U.S. DEPARTMENT OF ENERGY | Legacy Management

Fact Sheet

UMTRCA Title I

Maybell, Colorado, Disposal Site

This fact sheet provides information about the Uranium Mill Tailings Radiation Control Act of 1978 Title I disposal site at Maybell, Colorado. This site is managed by the U.S. Department of Energy Office of Legacy Management.

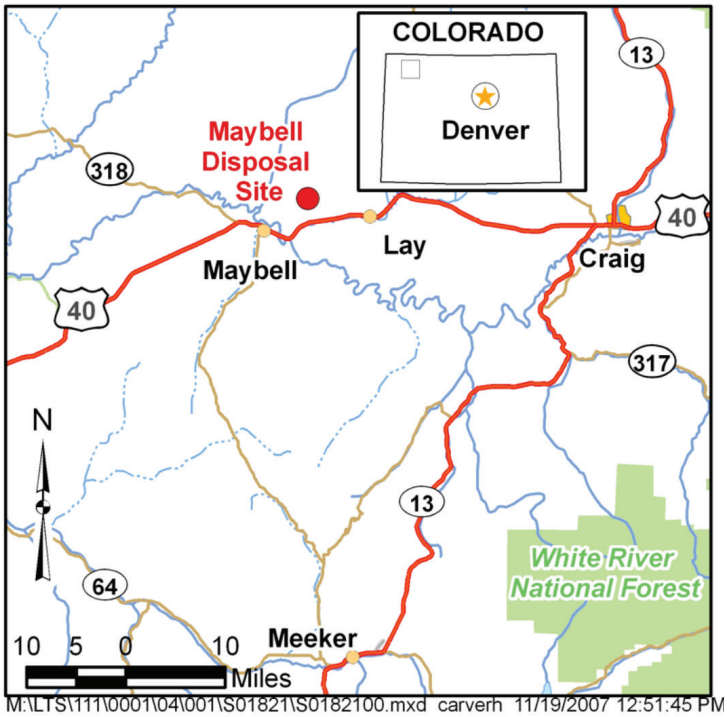
Site Description and History

The Maybell disposal site is located in Moffat County in northwest Colorado. The small town of Maybell is about 5 miles southwest of the site. The site is also the location of a former uranium mill that processed uranium ore between 1957 and 1964. Trace Elements Corporation established the facility in 1955, and Union Carbide Corporation (now Umetco) assumed control in 1957 and began milling operations using uranium ore from nearby open pit mines. During its 7 years of operations, the mill processed about 2.6 million tons of ore. The milling process produced radioactive tailings, a predominantly sandy material. Umetco dismantled the mill and began stabilizing the tailings pile in 1971; the U.S. Department of Energy (DOE) began remedial action at the site in 1995. All contaminated materials, including mill tailings, debris from demolished mill structures, and contaminated materials removed from vicinity properties, were placed in a disposal cell constructed onsite. DOE completed site cleanup and construction of the cell in 1998.

Land at the Maybell disposal site was originally owned by both public and private entities. The portion of the disposal site located on property administered by the U.S. Department of Interior Bureau of Land Management was permanently withdrawn and transferred to DOE in 1995. The State of Colorado purchased the privately held portion of the disposal site and transferred title to the land to DOE.

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 Agency in Title 40 *Code of Federal Regulations* (CFR), Part 192. Subpart B of



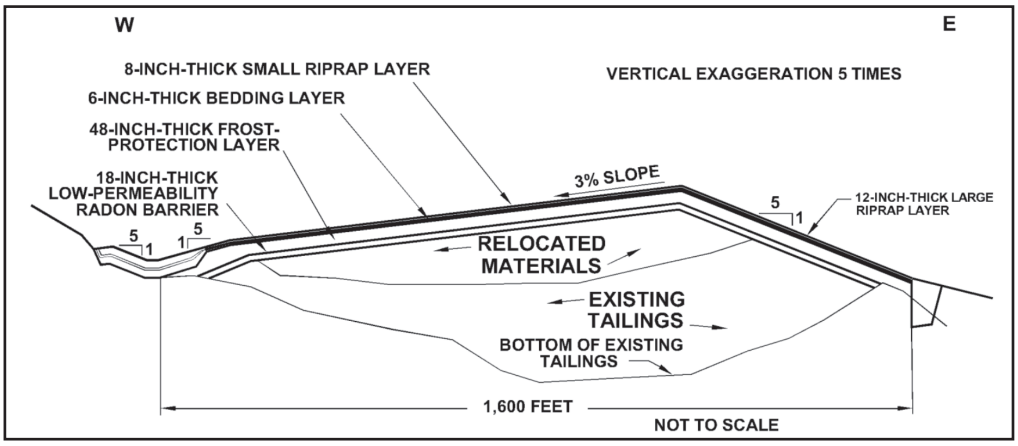
Location of the Maybell, Colorado, Disposal Site

40 CFR 192 regulated cleanup of contaminated groundwater 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 Maybell disposal site was included under the general license in 1999.

Compliance Strategy

The groundwater compliance strategy for the uppermost aquifer at the Maybell disposal site is no remediation with

application of supplemental standards. Supplemental standards may be applied at locations where groundwater is classified as limited use (not a current or potential source of drinking water) because it meets any of several criteria. At the Maybell site, groundwater is classified as limited use because of widespread ambient contamination not related to milling activities that cannot be cleaned up using treatment methods reasonably employed in public water systems (40 CFR 192.11[e][2]). Because widespread, naturally occurring uranium mineralization is present in the regional aquifer and is not related to uranium-milling operations at the former processing site, groundwater quality monitoring is not required at the site.



West-East Cross Section of the Maybell Disposal Cell

As a best management practice, DOE monitored water levels for a 5-year period (through 2004) in wells hydraulically upgradient and downgradient from the disposal cell to measure changes in groundwater levels related to transient drainage from the disposal cell. Water level monitoring results did not indicate any transient drainage interaction with the groundwater system near the cell. Consequently, water level monitoring was discontinued in 2005 following regulatory approval. All monitoring wells at the site were decommissioned in 2006 in accordance with State of Colorado regulations.

Disposal Site

The disposal site is situated in a small valley drained by Johnson Wash, an ephemeral stream that drains into the Yampa River to the south. As much as 25 feet of alluvial and colluvial material covers the site, below which lie sandstones of the Browns Park Formation.

The uppermost aquifer is unconfined in the upper sandstone unit of the Browns Park Formation. Minor recharge from precipitation occurs in the vicinity of the disposal cell, but the aquifer is generally of low yield. Depth to groundwater ranges from 35 to more than 300 feet below ground surface in the area.

The Maybell disposal site is located in a mining district that contains numerous abandoned uranium mines. Mineralization and mining activities in this area have resulted in elevated groundwater concentrations of arsenic, cadmium, lead, molybdenum, selenium, and uranium.

Disposal Cell Design

The original tailings pile on the site was recontoured following mill closure, and additional contaminated material was added. The roughly pentagonal disposal cell measures about 1,600 feet by 2,400 feet, rises 30 feet above the surrounding terrain, and occupies 66 acres of the 250-acre site. The cell contains about 3.5 million cubic yards of contaminated material with a total activity of 455 curies of radium-226. A posted wire fence surrounds the cell.

The cell cover is a multicomponent system designed to encapsulate and isolate the contaminated materials. The cover consists of (1) a low-permeability radon barrier (first layer placed over compacted tailings), (2) a frost protection layer, (3) a bedding layer, and (4) a layer of rock (riprap) on the top and side slopes to protect against wind and water erosion.

The sloped cell cover design promotes rapid runoff of precipitation to minimize leachate. Runoff from the top slope of the cell flows to a surrounding rock apron that carries water away from the apron. Disturbed areas were graded to promote positive drainage and reseeded with native vegetation.

Legacy Management Activities

The DOE Office of Legacy Management (LM) 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, LM conducts annual inspections of the site to evaluate the condition of surface features and to verify the continued integrity of the disposal cell.

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 Maybell disposal cell will last indefinitely.

Contacts

Documents related to the Maybell disposal site are available on the LM website at http://www.lm.doe.gov/maybell/Sites.aspx.

For more information about LM activities at the Maybell disposal cell, contact:

U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way, Grand Junction, CO 81503

(970) 248-6070 (monitored continuously), or
(877) 695-5322 (toll-free)