



# Ambrosia Lake, New Mexico, Disposal Site

## FACT SHEET

*This fact sheet provides information about the Uranium Mill Tailings Radiation Control Act of 1978 Title I disposal site located at Ambrosia Lake, New Mexico. The site is managed by the U.S. Department of Energy Office of Legacy Management.*

### Site Description and History

The Ambrosia Lake Disposal Site is a former uranium ore processing facility in McKinley County, approximately 25 miles north of Grants, New Mexico. The site is in the Ambrosia Lake Valley, a broad, elongate valley dominated by desert grassland plant communities and basalt-capped mesas to the north. 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 area surrounding the millsite is sparsely populated.

The former mill processed more than 3 million tons of uranium ore between 1958 and 1963 and provided uranium for U.S. Government national defense programs. 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, then ceased milling operations but retained ownership of the 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 radioactive mill tailings, a predominantly sandy material, on approximately 111 acres. Wind and water erosion spread some of the tailings across a 230-acre area.

The U.S. Department of Energy (DOE) remediated the Ambrosia Lake site and local contaminated vicinity properties between 1987 and 1995. Surface remediation consisted of consolidating and encapsulating all contaminated material on site in an engineered disposal cell. The disposal cell occupies 91 acres of a 290-acre tract of land.

### Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA) in 1978 (Public Law 95-604), and DOE remediated 22 inactive uranium-ore processing sites under the Uranium Mill Tailings Remedial Action Project in accordance with standards promulgated by the U.S. Environmental Protection



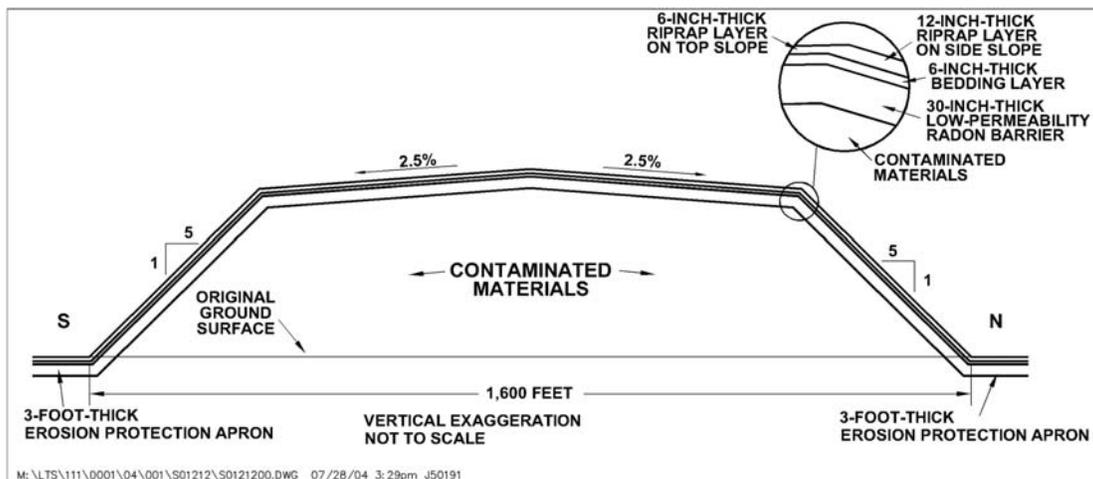
Location of the Ambrosia Lake Disposal Site

Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. Subpart B of 40 CFR 192 regulated cleanup of contaminated ground water at the processing sites. The radioactive materials were encapsulated in U.S. Nuclear Regulatory Commission–approved disposal cells. The U.S. Nuclear Regulatory Commission general license for UMTRCA Title I sites is established in 10 CFR 40.27. The Ambrosia Lake Disposal Site was included under the general license in 1998.

### Disposal Site

The disposal cell was closed in 1995 upon encapsulation of the tailings and completion of the cell cover. The cell contains 6.9 million dry tons (about 5.2 million cubic yards) of contaminated material, with a total activity of 1,850 curies of radium-226.

The uppermost aquifer beneath the site consists of alluvium (river deposits), sandstone, and weathered



South-North Cross Section of the Ambrosia Lake Disposal Site

shale. 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.

### Compliance Strategy

The ground water compliance strategy for the Ambrosia Lake Disposal Site is no remediation and the application of supplemental standards. The strategy of supplemental standards may be applied at UMTRCA sites where ground water in the uppermost aquifer is classified as limited use because it meets any of several criteria. Ground water at the Ambrosia Lake site meets the criterion of low yield, that is, the quantity of water reasonably available for sustained continuous use is less than 150 gallons per day (40 CFR 192.11[e]). Past milling operations, such as wastewater disposal and seepage from the tailings pile, supplied most of the water that recharged the aquifer. Those sources no longer exist, and the tailings and other contaminated materials are encapsulated in an engineered disposal cell. The alluvium is expected to return to the conditions of little to no saturation that prevailed before milling and mining began in the area. Because ground water is not a present or potential resource, no monitoring is required at the site. However, at the request of the New Mexico Environment Department, DOE samples two monitor wells every 3 years to monitor cell performance.

### Disposal Cell Design

The rectangular disposal cell measures approximately 2,500 feet by 1,600 feet, including the toe apron. The cell rises approximately 50 feet above the surrounding terrain.

The cover of the Ambrosia Lake disposal cell is a multicomponent system designed to encapsulate and protect the contaminated materials. The disposal cell cover comprises (1) a low-permeability radon barrier (first layer placed over compacted tailings) consisting of compacted clayey soil, (2) a bedding layer of granular

bedding material, and (3) a rock (riprap) erosion-protection layer for the top and side slopes.

A rock apron of larger diameter riprap surrounds the toe of the disposal cell. The ground immediately adjacent to the cell perimeter has been graded away from the cell to protect the site from storm water runoff. Disturbed areas have been successfully revegetated.

## Legacy Management Activities

DOE manages the disposal site according to a site-specific Long-Term Surveillance Plan to ensure that the disposal cell systems continue to prevent release of contaminants to the environment. Under provisions of this plan, DOE conducts annual inspections of the site to evaluate the condition of surface features, performs site maintenance as necessary, and samples two monitor wells every 3 years. The encapsulated materials will remain potentially hazardous for thousands of years.

In accordance with 40 CFR 192.32, the disposal cell is designed to be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years. However, the general license has no expiration date, and DOE's responsibility for the safety and integrity of the Ambrosia Lake Disposal Site will last indefinitely.

## Contacts

Site-specific documents related to the Ambrosia Lake Disposal Site are available on the DOE Office of Legacy Management website at <http://www.LM.doe.gov/land/sites/nm/amb/amb.htm>.

For more information about the DOE Office of Legacy Management activities at the Ambrosia Lake Disposal Site, contact

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