste from historical uranium mining operations at the Mariano Lake Mine. This fact sheet presents background information on the Mariano Lake Mine, the cleanup option selected, and the next steps for cleaning up waste material, also referred to as the removal action.

Superfund Process on the Navajo Nation



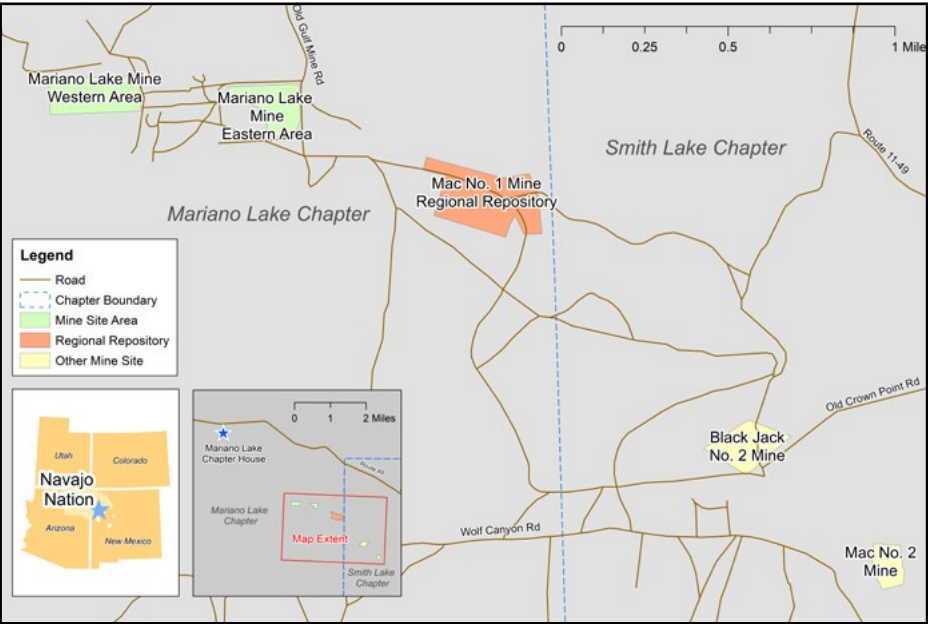
Location

Mariano Lake Mine is in the Mariano Lake Chapter of the Navajo Nation, about 25 miles east of Gallup, New Mexico. The uranium mine was operated from 1977 to 1982 by Gulf Mineral Resources Company, which has since been merged with Chevron. The mine primarily includes two distinct fenced areas: the Eastern Mine Area, where the main mine shaft was located, and the Western Mine Area, which was used as a dewatering pond. The Mariano Lake Mine location is shown on the map to the right.

Background

The Gulf Mining Resources Company reclaimed the Mariano Lake Mine after mining operations ended. The working shaft and vent holes were plugged, and a soil cover was added to portions of the Eastern Mine Area and the Western Mine Area. The two mine areas are fenced and do not currently pose a risk to the community.

Cleanup options were identified in the Engineering Evaluation and Cost Analysis (EE/CA) and the recommended option was presented to the public in multiple meetings. There was a public comment period from October 21, 2023 to March 8, 2024. USEPA and the Navajo Nation EPA (NNEPA) considered input and feedback from the community



and other Navajo Nation representatives on the cleanup options. The EE/CA identified seven cleanup options to deal with arsenic, radium-226, and uranium in soils. Those are the contaminants that pose a risk to human and environmental health at the site. NNEPA worked with USEPA to ensure the cleanup aligns with Navajo Nation laws and community priorities. The soils will be cleaned up to levels that are safe for local residents and near levels that exist naturally in the environment, also called background concentrations.

Action Memorandum

The action memorandum was published on September 27, 2024. The document describes the plan for implementing the selected cleanup option. The cleanup option includes digging up and trucking contaminated soils to be combined and covered at a regional repository. The regional repository is located at the Mac No. 1 Mine, about 1 mile southeast of the Mariano Lake Mine.

Arsenic, radium-226, and uranium have been identified as contaminants for removal action in soil at the Mariano Lake Mine. The concentrations of these contaminants exceed safe levels for human health. The soils will be cleaned up to levels that are close to background concentrations and are safe for local residents.

Removal Action Implementation

About 280,000 cubic yards of waste material need cleanup at the Mariano Lake Mine. The actual amount of waste will be determined in the design phase. Material where concentrations exceed the cleanup levels for arsenic, radium-226, and uranium will be combined in the repository at the Mac No. 1 Mine.

The removal action is anticipated to last 10 months, including combining and capping soils and restoring the sites. After the cleanup is done, the affected areas will be sampled to check that the soil meets the cleanup goals.

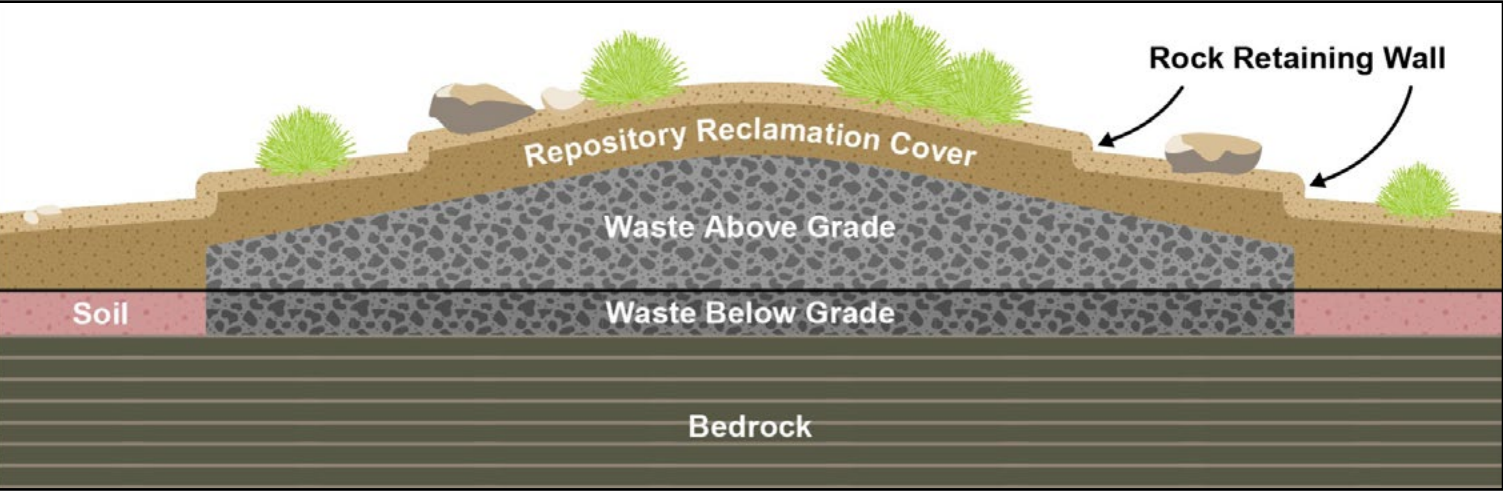
Regional Repository

The waste from the Mariano Lake Mine will be moved to a regional repository at the Mac No. 1 Mine, located about one mile from the Mariano Lake Mine. During the removal action, waste from the Mariano Lake will be transported by truck to the Mac No. 1 Mine. Contaminated soil from the Mac No.1, Mac No. 2, and Black Jack No. 2 Mines will also be disposed of at the Mac No. 1 Mine repository. The contaminated soil will be combined and a reclamation cover will be installed over the waste.

Repository Design

After the cleanup is done, the repository will be closed and a reclamation cover will be installed to protect the covered waste and prevent contaminant transport. A repository reclamation cover, such as an evapotranspiration (ET) cover, will protect buried waste from water and erosion. An ET cover is designed to hold enough moisture to support native plant growth at the surface. The cover prevents water from infiltrating near the surface and moving through the repository waste material into the groundwater.

Repositories are designed to protect the public and prevent contamination of soil and water. The repositories are located away from drainage pathways and include features to deflect the flow of surface water. Waste material buried in the repository will be covered with clean soil and rock to form a protective layer on top of the ET cover. The ET covers are designed for long-term stability to prevent surface water from contacting the waste. An example repository design is shown on the figure on the opposite page. This figure shows waste buried underground, mounded, and covered with a reclamation cover and rock retaining wall.



Site Restoration and Long-Term Maintenance

After the cover is placed, disturbed areas at will be restored with native vegetation. Excavations will be backfilled with clean fill soil and these areas will be regraded to prevent erosion, control the flow of stormwater, and support traditional land uses such as grazing, water sourcing, sacred sites, cultural preservation, and gathering in the future. The repository at the Mac No. 1 Mine will be maintained in perpetuity. Access controls, including signage and fencing, will be installed to protect the regrowth of native vegetation. Access controls will be removed once vegetation is well established to ensure long-term sustainability. Long-term maintenance on the cover and site inspections will be completed regularly.

Glossary	
Action memorandum	A written record of a decision to remove hazardous materials from a site.
Cleanup goal	The level of contamination remaining in soil that is safe for people and the environment at the site after a cleanup is done.
Cleanup option	An option for a cleanup design to remove or safely contain hazardous materials at a contaminated site.
Design phase	A step in the cleanup process to plan the details of the construction and how the cleanup will be completed.
Evapotranspiration (ET) cover	An action to clean up hazardous materials that pose a danger to people and wildlife. A removal action may include the excavation of contaminated soil, safely burying and covering contaminated material in a repository, and/or hauling contaminated material to a repository located away from the site. After a removal action, the natural landscape is restored and vegetation is planted.
Engineering Evaluation and Cost Analysis (EE/CA)	A document comparing the advantages and disadvantages of different cleanup options to plan for the removal action.
Removal action	An action to clean up hazardous materials that pose a danger to people and wildlife. A removal action may include the excavation of contaminated soil, safely burying and covering contaminated material in a repository, and/or hauling contaminated material to a repository or a certified landfill located away from the site. After a removal action, the natural landscape is restored and vegetation is planted.
Repository	A central location where contaminated material is stored, covered, and managed.