



The 5-Year Plan, along with this and past progress reports, can be found on the US EPA Region 9 website or by contacting the US EPA directly.

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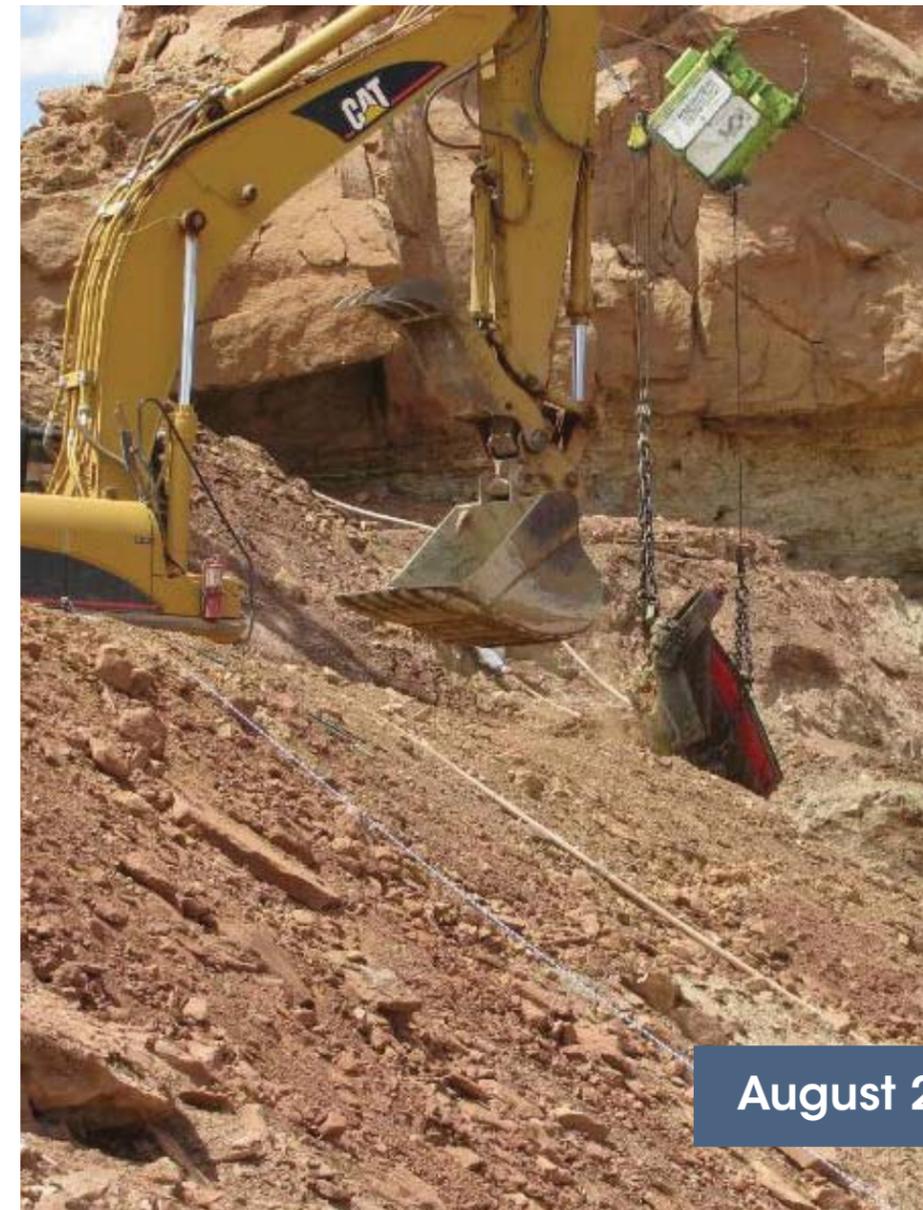
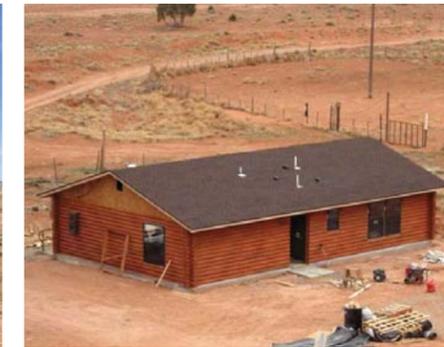
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# Health and Environmental Impacts of Uranium Contamination in the Navajo Nation

## EPA Progress in Implementing a 5-Year Cleanup Plan



U.S. Environmental Protection Agency, Department of Energy, Bureau of Indian Affairs, Indian Health Services, Center for Disease Control, and Nuclear Regulatory Commission are working together to implement a 5-year plan to address the health and environmental impacts of uranium contamination the Navajo Nation.

The US EPA in consultation with the Navajo Nation EPA has initiated a plan to specifically address uranium contamination at abandoned uranium mines, contaminated structures and water sources.

In the fourth year of the plan, US EPA and Navajo EPA are continuing to identify and address the most urgent risks, such as residents living in potentially contaminated structures, near contaminated mines, or drinking from contaminated water sources.

The plan, along with this and past progress reports, can be found on the US EPA Region 9 website or by contacting us directly. Website and contact information can be found on the back of this progress report.

**August 2011 Progress Report**

# Abandoned Uranium Mines

## Background

Mine operators extracted nearly four million tons of uranium ore from 1944 to 1986 under lease agreements with the Navajo Nation. As a result, uranium mining has left the Navajo Nation with 520 abandoned uranium mines (AUMs), which have been documented in a comprehensive GIS database and atlas. US EPA conducts initial investigations, called "on-site screenings", to determine which mines need follow-up action. As US EPA visits AUM sites, we also document nearby home sites and refer them to Navajo Superfund Program to be included in contaminated structures evaluations. EPA has completed 452 on-site screenings and will complete the remaining 68 in 2012. Four mines have been identified by US EPA and Navajo EPA for further action, as described in the next section.

## Mariano Lake Mine

US EPA signed an Administrative Order on Consent with Chevron USA on July 28, 2011 to conduct removal assessment activities and interim measures at the Mariano Lake Mine site to protect nearby residents from areas of contamination. Chevron has cooperated in developing a work plan, modeled after several Abandoned Uranium Mine investigations which US EPA and NN EPA have overseen. Field work started the week of July 25.

## Quivira Mines

In fall 2010, Rio Algom completed the first phase of work to identify and begin cleaning up contamination from the two Quivira mines, located nearby the Northeast Church Rock Mine. U.S. EPA (EPA) and Navajo Nation EPA (NNEPA) are supervising the work. Rio Algom Mining stabilized the mine site waste piles to minimize erosion and the spread of contamination into the surroundings; applied chip seal paving to Red Water Pond Road; and collected initial samples from the mine sites, arroyos, and nearby property.



Interim clean up at Quivira mine

## Northeast Church Rock

In 2009/2010, US EPA and Navajo EPA directed the United Nuclear Corporation/General Electric (UNC/GE) to remove contaminated soil that had migrated from the NECR mine onto nearby reservation lands. This effort was called the Interim Removal Action (IRA). The IRA provides protection for residents who live next to the mine site from unhealthy levels of radiation until the final removal and disposal of the mine waste.

We anticipate selecting a clean up plan for the Northeast Church Rock mine site by Fall 2011. At that time, we will also publish our response to comments on the cleanup plan (also known as the EE/CA which stands for "Engineering Evaluation/ Cost Analysis") received in Summer-Fall of 2009 and 2010.

# Large Scale Clean up in Monument Valley

## Abandoned Uranium Mine clean up in Monument Valley

The Skyline AUM Site encompasses the former Skyline Mine in the heart of Monument Valley along the Arizona/Utah border. At the Site, uranium mine waste was located on the edge of Oljato Mesa below the mine opening, in piles at the foot of the mesa, and in the drainage leading away from the mesa. The mine waste was a potential health threat to people who came into contact with it or inhaled it.

Between November 2008 and March 2010, US EPA conducted radiation assessments at the Site in coordination with Navajo Nation EPA. EPA determined that a time-critical removal action to mitigate the health threat posed by uncontrolled uranium mine waste was necessary.



Cleanup of the Skyline Mine

EPA worked with the Navajo Nation and the Oljato Chapter to locate a repository to safely contain the mine waste on top of Oljato Mesa, near the former mine opening. Construction of the on-site repository began at the end of March 2011 and was completed near the end of May. Excavation of waste from the upper slope below the mine opening and valley floor areas on the north side of Oljato Mesa began in early June 2011. The excavated waste is now being transported from the valley floor to the top of the mesa and placed into the repository. Transport of waste to the repository is expected to be completed in Fall 2011. The top cover of the repository will then be installed and areas of the Site impacted by work activities will be restored.



Large scale cleanup at Skyline Mine

# Contaminated Water Sources

## Background

US EPA is working with the NNEPA, Indian Health Services and other federal agencies, and the DiNEH Project to ensure that Navajo families who haul water for domestic use do not drink from unregulated water sources contaminated with uranium. The use of unregulated water sources represents the greatest public health risk associated with drinking water for the NNEPA. Water from these sources often contains bacteria, uranium and other harmful chemicals. Thirty percent of Navajo families currently use unregulated water sources. US EPA, NNEPA, and partner organizations are working together to sample wells, post signs and conduct outreach for contaminated water sources, and find alternative water supplies.

## Accomplishments

- NNEPA Centers for Disease Control, US EPA and the DiNEH Project sampled 250 unregulated water sources and found 28 that exceed drinking water standards for uranium or other radionuclides. 3 contaminated sources are shut down, including one source with the highest reported levels of uranium.
- NN EPA, the DiNEH Project, and CDC provided public outreach on contaminated water sources and safe water hauling practices, including chapter and community meetings, and radio public service announcements.
- The Navajo Nation Department of Water Resources began hauling water in Black Falls and Grand Falls, serving residents within the vicinity of 4 contaminated water sources, as part of a \$2.6M US EPA funded water hauling feasibility study and pilot project that will serve up to 3,000 homes.
- Indian Health Services is funding \$20M of drinking water projects to serve up to 386 homes without piped water. These homes are near 10 contaminated water sources.



Navajo Nation Department of Water Resources hauling drinking water to the Box Springs area

# Contaminated Structures

## Background

A number of structures on the Navajo Reservation, including homes, hogans (traditional structures) and storage buildings may have been constructed of contaminated materials from nearby mines. Building material sources include rocks, gravel, and aggregate from mine spoils which were used in concrete mixing. Structures may also be contaminated by the presence of radiological materials found in outdoor soils and by dust brought into the homes on shoes and clothing.



Newly constructed home

## Accomplishments

- 683 Structures screened for potential contamination in a combined effort by US EPA and Navajo Nation EPA Superfund Program
- Completed demolition and excavations of 34 structures and 12 residential yards
- Rebuilt 14 homes to date

## Next Steps

- Replace 6 structures in 2012 and demolish additional structures.
- Navajo Nation EPA will continue to screen potentially contaminated structures and refer suspected contamination to the US EPA Response Program.