



Gunnison, Colorado, 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 Gunnison, Colorado, between 1958 and 1962. These milling operations created process-related wastes and tailings, a sandlike material containing radioactive materials and other contaminants. The U.S. Department of Energy (DOE) completed cleanup of the Gunnison millsite in 1995. Remedial action consisted of moving radioactive materials from the former millsite to an engineered disposal cell southeast of Gunnison.

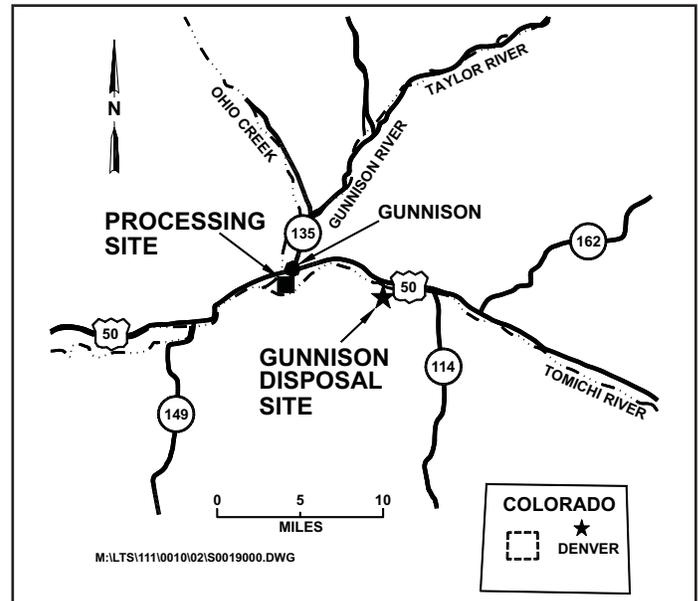
The U.S. Nuclear Regulatory Commission included the Gunnison Disposal Cell under general license in 1997. DOE is responsible, under the general license, for the long-term custody, monitoring, and maintenance of the site. The DOE Long-Term Surveillance and Maintenance (LTSM) Program at the DOE Grand Junction (Colorado) Office is responsible for the long-term safety and integrity of the disposal cell.

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 cell systems continue to prevent 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) that specified remedial action for 24 inactive millsites 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



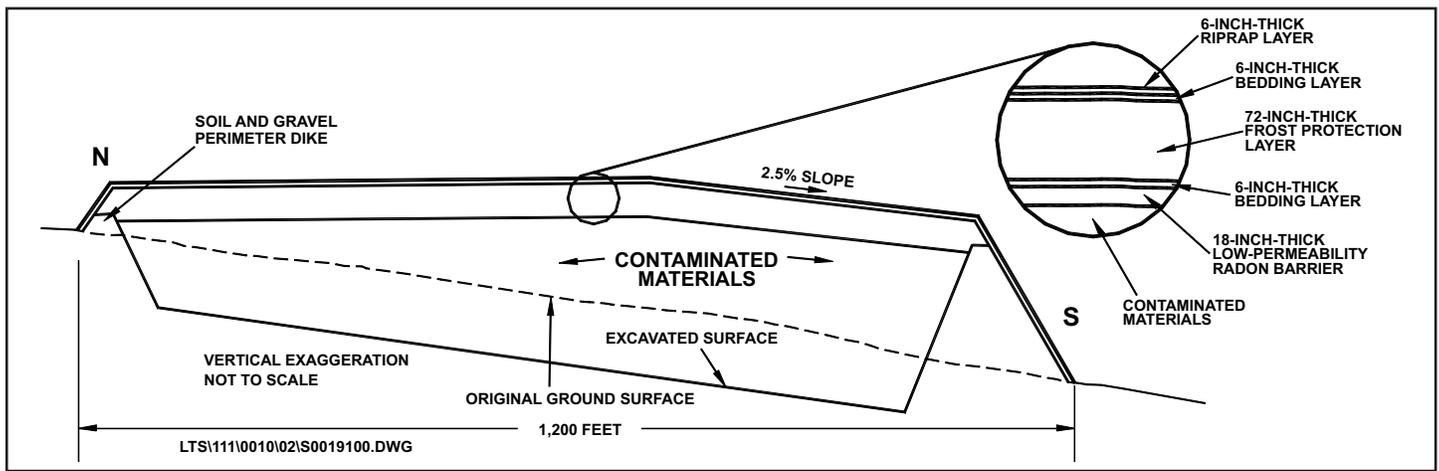
Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. The U.S. Nuclear Regulatory Commission general license is in accordance with 10 CFR 40.

Gunnison Disposal Site

The Gunnison Disposal Site is located approximately 6 miles southeast of the town of Gunnison, Colorado. The U.S. Bureau of Land Management transferred responsibility for the land to DOE in 1992. Public land surrounding the disposal site is used primarily for livestock grazing. The Gunnison County landfill is located approximately 2,000 feet northeast of the disposal site.

The Gunnison Disposal Site is located on a drainage divide. Ephemeral drainages bound the disposal site on the west and east. The disposal cell rests on a thin veneer of alluvial and colluvial materials that overlie a sequence of Tertiary sands and gravels separated by lower permeability volcanoclastic mudflow and ash fall tuffs. The lower Tertiary gravels constitute the uppermost regional aquifer beneath the disposal site. Groundwater at the site has not been contaminated by the disposal cell.

The Gunnison mill operated between 1958 and 1962, processing 540,000 tons of uranium ore. All uranium produced at the Gunnison mill was sold to the U.S. Atomic Energy Commission. Tailings resulting from operations at the former millsite covered approximately



North-South Cross Section of Gunnison Disposal Cell

39 acres. In 1990, the State of Colorado obtained ownership of the inactive mill property.

Excavation for the disposal cell began in 1992. During 1993 and 1994, contaminated materials (e.g., mill tailings, debris from demolished mill structures, and materials removed from contaminated vicinity properties) were hauled to and placed in the disposal cell. The cell was closed in 1995. The disposal cell contains 1,140,000 dry tons (approximately 740,000 cubic yards) of contaminated material, with a total activity of 175 curies of radium-226.

Cell Design

The roughly pentagonal-shaped disposal cell measures approximately 1,200 feet by 1,140 feet, including the toe apron. It occupies 29 acres of the 115-acre site. The disposal cell is constructed partially below grade and rises to a maximum height of 50 feet above the surrounding ground surface. A posted wire fence surrounds the perimeter of the cell.

The cover of the Gunnison Disposal Cell is a multi-component system designed to encapsulate and protect the contaminated materials for 1,000 years. The low-permeability radon barrier (the first layer placed over the compacted tailings) reduces radon emissions and minimizes precipitation from percolating through the contaminated materials into the underlying soil. This layer consists of compacted clayey soil amended with bentonite. Next, a bedding layer consisting of sand and gravel was placed as a capillary break beneath the frost-protection layer. The frost-protection layer consists of compacted soil and was designed to protect the underlying radon barrier from freeze/thaw damage. Another bedding layer consisting of coarse sand and fine gravel was placed over the frost-protection layer and was covered by a rock (riprap) erosion-protection layer. The upper bedding layer promotes rapid runoff of

precipitation to minimize leachate. The riprap protects the cell against erosion.

A riprap apron was placed around the perimeter of the disposal cell to provide erosion protection at the toe of the cell and to channel runoff away from the cell. A rock-lined interceptor ditch drains the upslope portion of the disposal cell to divert surface flow away from the cell. Disturbed areas were reseeded with native grasses.

LTSM Program Activities

The LTSM Program manages the site according to a long-term surveillance plan (LTSP) prepared specifically for the Gunnison site. Under provisions of the LTSP, the LTSM Program (1) conducts annual inspections of this site to evaluate the condition of surface features, (2) performs site maintenance as necessary, and (3) monitors groundwater. DOE monitors groundwater at the Gunnison Disposal Site to demonstrate disposal cell performance and compliance with applicable groundwater protection standards.

The disposal cell at Gunnison 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 Gunnison site will last indefinitely.

Contacts

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

U.S. Department of Energy Grand Junction Office
 2597 B³/₄ Road, Grand Junction, CO 81503
 Art Kleinrath, LTSM Program Manager (970) 248-6037
 Audrey Berry, Public Affairs (970) 248-7727

or visit the Internet site at
<http://www.gjo.doe.gov/programs/ltsm>