What Criteria Does U.S. EPA Use to Select a Remedy Decision?

Effectiveness – Evaluates the ability of each alternative to meet the removal action objectives and protect human health and the environment. It is evaluated in terms of short-term and long-term effectiveness. Short-term effectiveness focuses on impacts during and immediately after the action on the community, workers, and local environment as a result of performing the work. Long-term effectiveness focuses on the ability of the completed action to protect human health and the environment and meet the removal action objectives in the future.

Implementability – Evaluates the difficulty of performing each alternative. This includes, for example, administrative issues such as permits, land access, and the ability to enforce land use controls. It also includes whether a given technology or construction technique is technically feasible and whether equipment and personnel are readily available.

Cost – Evaluates the capital costs of planning, design, and construction and long-term costs for maintenance.

Next Steps in the Cleanup Process

EPA will consider input and feedback from the community and other Navajo Nation representatives on recommended alternative in the Engineering Evaluation/Cost Analysis document (EE/CA). In coordination with Navajo Nation, EPA will collect input on the recommended alternative during the **public comment period from October 21 – December 20, 2023.** It is important that community members from Mariano Lake and Smith Lake chapters attend this meeting and provide their input during the formal comment period of the Superfund Process. The EE/CA will be made available, and a public meeting will be held to gather stakeholder comments on October 21, 2023. **Comments can also be submitted to oppelt.alexandra@epa.gov or by toll-free phone number: 1-833-561-8555.**

How Can You Learn More?

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Public Meeting to present
Mac & Black Jack EECA and
recommended cleanup alternative

October 21, 2023
10:00am 2:00pm

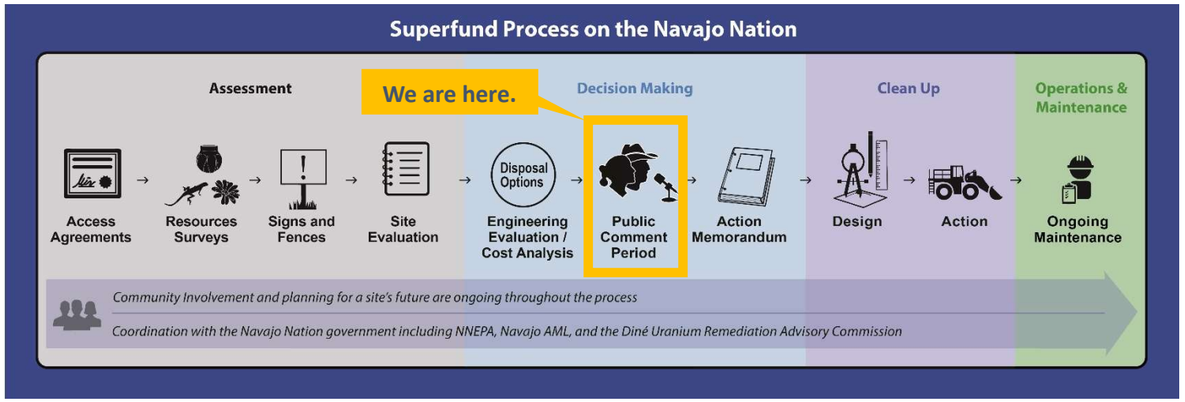
Pinedale Chapter House

Mac and Black Jack Mines: https://www.epa.gov/navajo-nation-uranium-cleanup/mac-and-black-jack-mines

The Mac and Black Jack Mines Cleanup Alternatives

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • October 2023

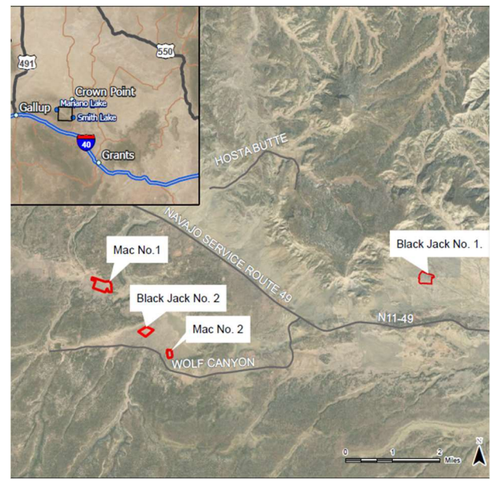
The U.S. EPA and Navajo Nation EPA want your feedback on potential clean-up options for the Mac and Black Jack uranium mines. This fact sheet presents background information on the mine sites, the alternatives being considered as part of the response action decision making, and the next steps in the process including providing input on the Engineering Evaluation/Cost Analysis (EECA).



Background

The Mac and Black Jack (M&BJ) Mines were active off and on between 1959 and 1979. There are four areas that were mined (Mac No. 1, Mac No. 2, Black Jack No. 1, and Black Jack No 2 – see picture on the right). Three mines are about 6.5 miles west of the Smith Lake Chapter House. The fourth mine is about 2 miles west of the Mariano Lake Chapter House. Homestake Mining Company (HMC) joined with several other mining companies to run these mines. About 1.75 million tons of uranium ore came from the mines. Black Jack No. 1 had the most ore (1.4 million tons).

HMC finished the "assessment" phase with completion of the Removal Site Evaluation in 2018 and submitted a draft EECA to U.S. EPA on September 6, 2019. In response to comments from the U.S. EPA and the Navajo Nation EPA, HMC submitted revised drafts of the EECA in November 2022, July 2023, and a final version with a U.S. EPA recommended alternative in September 2023.



Clean-up Alternatives

The four sites likely contain hundreds of thousands of cubic yards of mine related materials (MRM). The draft EECA identified six alternatives for evaluating how the MRM could be managed, removed, contained, or a combination of these to accomplish the clean-up goals. The alternatives are listed in the table on the next page. **The U.S. EPA is recommending Alternative 4C – Consolidate mine waste from multiple mines into two repositories.**

ALTERNATIVES	TIME FRAME	EVALUATION	IMPACTS TO COMMUNITY AND EARTH			
			Trucks through community	Equipment/Trucks Fuel and Mileage	Water Usage	Cost
1 **No Action** Site left in the existing condition. No removal or consolidation of impacted materials.	Not Applicable	• Does not protect people and the environment • Baseline alternative for comparison • **Ineligible for selection, it is not protective of human health**	Ineligible for selection, not protective of human health			
2 **Consolidate and cover in place** Consolidate mine waste into repository at each site and cover with an evapotranspiration (ET) cap.	4.2 years	• Protects people and the environment • Dig-and-haul and ET caps are common and proven effective technologies • Construction occurs on each site, no waste is hauled off site • **Minimizes disturbance to the residents and construction duration, most land with restricted future use**	Minimal during mobilization	172,000 gallons 860,000 miles	6.9M gallons	$22.6M
3 **Consolidate mine waste from Mac and Black Jack mines in a single repository** 3a) Consolidate and cap at Mac No. 1 3b) Consolidate and cap at Black Jack No. 1	3a) 4.8 years	• Protects people and the environment • Dig-and-haul and ET caps are common and proven effective technologies • Consolidates 4 mine sites into 1 repository footprint • **Low disturbance to the residents, construction durations slightly longer than Alternatives 2 and 4c, minimizes restricted future use at M&BJ sites only**	16,110	141,000 gallons 704,000 miles	7.9M gallons	$32.9M
	3b) 4.9 years		8,410	132,000 gallons 662,000 miles	8.1M gallons	$30.4M
4 **Consolidate mine waste from multiple mines in a single regional repository** 4a) Consolidate and cap all at Mac No. 1 4b) Consolidate and cap at all Black Jack No. 1	4a) 4.8 years	• Protects people and the environment • Dig-and-haul and ET caps are common and proven effective technologies • Consolidates 4 M&BJ sites, plus Mariano Lake into 1 repository footprint • **Low disturbance to the residents, construction durations slightly longer than Alt 2 and 4c, minimizes restricted future use at M&BJ and Mariano Lake sites**	16,110	142,000 gallons 712,000 miles	7.9M gallons	$32.9M
	4b) 4.9 years		8,410	132,000 gallons 662,000 miles	8.1M gallons	$30.3M
4c **Consolidate mine waste from multiple mines in two regional repositories** Cap Black Jack No. 1 in place, consolidate remaining Mac and Black Jack mines with Mariano Lake mine at Mac No. 1	4.2 years	• Protects people and the environment • Dig-and-haul and ET caps are common and proven effective technologies • Consolidates 4 M&BJ sites, plus Mariano Lake into 2 repository footprints • **Minimizes disturbance to the residents and construction duration, minimizes restricted future use at M&BJ and Mariano Lake sites**	6,890	155,000 gallons 773,000 miles	6.9M gallons	$24.9M
5 **Excavation and Off-Navajo Nation Disposal within 100 miles** Excavate waste and haul to off-Navajo repository location at Section 13 mine in Ambrosia Lake, NM	6.5 years	• Protects people and the environment • Dig-and-haul and ET caps are common and proven effective technologies • Removes waste at 4 M&BJ sites • Construction duration longer than Alternatives 2, 3, and 4 • Uses more resources and costs more than Alternatives 2, 3, and 4 • **Large disturbance to surrounding residents, no future land use restrictions at M&BJ sites, repository will have restricted future use**	17,630	558,000 gallons 2,789,000 miles	10.8M gallons	$40.7M
6 **Excavation and Off-Navajo Nation Disposal at and existing licensed facility** Excavate waste from four M&BJ sites and haul to off-Navajo disposal facility (Deer Trail, CO)	10.9 years	• Protects people and the environment • Removes waste at four M&BJ sites • Construction duration significantly longer compared to other alternatives • Uses most resources and cost is significantly higher than other alternatives • **Large disturbance to surrounding residents, longest construction duration, no future land use restrictions at M&BJ sites**	26,050	3,764,000 gallons 18,820,000 miles	18.1M gallons	$168.9M

U.S. EPA's Recommended Alternative

Why is U.S. EPA Recommending Alternative 4c?

U.S. EPA is recommending Alternative 4c: Consolidate mine waste from multiple mines into two regional repositories. This alternative protects the community and environment and consolidates mine waste from 5 sites into 2 footprints, limiting land future land restrictions to those two sites. Alternative 4c reduces community impacts along haul routes and the construction duration for the repositories is less than most alternatives. The cost of Alternative 4c is less than most of the other alternatives.