

1.0 Ambrosia Lake, New Mexico, Disposal Site

1.1 Compliance Summary

The Ambrosia Lake, New Mexico, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site was inspected on August 19, 2015. The disposal cell was in excellent condition. Inspectors identified no maintenance needs or cause for a follow-up or contingency inspection.

1.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the *Long-Term Surveillance Plan for the Ambrosia Lake, New Mexico, Disposal Site* (LTSP) (DOE/AL/62350-211, Rev. 1, U.S. Department of Energy [DOE], July 1996) and in procedures that DOE established to comply with the requirements of Title 10 *Code of Federal Regulations* Section 40.27 (10 CFR 40.27). Table 1-1 lists these requirements.

Table 1-1. License Requirements for the Ambrosia Lake Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 6.0	Section 1.4
Follow-Up or Contingency Inspections	Section 7.0	Section 1.5
Maintenance and Repairs	Section 8.0	Section 1.6
Groundwater Monitoring	Section 5.0	Section 1.7
Corrective Action	Section 9.0	Section 1.8

1.3 Institutional Controls

The 288-acre site (Figure 1-1) is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission (NRC) general license (10 CFR 40.27) in 1998. DOE is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls at the site include federal ownership of the property and the following physical features that are inspected annually: perimeter warning signs, site markers, and survey and boundary monuments.

1.4 Inspection Results

The site, north of Grants, New Mexico, was inspected on August 19, 2015. The inspection was conducted by M. Widdop and R. Johnson of the DOE Legacy Management Support contractor.

The purposes of the inspection were to confirm the integrity of visible features at the site, to identify changes in conditions that might affect site integrity, and to determine the need, if any, for maintenance or additional inspections and monitoring. Numbers in the left margin of this report refer to items summarized in Table ES-1 of the “Executive Summary.”

1.4.1 Site Surveillance Features

Figure 1-1 shows the locations of site surveillance features. Inspection results and recommended maintenance activities associated with site surveillance features are included in the following

subsections. Photographs to support specific observations are identified in the text and on Figure 1-1 by photograph location (PL) numbers.

1.4.1.1 Entrance Gate, Access Road, and Entrance Sign

Access to the site is along a gravel road that crosses private property and leads to the site for approximately 1 mile from New Mexico State Highway 509. There is a locked gate across this road where it leaves Highway 509 because the road continues to private mining and grazing interests east of the site. The gate and access road are privately owned by Rio Algom Mining LLC (Rio Algom). DOE has been granted permanent access to the site. DOE does not maintain the gate or the access road. Inspectors found the access gate locked by a sampling crew supporting the U.S. Environmental Protection Agency investigation of groundwater conditions in the Ambrosia Lake Valley, and a representative of Rio Algom showed the inspectors an alternate route to the site across Rio Algom property. Rio Algom reinstalled the DOE lock on the access gate at a later date.

The entrance sign was in good condition (PL-1).

1.4.1.2 Perimeter Signs

The site is not fenced. Seventy perimeter signs, positioned on the site boundary, were in good condition. Posts for perimeter signs P1 through P15 include mining-restriction-area warning signs. Cattle have rubbed against and bent the mining restriction signs but the signs were otherwise in good condition (PL-2).

1.4.1.3 Site Markers

Granite site markers are located near the site entrance and on top of the disposal cell (PL-3). Both site markers were in excellent condition.

1.4.1.4 Survey and Boundary Monuments

Three combined survey and boundary monuments and five additional boundary monuments identify the property corners and boundary. Boundary monument BM-3 was not found and was apparently covered with soil. All of the other monuments were undisturbed and in good condition. Wind erosion has exposed the concrete base of boundary monument BM-8, but the monument is stable (PL-4).

1.4.1.5 Monitoring Wells

Monitoring wells 0409, 0675, and 0678 were in good condition. Gully formation adjacent to monitoring well 0678 appears to be stable, and the well is not impacted by the erosion.

1.4.1.6 Mine Vent

A mine vent shaft, associated with an abandoned underground mine, is within the site boundary in the northern portion of the site. The vent has a casing, which rises approximately 3 feet above the ground, and a spot-welded cover. The vent was secure at the time of the inspection (PL-5). Inspectors will continue to monitor the condition of the vent to ensure that the closure remains secure.

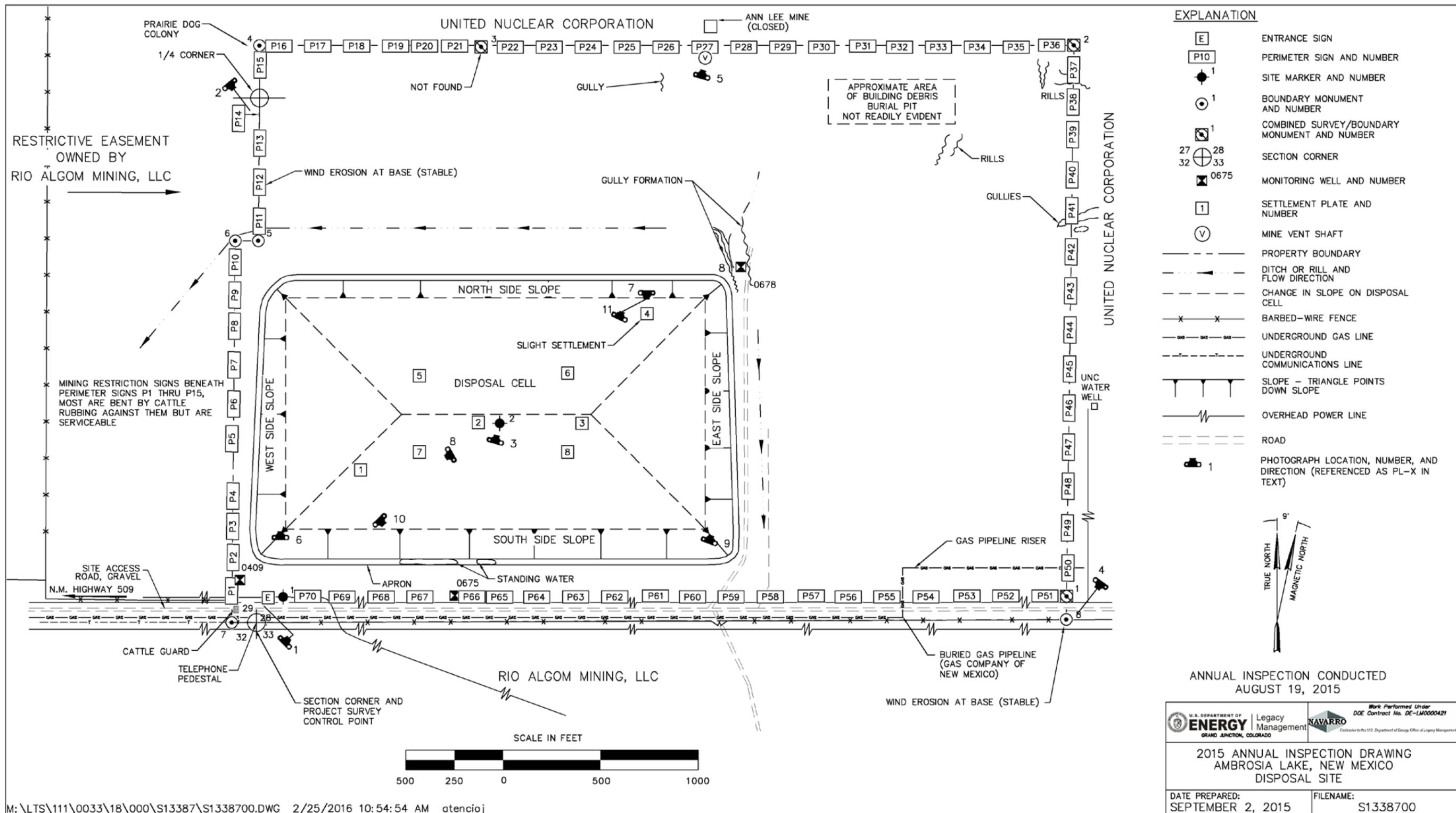


Figure 1-1. 2015 Annual Inspection Drawing for the Ambrosia Lake Disposal Site

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1.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into four inspection areas (referred to as “transects” in the LTSP) to ensure a thorough and efficient inspection. The inspection areas are: (1) the riprap-covered top of the disposal cell, (2) the riprap-covered side slopes and apron of the cell, (3) the graded and revegetated area between the disposal cell and the site perimeter, and (4) the outlying area.

Within each area, inspectors examined specific site surveillance features. Inspectors also looked for evidence of erosion, settling, slumping, or other disturbances that might affect the site’s integrity, protectiveness, or long-term performance.

1.4.2.1 Top of Disposal Cell

The 91-acre disposal cell was completed in 1994. The basalt riprap-covered top slope of the disposal cell was in excellent condition (PL-6). There was no evidence of cracking, slumping, or erosion, and there was no indication of riprap degradation.

A shallow depression around settlement plate SP-4, near the northeast corner of the disposal cell cover, was first noted during the 1997 inspection and continued to grow in depth and area in subsequent years. The depression was repaired in August 2005. Visual observations during the 2015 inspection indicate that very minor settlement may have occurred since the depression was repaired (PL-7).

Scattered annual weeds and perennial grasses and forbs are growing on the disposal cell top slope (PL-8). In accordance with the LTSP, deep-rooted shrubs are to be removed from the cell cover. No deep-rooted shrubs were noted during the inspection.

1.4.2.2 Side Slopes and Apron

The basalt riprap-covered side slopes and apron were in excellent condition and showed no evidence of cracking, settling, slumping, or erosion (PL-9). Standing water was present in a portion of the south apron (PL-10). This location is the topographic low spot along the base of the disposal cell and rainfall runoff collects in this area.

1.4.2.3 Graded and Revegetated Area

In general, site vegetation appeared to be healthy. However, some areas are windswept and have little growth, particularly in an area north of the disposal cell where mill tailings had formerly been stockpiled. Because the site is not fenced, livestock occasionally enter the site. Inspectors found cattle grazing south of the cell. Occasional grazing will not affect cell performance or protectiveness and livestock do not walk on riprap-armored surfaces.

Rills and gullies within the DOE property north and east of the disposal cell have been monitored for several years (PL-11). These erosional features do not threaten the disposal cell’s performance or integrity because headward erosion is progressing away from the cell, and there is no significant sedimentation near the cell.

1.4.2.4 Outlying Area

The area within 0.25 mile of the site boundary was visually observed for erosion, changes in land use, or other phenomena that might affect the long-term integrity of the site. No such impacts were observed.

Prairie dogs have established a colony near boundary monument BM-4. No site surveillance features are affected.

1.5 Follow-Up or Contingency Inspections

DOE will conduct follow-up or contingency inspections if (1) an annual inspection or other site visit identifies a condition that requires a return to the site to evaluate the condition or (2) a citizen or outside agency notifies DOE that conditions at the site or in the vicinity of the site are substantially changed. No need for a follow-up or contingency inspection was identified.

1.6 Maintenance and Repairs

No maintenance needs were identified.

1.7 Groundwater Monitoring

- 1A In accordance with the LTSP, groundwater monitoring is not required at this site because (1) the groundwater is heavily contaminated from underground uranium mining and naturally occurring mineralization and (2) the uppermost aquifer is of limited use due to its low yield. Consequently, NRC concurred with the application of supplemental standards at the site and the exemption of both compliance and performance groundwater monitoring. However, at the request of the New Mexico Environment Department (NMED), DOE conducts groundwater monitoring at three wells as a best management practice.

Monitoring well 0675 is completed in weathered Mancos Shale just below its contact with the overlying alluvium, and monitoring well 0678 is completed in the Tres Hermanos B sandstone unit of the Mancos Shale. DOE originally agreed to sample these locations once every third year for 30 years; however, annual sampling began in November 2010 at the request of NMED. Monitoring results are provided to NMED and NRC.

DOE installed a new monitoring well (0409) in May 2011 in support of a regional groundwater investigation being conducted by NMED. The well, located on DOE property adjacent to the southwest corner of the disposal cell, is completed in an alluvium-filled paleochannel. The bottom of the well screen is at the contact between the alluvium and sandstone of the Tres Hermanos C unit of the Mancos Shale. The well is dry, which suggests that groundwater is not leaving the southwest portion of the site via alluvium.

1.8 Corrective Action

In accordance with the LTSP, corrective action is taken to correct conditions that threaten the integrity of the disposal cell or compliance with 40 CFR 192. No need for corrective action was identified.

1.9 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	45	Entrance sign and site marker SMK-1.
PL-2	140	Perimeter sign P14.
PL-3	15	Site marker SMK-2.
PL-4	215	Boundary monument BM-8.
PL-5	15	Vent south of Ann Lee mine shaft.
PL-6	0	West edge of disposal cell top slope.
PL-7	180	Settlement plate SP-4.
PL-8	240	Vegetation on southeast portion of top slope.
PL-9	20	East side slope.
PL-10	135	South side slope and standing water in apron.
PL-11	25	Erosion north of disposal cell.



AMB 8/2015. PL-1. Entrance sign and site marker SMK-1.



AMB 8/2015. PL-2. Perimeter sign P14.



AMB 8/2015. PL-3. Site marker SMK-2.



AMB 8/2015. PL-4. Boundary monument BM-8.



AMB 8/2015. PL-5. Vent south of Ann Lee mine shaft.



AMB 8/2015. PL-6. West edge of disposal cell top slope.



AMB 8/2015. PL-7. Settlement plate SP-4.



AMB 8/2015. PL-8. Vegetation on southeast portion of top slope.



AMB 8/2015. PL-9. East side slope.



AMB 8/2015. PL-10. South side slope and standing water in apron.



AMB 8/2015. PL-11. Erosion north of disposal cell.

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