

Ambrosia Lake site suitable for waste



Courtesy/Disa Technologies, Inc.

Disa Technologies' mobile high-pressure slurry ablation system is seen in field configuration. Disa and the Navajo Nation are planning a commercial-scale verification demonstration featuring a unit that can process 10 tons per hour and can scale up to 50 and 100 tons per hour for commercial deployments.

Navajo uranium waste could be a boon to US energy needs

By Kathy Helms
Special correspondent

BACA — For decades, the only option considered for cleaning up low-level radioactive waste left behind on the Navajo Nation by uranium and vanadium profiteers was to consolidate it and cap it in place after the more radioactive principal threat waste had been removed.

But technology has advanced since the Cold War, and executive orders signed by President Donald Trump following his Jan. 20 declaration of a “National Energy Emergency” could give Navajo an advantage in helping further the president’s policy of making America energy dominant.

The tribe hopes to support the national energy security effort by supplying critical minerals from residual wastes at 523 abandoned uranium mine sites across the reservation. In addition to uranium, vanadium also was mined on the reservation. Both are among 60 minerals added to the Final 2025 List of Critical Minerals published Nov. 7 in the Federal Register.

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Navajo EPA Director Stephen Etsitty talks about the Navajo Nation’s plans with uranium remediation during a community meeting at the Red Rock Landfill Aug. 14.

Uranium waste

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From waste to feedstock?

Many of the energy actions set in motion by the president's executive orders are being put on the fast track, backed by funding opportunities to accelerate implementation, according to Stephen Etsitty, executive director of the Navajo Nation Environmental Protection Agency.

Etsitty pointed to Executive Order 14241 which focuses on "Immediate Measures to Increase American Mineral Production" as example. The U.S. Department of Energy announced two funding opportunities Nov. 14 totaling \$355 million to expand domestic production of critical minerals and materials.

"This announcement is highly relevant to the Navajo Nation for several reasons," Etsitty told the Eastern Navajo Land Commission during a Nov. 21 meeting at Baca Chapter House. "The first funding opportunity provides \$275 million to extract critical minerals from industrial byproducts and waste streams, including materials left over from historic mining operations. Our [abandoned uranium mine] sites and legacy uranium waste streams may qualify as eligible feedstock."

The \$275 million will be divided among 10 recipients. "We're going to try and get anywhere from \$35 million to \$40 million," he said.

The second opportunity would provide up to \$80 million to establish "Mine of the Future" field-testing sites for next-generation mining and reclamation technologies. "My understanding from reading the grant announcement is that is really for the current mining industry and we don't have a lot of mining industry actually on the reservation," Etsitty added.

Partnering for cleanup

Working with its partners – Disa Technologies Inc., BHP, and Energy Fuels Inc. – Navajo could help secure the country's mineral supply chain within months of getting the green light, as opposed to the years it takes to get a single conventional uranium mine off the ground.

The U.S. Nuclear Regulatory Commission granted Disa the first-ever Service Provider License in October after nearly two years of federal review, according to the Navajo Nation Washington Office. The license authorizes the company to remediate abandoned uranium mine waste across the western United States utilizing a new technology called high-pressure slurry ablation.

Disa's licensing process began after a 2023 U.S. EPA-funded treatability study, conducted in partnership with Navajo EPA, demonstrated the safety and scalability of the technology, the Washington Office stated in a news release.



Vida Volkert/Independent

USEPA Region 9 Remedial Project Manager Kenyon Larson talks about USEPA uranium remediation plans during a tour of the Red Rock Landfill Aug. 14.

"If we get the grant it's going to give us an opportunity to elevate everything that we're doing from a one-machine, one-site cleanup mode to multi sites, multi cleanups, all going at the same time," Etsitty said. "We have a chance to do more clean closures and accelerate the pace of cleanup."

The DOE grant would support the removal of uranium mine waste by concentrating the waste in a treated material to make its milling economically viable. Energy Fuels, sole owner of the only operating uranium mill in the United States, would recycle the uranium at the White Mesa Mill near Blanding, Utah, after it undergoes ablation.

The process also is expected to reduce the cost of remediation by minimizing the waste and providing revenue to offset operations such as removal costs. The lesser volume of the treated material, which will have higher concentrations of uranium, will be transported off the Nation for recycling. The remaining treated waste, which is less toxic and with fewer contaminants, will be disposed in the proposed repository.

The Land Commission and the Resources and Development Committee have signaled support for selection of an Ambrosia Lake Valley site as a centralized, long-term regional waste repository. The Land Commission also approved a resolution, 4-0, at the Nov. 21 meeting, supporting the Navajo Nation in applying for the DOE grant to help the United States produce critical minerals needed for civilian and military applications.

BHP land for repository?

BHP, an Australian multinational mining and

metals company, acquired the Ambrosia Lake uranium mill site through its wholly owned subsidiary Rio Algom, which purchased the Quivira Mining Corp. from Kerr-McGee in 1989.

The U.S. EPA has proposed removing radioactive waste from the Quivira Mines site on Navajo land near Church Rock, trucking it to a solid waste landfill just outside the Navajo community of Thoreau and burying it atop an artesian aquifer at a cost of around \$182 million. Navajo EPA wants the waste taken off the Navajo Nation, in compliance with the Diné Natural Resources Protection Act, and BHP has expressed willingness to collaborate on developing a repository.

Liz Ruedig of BHP addressed the Land Commission at the Nov. 21 meeting, informing them that Ambrosia Lake was a uranium mining and milling district that operated from the mid-1950s until the 1980s. It has been in reclamation status since the mid-'80s and is partially reclaimed.

"We believe that there is a lot of potential at the site," she said, not only because of the reclamation status, but because BHP owns 14,000 acres in the area and could accept all of the waste from Navajo's 523 abandoned uranium mines.

"One of the most attractive features of the site is it is located near Navajo land but off of Navajo land, thus reducing transportation costs and degree of logistical complexity of moving waste following the ablation process," Ruedig said.

Additionally, there are several environmental and technical features that make the site suitable. "One of the primary ones is that there is no threat to groundwater," she said, because historical mining activities reduced the amount of groundwater in the area.

There are massive layers of Mancos Shale that encapsulate any discharge and prevent contaminants from being transferred offsite. There are existing roads and a railroad nearby. There are no perennial streams or surface water bodies and no nearby residences. "All of these factors make the Ambrosia Lake site a suitable location for a waste repository," Ruedig said.

Etsitty said that if Navajo could get the commitments on the processing end, "we could be producing, through that recycling effort, significant pounds of uranium far in advance of when a new mine could be permitted. We call it 'pounds above the ground' versus 'pounds in the ground'."

"Pounds above the ground is not going to require a permit, it's not going to require a major investment in infrastructure for a conventional underground mine," he said. "You just need to scoop it up, you don't need to mine it. It's not mining. It's all remediation."