

3.0 Canonsburg, Pennsylvania, Disposal Site

3.1 Compliance Summary

The Canonsburg, Pennsylvania, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site was inspected on December 10, 2013. The 2013 inspection was originally scheduled to occur in October; however, the partial government shutdown required that the inspection be reschedule later in the same calendar year. The Canonsburg site was in excellent condition. No evidence of erosion or slope instability was observed on the disposal cell. No maintenance needs or cause for a follow-up or contingency inspection was identified.

3.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the *Long-Term Surveillance Plan for the U.S. Department of Energy Canonsburg Uranium Mill Tailings Disposal Site, Canonsburg, Pennsylvania* (LTSP) (LMS/CAN/S00404-0.0, U.S. Department of Energy [DOE], September 2008) and in procedures that DOE established to comply with the requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). Table 3-1 lists these requirements.

Table 3-1. License Requirements for the Canonsburg Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.3	Section 3.4
Follow-Up or Contingency Inspections	Section 3.4	Section 3.5
Maintenance and Repairs	Section 3.5	Section 3.6
Groundwater and Surface Water Monitoring	Section 3.7	Section 3.7
Corrective Action	Section 3.6	Section 3.8

3.3 Institutional Controls

The 34.2-acre disposal site 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 1996. 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 features that are inspected annually: site markers, survey and boundary monuments, warning/no-trespassing signs, a site perimeter fence, and locked gates at the site entrances.

Institutional controls also apply to Area C and former Tract 117, which are southeast of Strabane Avenue. Area C (3.1 acres) was sold and transferred in 2006, and former Tract 117 (0.431 acre) was sold and transferred in 2009; the same private party purchased both. DOE and the Commonwealth of Pennsylvania complied with restrictions on parcel transfers stipulated in UMTRCA and the Cooperative Agreement between DOE and the Commonwealth. The deed for Area C and former Tract 117 establishes restrictions to limit excavation in the areas, prohibits the disturbance of the stream bank, maintains access for monitoring, and prevents the areas from being used for residential purposes.

In 2012 the landowner of Area C and Tract 117 elevated the land surface of both areas through the placement and grading of clean fill material. The elevated land surface is in compliance with institutional controls for the property. DOE owns two groundwater monitoring wells on Area C and Tract 117. The landowner took steps to provide adequate access to the wells and to protect the integrity of the wells by grading the fill in a manner that should not result in surface water pooling around the base of the well pads. Continued adherence to institutional controls will be evaluated during future site inspections.

3.4 Inspection Results

The site, approximately 20 miles southwest of Pittsburgh, Pennsylvania, was inspected on December 10, 2013. M. Miller and K. Broberg of S.M. Stoller Corporation, the Legacy Management Support contractor for the DOE Office of Legacy Management (LM) in Grand Junction, Colorado, conducted the inspection. C. Carpenter of the DOE Office of Legacy Management and M. Roberts of NRC also participated in the inspection.

The purposes of the inspection were to confirm the integrity of visible features at the site, to identify changes in conditions that may affect site integrity, and to determine the need, if any, for maintenance or additional inspections and monitoring.

3.4.1 Site Surveillance Features

Figure 3-1 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 in Figure 3-1 by photograph location (PL) numbers.

3.4.1.1 Entrance Gates, Entrance Signs, and Access Road

Access to the Canonsburg site is directly off Strabane Avenue. The main entrance gate for the site is located on the southeast corner and was locked. The main entrance sign was in good condition. The main gate lock was replaced with a new LM lock during the site inspection.

3.4.1.2 Perimeter Fence and Perimeter Signs

The security fence was replaced in 2007 and remains in excellent condition, with the exception of the north vehicle gate. The hinge on the north vehicle gate requires minor adjustment (PL-1 and PL-2). A vegetation-free buffer zone is being maintained around the entire site security fence.

An area of erosion under the fence is present along the western edge of the site where the old fence line was located. The area appears to be stable and does not need to be filled in at this time. The area will be checked during future inspections to determine if conditions have changed such as to require some type of maintenance action.

The perimeter security fence has 11 attached signs identifying the site. With the exception of perimeter sign P2, all perimeter signs were in good condition. Perimeter sign P2 is held in place with zip-ties, and covers a small hole in the fence where the original P2 perimeter sign was stolen in 2011.

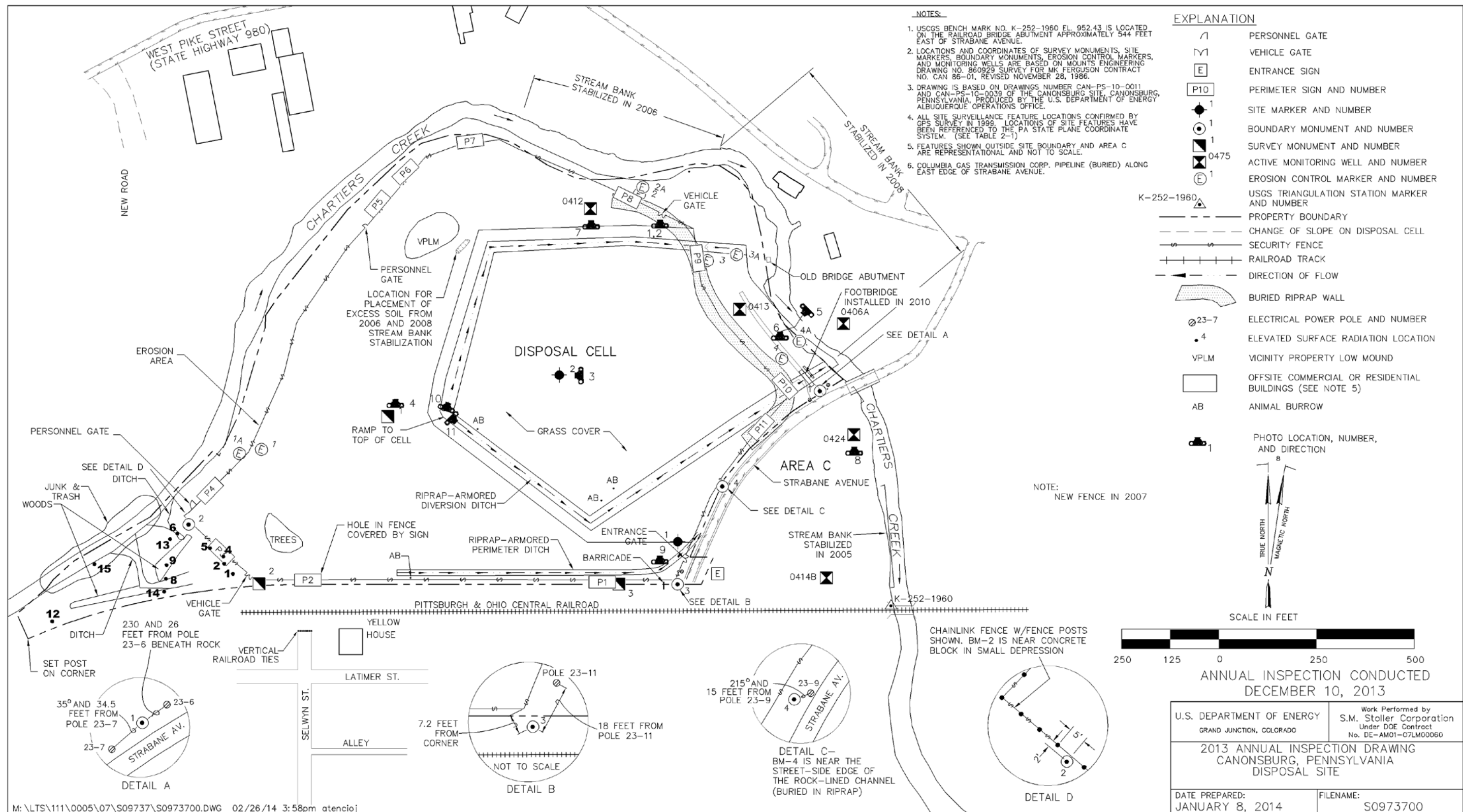


Figure 3-1. 2013 Annual Inspection Drawing for the Canonsburg Disposal Site

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3.4.1.3 Site Markers

The site has two site markers. Both site markers were in good condition (PL-3).

3.4.1.4 Survey Monuments and Boundary Monuments

The site has three survey monuments and four boundary monuments. Survey monument SM-1 was in good condition (PL-4). Snow cover limited verification of other survey and boundary monuments during this inspection. They were verified during the 2012 inspection and also during a recent Facilities Information Management System site visit.

3.4.1.5 Erosion Control Markers

The site has four pairs of erosion control markers; all were in good condition (PL-5 and PL-6).

3.4.1.6 Monitoring Wells

The site has five groundwater monitoring wells—0406A, 0412, 0413, 0414B, and 0424, which are inspected when the wells are sampled.

All monitoring wells were observed to be properly locked during the inspection (PL-7 and PL-8).

3.4.2 Inspection Areas

To ensure a thorough and efficient inspection, inspectors divided the site into five inspection areas (referred to as “transects” in the LTSP): (1) the disposal cell; (2) the grass-covered area surrounding the disposal cell; (3) the diversion channels and perimeter ditches; (4) the site perimeter; and (5) the outlying area.

Within each inspection area, inspectors examined specific site surveillance features, drainage structures, vegetation, and other features. Inspectors also looked for evidence of settlement, erosion, or other modifying processes that might affect site integrity or long-term performance.

3.4.2.1 Disposal Cell

The grass-covered disposal cell was in excellent condition (PL-9). No evidence of erosion or slope instability was observed during the inspection.

Animal burrows occur on the cell cover. Because the buried tailings are overlain by a 36-inch-thick clay layer (radon barrier), an 18-inch-thick rock layer, and a 12-inch-thick topsoil layer, biointrusion down to or through the radon barrier is unlikely. Therefore, such burrows should not pose a risk to cell integrity or public health. Inspectors will continue to monitor the location and significance of burrows each year. Some new burrows were noted on the cell during the 2013 inspection but were not considered to be large enough to identify on the inspection map.

3.4.2.2 Grass-Covered Area Surrounding the Disposal Cell

The Canonsburg site consists primarily of mowed grasses within the perimeter fence and on the disposal cell cap, with seeded fescues and crown vetch present across the site. The “spray and

mow” approach to vegetation management at the site continues to be effective. Noxious weeds within the fenced area are limited to re-sprouting seedlings, which were observed in portions of mowed areas.

A small pedestrian footbridge was installed northeast of the disposal cell in 2010. The footbridge was in excellent condition.

3.4.2.3 Diversion Channels and Perimeter ditches

Rock in the engineered channels and ditches surrounding the disposal cell was in good condition. Rock deterioration does not appear to be a problem. Future inspections will look at rock conditions within the diversion ditch, and indications of poor rock durability will be noted. No indications of poor rock durability were noted in 2013.

No woody vegetation in the channels and ditches was observed (PL-10 and PL-11). Physical removal and spot herbicide applications have been effective at reducing woody vegetation.

3.4.2.4 Site Perimeter

Chartiers Creek is an active, meandering waterway that is only partially restrained on the east end of the disposal site. The creek is slowly cutting into the bank and has required several stream bank stabilization projects.

- **2001:** The Chartiers Creek bank along Area C was reconstructed to stop slumping.
- **2004:** Inspectors found that floodwater had caused erosion damage to the stream bank. Approximately 100 feet of reconstructed stream bank was damaged downstream from the Strabane Avenue Bridge, and 200 feet was damaged upstream from the railroad bridge. Floodwater cut laterally into the bank as much as 6 feet in places. Floodwater scoured behind the riprap and fabric in places. DOE notified NRC, performed a follow-up inspection of the damage, and developed recommendations for creek bank repair along Area C. NRC concurred in the recommendations, and repair work was performed in April 2005.
- **2005:** DOE restored the creek bank profile along Area C by filling scoured areas with riprap. Shrub and forb seed was broadcast to further stabilize the bank with vegetation.
- **2006:** The area between perimeter signs P7 and P8 was stabilized.
- **2008:** The area between perimeter sign P8 and Strabane Avenue Bridge was stabilized. The stabilization work consisted of cutting back the slope of the creek bank and armoring the toe with riprap keyed into bedrock. The riprap was underlain by a geotextile fabric. Above the riprap the slope was protected by stabilization matting and planting of live fascines.
- **2009:** Reseeding and installation of about 40 large (>2-inch caliper) sapling trees took place within the area that was regraded in 2008. Seven patches of trees were installed, consisting of oak, maple, and birch species. All trees were mulched and staked, and disturbed areas were reseeded. The trees were installed under a third party LM grant in conjunction with the 2008 bank stabilization project.
- **2010:** A footbridge was constructed across the riprap-lined diversion ditch to provide safe pedestrian access to the planted area.

The stream bank west of the perimeter fence appears to remain in a stable condition. Bedrock outcrops and mature trees indicate that the bank is stable.

3.4.2.5 Outlying Area

The landowner of Area C and Tract 117 has elevated the ground surface of both areas through the placement and grading of clean fill material. Placement and grading of the fill does not violate land use restrictions.

DOE has two groundwater monitoring wells on Area C and Tract 117 (MW-0424 and MW-0414B, respectively) that are part of the groundwater-monitoring network. DOE ensured ongoing access to these wells through the sale agreements. The private property owner has done a good job of maintaining access to the wells and grading the land surface so that surface water will not collect and pool around the well pads.

3.5 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) an annual inspection or other site visit reveals a condition that must be reevaluated during a return to the site, or (2) a citizen or outside agency notifies DOE that conditions at the site are substantially changed.

No need for a follow-up or contingency inspection was identified during the inspection.

3.6 Maintenance and Repairs

Routine vegetation management was conducted in 2013 (mowing and herbicide treatments). Nonroutine maintenance or repairs were not required.

3.7 Environmental Monitoring

3.7.1 Groundwater Monitoring

3A DOE monitors groundwater and surface water at the Canonsburg site to comply with the requirements in the revised LTSP. The revised LTSP combines the objectives of both the original LTSP (issued in 1995) and the *Ground Water Compliance Action Plan and Application for Alternate Concentration Limits for the Canonsburg, Pennsylvania, UMTRA Project Site* (U0035901, DOE, February 2000; GCAP). Monitoring prescribed in the original LTSP was a best management practice because NRC determined that cell performance monitoring to ensure compliance with remedial actions discussed in Subpart A of 40 CFR 192 was not required since the disposal cell's design was adequate to provide long-term protection of human health and the environment. The GCAP required monitoring for a period of no less than 5 years (through 2004) and up to 30 years (through 2029, which is the estimated time for any contamination present to naturally attenuate). This monitoring period was established to ensure compliance with Subpart B of 40 CFR 192, which applies to contamination related to legacy uranium-processing sites. The Subpart B protection strategy is no remediation in conjunction with the application of an alternate concentration limit for uranium.

In 2012 DOE evaluated the groundwater and surface water monitoring program as required by the revised LTSP. The assessment recommended that following the collection of samples in

2011, the frequency of monitoring be reduced from annually to once every 5 years, for cell performance purposes. DOE received NRC approval for the sampling change in 2012.

Groundwater and surface water sampling was conducted in November 2013. Results for this sampling event will be included in the 2014 Annual Report.

3.7.2 Vegetation Monitoring

3B

An effective vegetation management program that aligns with requirements in the LTSP remains successful. Inspectors continued to use discussions with site maintenance personnel during the inspections to provide lesson learned opportunities to improve the efficiency and effectiveness of site maintenance activities.

The spray-and-mow approach to vegetation management continues to be effective. Noxious weeds within the fenced area are limited to re-sprouting seedlings, which were observed in portions of mowed areas.

Tree of heaven (an invasive tree) has been identified at the site and is being effectively treated for eradication from the site. Because re-sprouts have been observed, continued control of this species and the multiflora rose is recommended, using a basal application of Garlon 4A.

Physical removal and spot herbicide applications have been effective at reducing woody vegetation in the channels and ditches.

3.8 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 corrective action was required in 2013.

3.9 Photographs

Photo Location Number	Azimuth	Photograph Description
PL-1	NA	Damage to vehicle gate near perimeter sign P8.
PL-2	NA	Damage to vehicle gate near perimeter sign P8.
PL-3	270	Inspectors at site marker on cell cap.
PL-4	NA	Survey monument SM-1.
PL-5	225	Erosion control marker 4B.
PL-6	NA	Erosion control marker 4A.
PL-7	NA	Monitoring well 0412.
PL-8	NA	Monitoring well 0412.
PL-9	360	Southeast side of disposal cell.
PL-10	20	Riprap-armored diversion ditch on southwest side of disposal cell.
PL-11	135	Riprap-armored diversion ditch on northwest side of disposal cell.



CAN 10/2013. PL-1. Damage to vehicle gate near perimeter sign P8.



CAN 10/2013. PL-2. Damage to vehicle gate near perimeter sign P8.



CAN 10/2013. PL-3. Inspectors at site marker on cell cap.



CAN 10/2013. PL-4. Survey monument SM-1.



CAN 10/2013. PL-5. Erosion control marker 4B.



CAN 10/2013. PL-6. Erosion control marker 4A.



CAN 10/2013. PL-7. Monitoring well 0412.



CAN 10/2013. PL-8. Monitoring well 0412.



CAN 10/2013. PL-9. Southeast side of disposal cell.



CAN 10/2013. PL-10. Riprap-armored diversion ditch on southwest side of disposal cell.



CAN 10/2013. PL-11. Riprap-armored diversion ditch on northwest side of disposal cell.