Ambrosia Lake, New Mexico, Disposal Site

Long-Term Surveillance and Maintenance Program

U.S. Department of Energy
Grand Junction Office

FACT SHEET

The Grand Junction Office has provided cost-effective and efficient stewardship for more than 10 years

Overview

Uranium ore was processed at the Ambrosia Lake, New Mexico, site between 1958 and 1963. Milling operations at the site created process-related wastes and tailings, a sandlike waste product containing radioactive materials and other contaminants. The U.S. Department of Energy (DOE) remediated the Ambrosia Lake site between 1987 and 1995. Contaminated materials were consolidated and encapsulated on site in an engineered disposal cell.

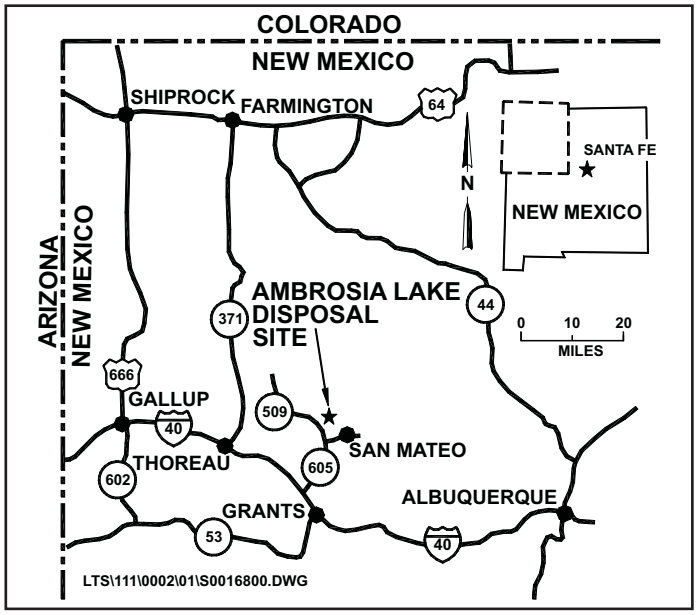
The U.S. Nuclear Regulatory Commission included the Ambrosia Lake Disposal Cell under general license in 1998. DOE is responsible, under the general license, for the long-term custody, monitoring, and maintenance of the site. The DOE Long-Term Surveillance and Maintenance (LTSM) Program at the DOE Grand Junction (Colorado) Office is responsible for the long-term safety and integrity of the disposal site.

In 1988, DOE established the LTSM Program to provide stewardship of disposal cells that contain low-level radioactive material after completion of environmental restoration activities. The mission of the LTSM Program is to ensure that the disposal cells continue to prevent the release of contaminated materials to the environment. These materials will remain potentially hazardous for thousands of years. As long as the disposal cells function as designed, risks to human health and the environment are negligible.

The LTSM Program maintains the safety and integrity of the disposal cell through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository at the DOE Grand Junction Office for all sites in the LTSM Program.

Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act in 1978 (Public Law 95–604), which identified 24 inactive millsites for remedial action where uranium was produced for the Federal Government. DOE remediated these sites under the Uranium Mill Tailings Remedial Action Project and encapsulated the radioactive material in U.S. Nuclear Regulatory Commission-approved disposal cells. Cleanup standards were promulgated by the U.S. Environmental Protection Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. The U.S. Nuclear Regulatory Commission license was issued in accordance with 10 CFR 40.

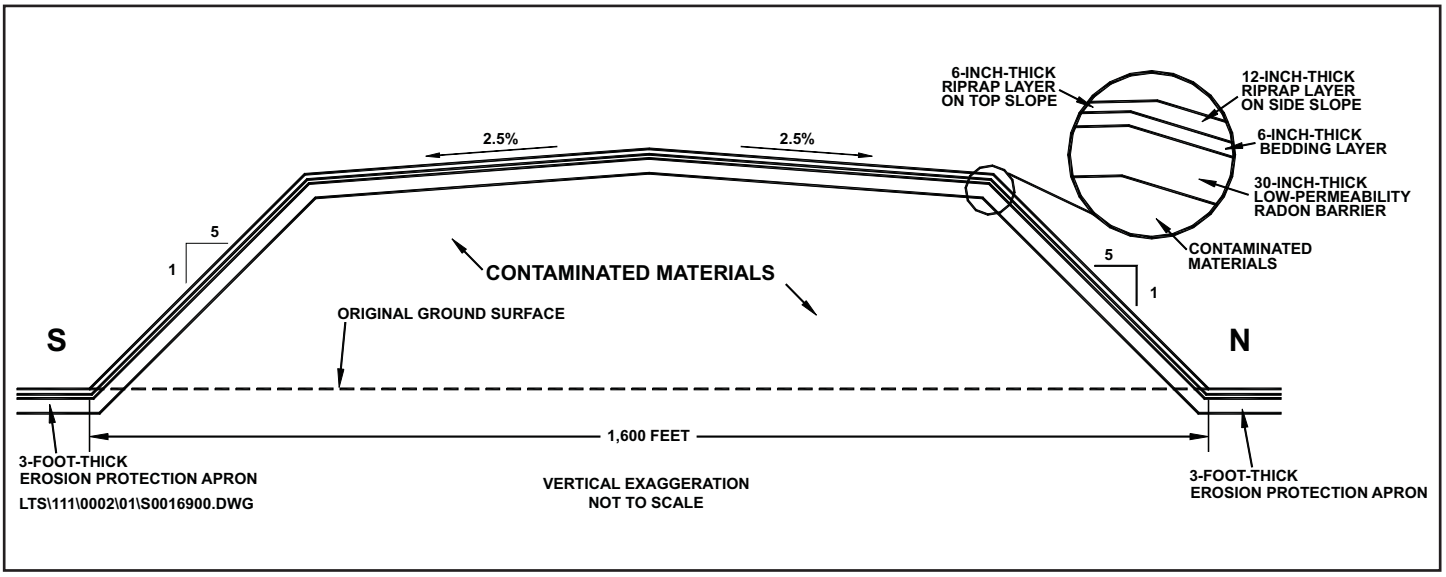


Ambrosia Lake Disposal Site

The Ambrosia Lake Disposal Site is located on a 290-acre tract of land in McKinley County, approximately 25 miles north of Grants, New Mexico. The site is within the Ambrosia Lake Mining District, near the center of the Grants Mineral Belt. Decommissioned uranium mills, abandoned underground mines, mine shafts and vents, ore piles, tailings piles, and heap leach piles are close to the site. The immediate area surrounding the millsite is sparsely populated.

The Ambrosia Lake Disposal Site is underlain by alluvium that grades into weathered Mancos Shale. The uppermost aquifer beneath the site consists of Tres Hermanos-C sandstone, weathered Mancos Shale, and alluvium. The maximum thickness of the aquifer is approximately 175 feet; the maximum saturated thickness is 25 feet. This uppermost aquifer is not a current or potential source of drinking water because of low yield.

Phillips Petroleum Company built the original mill at the Ambrosia Lake site in 1957 to process ore from nearby mines. United Nuclear Corporation purchased and operated the mill for a brief period in 1963 and then ceased milling operations but retained ownership of the



South-North Cross Section of Ambrosia Lake Disposal Cell

site. In the late 1970s to early 1980s, United Nuclear Corporation operated an ion exchange system, extracting uranium from mine water. All mill operations ceased in 1982, leaving tailings on 111 acres.

In the 1987 environmental assessment and the 1991 remedial action plan, DOE selected the remedial action alternative of on-site consolidation and stabilization of contaminated materials. By June 1995, all tailings and associated contaminated materials (including materials removed from off-site vicinity properties) were consolidated in the disposal cell. The disposal cell contains 6,931,000 dry tons (approximately 5.2 million cubic yards) of contaminated material, with a total activity of 1,850 curies of radium-226.

Cell Design

The Ambrosia Lake Disposal Cell is roughly rectangular and measures approximately 2,500 feet by 1,600 feet, including the toe apron. The cell rises approximately 50 feet above the surrounding terrain and occupies approximately 91 acres of the 290-acre site.

The cell cover is a multicomponent system designed to encapsulate and protect the contaminated materials for 1,000 years. A low-permeability radon barrier, consisting of compacted clayey soils, was placed over the compacted tailings. This layer is designed to prevent precipitation from percolating through the contaminated materials and into the underlying soils and to reduce radon emissions. Erosion protection for the top and side slopes consists of a layer of rock (riprap) underlain by a layer of granular bedding material. The cell design promotes rapid runoff of precipitation to minimize leachate. The maximum grade is 4 percent on the top slope and 20 percent on the side slopes. A rock apron consisting of larger diameter riprap surrounds the toe of the cell. The ground immediately adjacent to the cell perimeter has been graded away from the cell to protect the site from storm water runoff. All disturbed areas of the site surrounding the disposal cell have been successfully revegetated.

LTSM Program Activities

The LTSM Program manages the site according to a long-term surveillance plan (LTSP) prepared specifically for the Ambrosia Lake site. Under provisions of the LTSP, the LTSM Program conducts annual inspections of this site to evaluate the condition of surface features and performs maintenance as necessary.

Because the uppermost aquifer is considered a "limited use" aquifer, it is not a groundwater resource. Therefore, groundwater monitoring at the Ambrosia Lake site is not required.

The disposal cell at Ambrosia Lake is designed and constructed to last for 200 to 1,000 years. However, the general license has no expiration date, and DOE understands that its responsibility for the safety and integrity of the Ambrosia Lake site will last indefinitely.

Contacts

For more information about the LTSM Program or about the Ambrosia Lake Disposal Site, contact

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http://www.gjo.doe.gov/programs/ltsm