

15.0 Salt Lake City, Utah, Disposal Site

15.1 Compliance Summary

The Salt Lake City, Utah, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site was inspected on June 22, 2023. Due to an abnormally wet spring in the region around the site, inspectors observed ponded water in drainage channels and increased vegetation around the disposal cell. Observations of rock-quality monitoring plots indicated no significant change from the previous year. Inspectors did not find any routine maintenance needs and found no cause for a follow-up inspection. Maintenance needs that could be addressed during the inspection were completed by inspectors. Groundwater monitoring is not required.

15.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the site-specific Long-Term Surveillance Plan (DOE 1997) (LTSP) in accordance with procedures established to comply with the requirements of the U.S. Nuclear Regulatory Commission (NRC) general license at Title 10 *Code of Federal Regulations* Section 40.27 (10 CFR 40.27). Table 15-1 lists these requirements.

Table 15-1. License Requirements for the Salt Lake City, Utah, Disposal Site

Requirement	LTSP	This Report	10 CFR 40.27
Annual Inspection and Report	Section 3.0	Section 15.4	(b)(3)
Follow-Up Inspections	Section 3.4	Section 15.5	(b)(4)
Maintenance and Repairs	Section 5.0	Section 15.6	(b)(5)
Groundwater Monitoring	Section 4.0	Section 15.7	(b)(2)
Corrective Action	Section 6.0	Section 15.8	--

15.3 Institutional Controls

The 100-acre site, identified by the property boundary shown in Figure 15-1, is owned by the United States and was accepted under the NRC general license in 1997. The U.S. Department of Energy (DOE) is the licensee and, in accordance with the requirements for UMTRCA Title I sites, the Office of Legacy Management (LM) is responsible for the custody and long-term care of the site. Institutional controls (ICs) at the site include federal ownership of the property, administrative controls, and the following physical ICs that are inspected annually: the disposal cell and associated drainage features, entrance gates and sign, fences, perimeter (warning) signs, site markers, and boundary monuments.

15.4 Inspection Results

The site, 81 miles west of Salt Lake City, Utah, was inspected on June 22, 2023. The inspection was conducted by D. Atkinson and N. Lind of the Legacy Management Support (LMS) contractor. M. Kautsky and M. Young (LM) and H. Mickelson, C. Bishop, and B. Anderson (Utah Department of Environmental Quality) attended the inspection. S. Gurr and N. Clarke of EnergySolutions (the private operator of the surrounding radioactive waste disposal facility) escorted the inspection group. The purposes of the inspection were to confirm the integrity of visible features at the site, identify changes in conditions that might affect conformance with the LTSP, and evaluate whether maintenance or follow-up inspection and monitoring are needed.

15.4.1 Site Surveillance Features

Figure 15-1 shows the locations of site features, including site surveillance features and inspection areas, in black and gray font. Some site features that are present but not required to be inspected are shown in italic font. Observations from previous inspections that are currently monitored are shown in blue, and new observations identified during the 2023 annual inspection are shown in red. Inspection results and recommended maintenance activities associated with site surveillance features are described in the following subsections. Photographs to support specific observations are noted in the text and in Figure 15-1 by photograph location (PL) numbers. The photographs and photograph log are presented in Section 15.10.

15.4.1.1 Site Access, Entrance Gates, and Entrance Sign

The site is surrounded by the EnergySolutions radioactive waste facility. A perpetual right-of-way easement ensures that LM and its representatives have continued access across the EnergySolutions property to the site. LM also provides EnergySolutions access to the site to perform periodic maintenance activities, as needed, through a signed access agreement. In accordance with the agreement, EnergySolutions is required to provide a minimum 48-hour notice to LM before accessing or conducting maintenance activities at the site.

All personnel entering the EnergySolutions facility must sign in at the security building. Because of the surrounding radioactive waste disposal facility, posted radiological control areas must be crossed to access the site. Therefore, EnergySolutions requires that inspectors and other site visitors receive a radiological hazard awareness briefing, sign the EnergySolutions Radiological Work Permit, wear a dosimeter, and be escorted to and from the site. Hard hats, safety glasses, high-visibility vests, and steel-toed boots are also required on the EnergySolutions property. Following the inspection and before exiting the radiological control area, personnel and equipment are scanned for radiological contamination using a calibrated Ludlum model 2360 alpha-beta ratemeter.

A route across the EnergySolutions property provides access to the southwest corner of the site. Six locked gates around the site limit access to the site and disposal cell. Two gates (Gates 61 and 64) are in the southwest corner of the property, and one gate (Gate 87) is in the northwest corner of the property; these property boundary gates are maintained by EnergySolutions. The remaining three gates (Gate 65 in the northwest corner and Gates 60 and 62 in the southwest corner) are along the interior chainlink security fence that surrounds the disposal cell; these interior gates are maintained by LM. Gates 60, 61, and 64 are considered site entrance gates. The gates were locked and functional. The entrance sign is at Gate 61. No maintenance needs were identified.

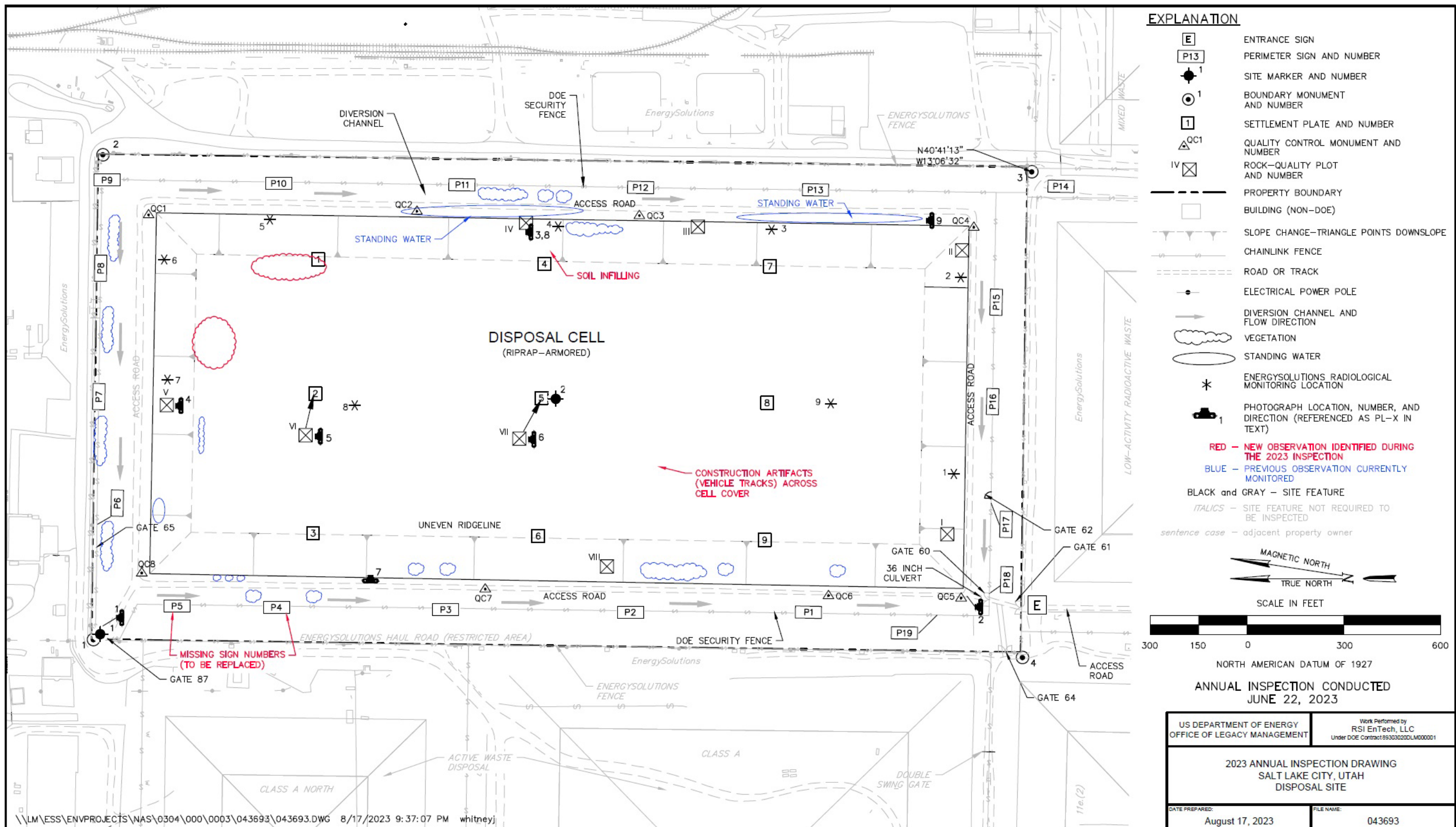


Figure 15-1. 2023 Annual Inspection Drawing for the Salt Lake City, Utah, Disposal Site

15.4.1.2 Fences and Perimeter Signs

The site has two chainlink fences: the exterior EnergySolutions perimeter fence along the property boundary and the interior LM security fence that encloses the disposal cell and surface water diversion channels. There are 19 perimeter signs attached to the LM security fence; all 19 perimeter signs were present and in good condition. Perimeter signs P4 and P5 are missing their number identifiers. Numbers will be replaced during the next annual site inspection. Inspectors noted continued growth of vegetation along the east fence line; treating and removing this vegetation is not required at this time. No other maintenance needs were identified.

15.4.1.3 Site Markers

The site has two granite site markers. Site marker SMK-1 (PL-1) is just inside Gate 87 in the northwest corner of the site. Site marker SMK-2 is on the top slope of the disposal cell. No maintenance needs were identified.

15.4.1.4 Boundary Monuments

Four boundary monuments delineate the corners of the property boundary (boundary monuments BM-1 to BM-4). Protective casings that EnergySolutions installed over each boundary monument continue to protect the boundary monuments from damage by surrounding earthmoving activities. No maintenance needs were identified.

15.4.1.5 Aerial Survey Quality Control Monuments

Eight aerial survey quality control monuments (PL-2) were in good condition and no maintenance needs were identified.

15.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into three inspection areas to ensure a thorough and efficient inspection. The inspection areas are (1) the disposal cell, (2) the area between the disposal cell and the site perimeter, and (3) the outlying area. Inspectors examined specific site surveillance features within each area and looked for evidence of erosion, settling, slumping, or other modifying processes that might affect the site's conformance with LTSP requirements.

15.4.2.1 Disposal Cell

The disposal cell, completed in 1988, occupies 54 acres. The disposal cell is armored with riprap to control erosion. Inspectors noted the presence of vehicle tracks on the top slope and east side slope of the disposal cell, but there was no evidence of erosion, settling, slumping, or other modifying processes that might affect the integrity of the disposal cell. Vehicle use on disposal cells is prohibited without consent from DOE. No maintenance needs were identified.

One of several types of rock found within the mix used for the disposal cell erosion-protection riprap layer has exhibited minor degradation since the disposal cell was constructed. Eight rock-quality monitoring plots, each measuring 1 square meter (indicated by Roman numerals I–VIII in Figure 15-1), were established in 2010 to monitor for continued rock degradation.

The type of rock exhibiting degradation constitutes approximately 1%–10% of the riprap material; observed rock degradation is thought to result from freeze-thaw weathering. Rock-quality monitoring plots are visually monitored and documented annually with photographs. Photographs of plots IV, V, VI, and VII (PL-3 through PL-6) have been included in the report as representative of the rock-quality monitoring plots. Based on visual monitoring of the rock in the plots, there have been no significant changes from the 2022 annual inspection. Comparisons to the initial 2010 rock-quality plot photographs indicate very little (if any) additional rock degradation since monitoring began (PL-3 through PL-6). The extent of rock degradation observed to date has not reduced the effectiveness of the riprap cover, and, at this time, there is no concern that cover integrity will be affected in the future. Rock-quality monitoring plots will continue to be visually monitored and documented annually with photographs to ensure that the riprap continues to protect the integrity of the disposal cell.

Nine settlement plates are on the top slope of the disposal cell; several outer casings associated with the settlement plates were visually inspected. Surveying of the settlement plates is not required unless settlement appears to be occurring. Every year, EnergySolutions performs light detection and ranging (lidar) surveys of the area that includes the disposal cell. The lidar survey results are available upon request. The LMS contractor completed a baseline aerial survey of the site in 2022 using lidar and photogrammetry. The results of this survey will be used in future assessments of erosion or other modifying processes to help ensure that the disposal cell remains structurally sound and protective of human health and the environment.

Although areas of the disposal cell have continued to have minor perennial grass growth, no deep-rooted plants were present on the disposal cell. Two small weedy plants were found growing on the west side slope (PL-7), and two areas near the northeast corner of the top slope had minor vegetation growth. Soil infilling and some minor settling was observed along the east side slope (PL-8). No immediate maintenance is required, but this area will be monitored in the future for further settling, slumping, and infilling. No other maintenance needs were identified.

15.4.2.2 Area Between Disposal Cell and Site Perimeter

Inspectors examined the area between the toe of the disposal cell and the EnergySolutions security fence on the property boundary. No evidence of erosion was observed. Vegetation encroaching along the access road was removed after the 2021 inspection and the road is in good condition. EnergySolutions will continue to remove vegetation along the road as needed.

The surface water diversion channels were functioning as designed. Ponded water and vegetation growth were observed in and along these diversion channels (PL-9) but are not impeding stormwater runoff.

Radiological surveys are performed at least every 2 years on the site by EnergySolutions personnel to confirm there is no spillover or windblown radioactive contamination from surrounding radioactive waste disposal operations. The previous survey occurred in 2022, and informal spot-check radiological measurements were collected by EnergySolutions in 2023.

Dose rate measurements and wipe samples were collected at random locations around the base of the disposal cell, including on the disposal cell top slope during the 2023 annual inspection.

Results from all radiological surveys conducted at the site have been below applicable exposure limits established in the *Radiological Control Manual* (LMS/POL/S04322). All results from the 2023 wipe samples collected by EnergySolutions were below the minimum detectable activities (i.e., nondetect) for removable alpha and beta radiation contamination. Therefore, both spillover and windblown radiological contamination from the surrounding radioactive waste disposal operation are not evident. The next radiological survey will occur during the 2024 annual site inspection.

EnergySolutions conducts periodic walkthroughs of the site to remove any windblown debris. The company reported no debris on the site in 2023. No maintenance needs were identified.

15.4.2.3 Outlying Area

The area beyond the site boundary for 0.25 mile 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.

A variety of features and ongoing waste disposal activities that are managed by EnergySolutions surround the site. The most obvious waste disposal activities are occurring directly west of the site where a Class A (i.e., low-level radioactive waste) disposal cell is being capped. On the northeast and east sides of the site, incoming wastes are unloaded from railcars and transferred to haul trucks; decontamination facilities are also present. Directly to the south is a completed low-level (activity) radioactive waste disposal cell; to the southwest is a waste disposal cell containing Atomic Energy Act Section 11e.(2) byproduct material, as described in Title 42 *United States Code* Section 2011 et seq. (42 USC 2011 et seq.); and to the southeast is an operating mixed-waste treatment and disposal facility. Administration, security, and maintenance buildings lie directly north-northwest of the site. A shredding facility, rotary dump, and railroad spur delivery loop are northwest of the site. These adjacent operations and facilities are not affecting the site.

15.5 Follow-Up Inspections

LM will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition or (2) LM is notified by a citizen or outside agency that conditions at the site have substantially changed. No need for a follow-up inspection was identified.

15.6 Maintenance and Repairs

Maintenance was performed to remove the vegetation on the east perimeter fence before the inspection.

Inspectors noted that the contact information stickers on perimeter signs P4 and P5 were missing and will be replaced during the next inspection. No other maintenance needs were identified.

15.7 Groundwater Monitoring

In accordance with the LTSP, groundwater monitoring is not required. Supplemental standards have been applied as site standards because (1) the uppermost aquifer is classified as limited use due to naturally occurring concentrations of total dissolved solids that exceed 10,000 milligrams per liter and (2) the site is not contributing to the contamination of any current or potentially useful aquifer. EnergySolutions owns and maintains several groundwater monitoring wells throughout its licensed radioactive waste facility.

15.8 Corrective Action

Corrective action is taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192. No need for corrective action was identified.

15.9 References

10 CFR 40.27. U.S. Nuclear Regulatory Commission, “General License for Custody and Long-Term Care of Residual Radioactive Material Disposal Sites,” *Code of Federal Regulations*.

40 CFR 192. U.S. Environmental Protection Agency, “Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings,” *Code of Federal Regulations*.

42 USC 2011 et seq. “Atomic Energy Act of 1954,” *United States Code*.

DOE (U.S. Department of Energy), 1997. *Long-Term Surveillance Plan for the South Clive Disposal Site, Clive, Utah*, DOE/AL/62350-228, Rev. 2, September.

Radiological Control Manual, LMS/POL/S04322, continually updated, prepared by the LMS contractor for the U.S. Department of Energy Office of Legacy Management.

15.10 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	—	Site Marker SMK-1
PL-2	—	Aerial Survey Quality Control Monument QC-5
PL-3	—	(a) Rock-Quality Monitoring Plot IV—2023 (b) Rock-Quality Monitoring Plot IV—2010 Photo for Comparison
PL-4	—	(a) Rock-Quality Monitoring Plot V—2023 (b) Rock-Quality Monitoring Plot V—2010 Photo for Comparison
PL-5	—	(a) Rock-Quality Monitoring Plot VI—2023 (b) Rock-Quality Monitoring Plot VI—2010 Photo for Comparison
PL-6	—	(a) Rock-Quality Monitoring Plot VII—2023 (b) Rock-Quality Monitoring Plot VII—2010 Photo for Comparison
PL-7	90	Vegetation on West Side Slope
PL-8	—	Infilled Soil in Rock-Quality Monitoring Plot IV
PL-9	0	Ponded Water in Toe Drain near Southeast Corner of Disposal Cell

Note:

— = Photograph taken vertically from above.



PL-1. Site Marker SMK-1



PL-2. Aerial Survey Quality Control Monument QC-5



PL-3a. Rock-Quality Monitoring Plot IV—2023



PL-3b. Rock-Quality Monitoring Plot IV—2010 Photo for Comparison



PL-4a. Rock-Quality Monitoring Plot V—2023



PL-4b. Rock-Quality Monitoring Plot V—2010 Photo for Comparison



PL-5a. Rock-Quality Monitoring Plot VI—2023



PL-5b. Rock-Quality Monitoring Plot VI—2010 Photo for Comparison



PL-6a. Rock-Quality Monitoring Plot VII—2023



PL-6b. Rock-Quality Monitoring Plot VII—2010 Photo for Comparison



PL-7. Vegetation on West Side Slope



PL-8. Infilled Soil in Rock-Quality Monitoring Plot IV



PL-9. Ponded Water in Toe Drain near Southeast Corner of Disposal Cell