# 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 October 27, 2015. The site was in excellent condition. No evidence of erosion or slope instability was observed on the disposal cell. A trespass campsite was discovered hidden among the trees in the southwest corner of the property, outside the perimeter fence. The Canonsburg Police Department was notified; however, law enforcement could not locate the occupant of the camp. The Canonsburg Police Department will continue to patrol the area in order to find the camper, and to decrease the potential for future trespass.

Water quality monitoring is conducted on a 5-year schedule. Sampling was last conducted in 2013. The next sampling event is scheduled for 2018. Inspectors identified no maintenance needs or cause for a follow-up inspection.

## 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/S00404-1.0, U.S. Department of Energy [DOE], March 2013) and procedures established by DOE to comply with requirements of Title 10 *Code of Federal Regulations* Section 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 Inspections | Section 3.4 | Section 3.5 |
| Maintenance and Repairs | Section 3.5 | Section 3.6 |
| Environmental Monitoring | Section 3.7 | Section 3.7 |
| Emergency Response | Section 3.6 | Section 3.8 |

## 3.3 Institutional Controls

The Canonsburg disposal site is managed in accordance with requirements for UMTRCA Title I sites. DOE, as the U.S. Nuclear Regulatory Commission (NRC) licensee, is responsible for the site's custody and long-term care. The site-specific institutional controls include federal ownership of the property and the following physical features that are inspected annually: warning/no trespassing signs (perimeter signs) placed along the property boundary, a site perimeter fence, and locked gates at the site entrances.

Institutional controls also apply to Area C and Tract 117, which are located southeast of Strabane Avenue. Area C (3.1 Acres) was sold and transferred in 2005 and Tract 117 (0.431 acres) was sold and transferred in 2009 to the same private owner. 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 Tract 117 establishes restrictions to limit excavation in the areas, prohibits the disturbance of the

stream bank, maintains access for monitoring and stream bank maintenance, and prevents the areas from being used for residential purposes. Use of groundwater is not restricted. Adherence to these institutional controls is evaluated during site inspections.

The owner of the property is constructing storage units (PL-1). Access to monitoring wells MW-0424 and MW-0414B is being maintained. The area around monitoring well MW-0414B is becoming overgrown with weeds (PL-2). Drainage from the storage unit foundation is directed behind monitoring well MW-0414B via a pipe (PL-3). Inspectors plan to keep an eye on this area to assess how/if drainage from the pipe might impact the area near the monitoring well.

## 3.4 Inspection Results

The site, located in Canonsburg, Pennsylvania, was inspected on October 27, 2015. The inspection was conducted by S. Smith and K. Broberg of the DOE Legacy Management Support contractor. C. Carpenter (DOE Site Manager) and T. Biller (Lawn RX) also participated in the inspection. Lawn RX is the subcontractor conducting herbicide services.

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."

### 3.4.1 Site Surveillance Features

The locations of site surveillance features are shown in Figure 3-1. 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 of Strabane Avenue. The main entrance gate for the site was locked and in good condition. The personnel gate in the southwest corner of the site has a broken hasp that will be repaired. The gate is currently secured with a chain (PL-4). The hasp on the gate along with the lock will be repaired. The other personnel and vehicle gates were in good condition.

#### 3.4.1.2 Perimeter Fence and Perimeter Signs

3A The security fence was replaced in 2007 and is in excellent condition. The north vehicle gate hinge was repaired in 2015 and is in good condition (PL-5). A vegetation-free buffer zone is being maintained around the entire site security fence.

An area of erosion under the west perimeter fence remains (see Figure 3-1). The area appears to be stable and has not grown in size in several years (PL-6). For added security, the gap that is present between the bottom of the fence and the ground surface will be better secured with a few stakes and some wires or additional fence fabric.

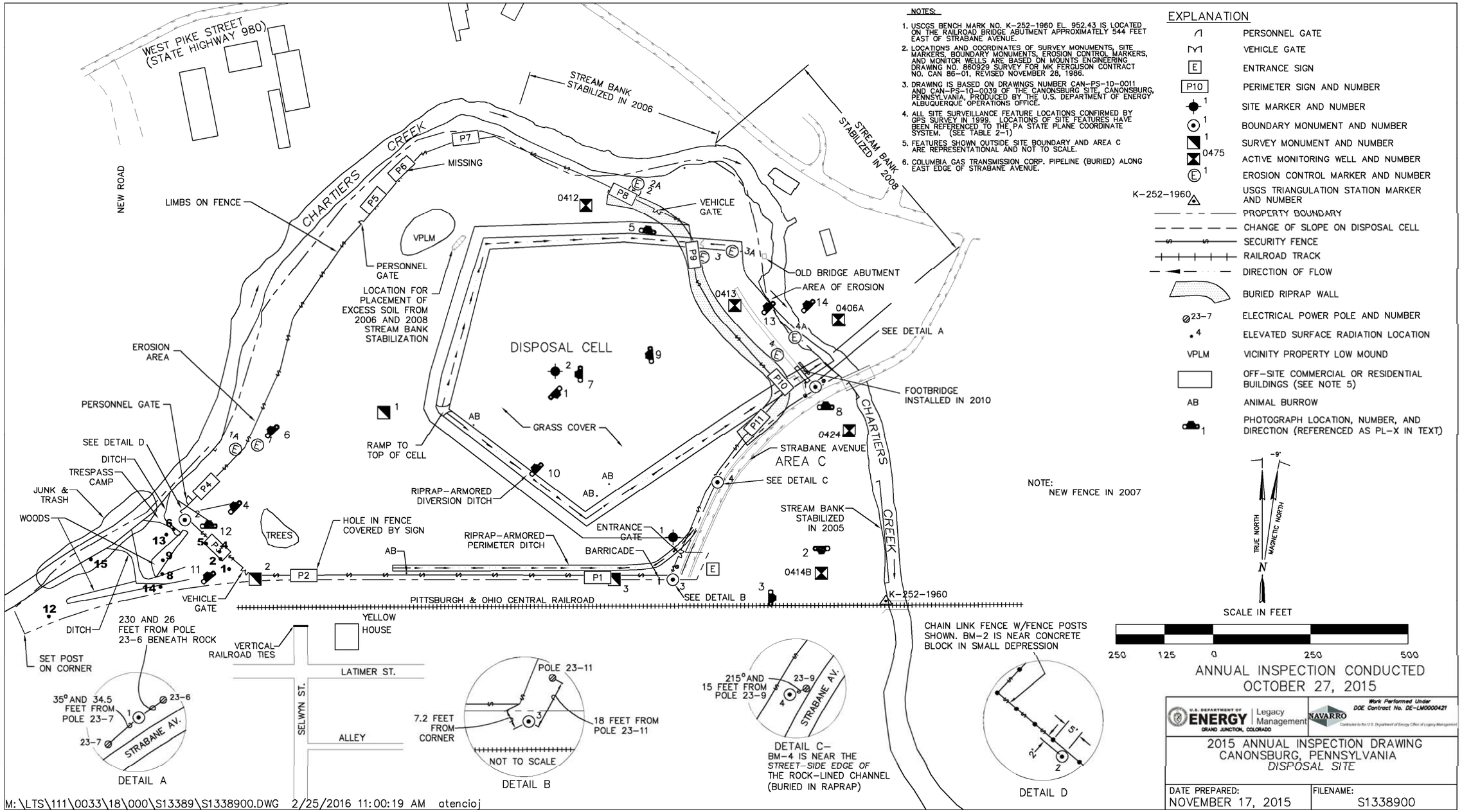


*Figure 3-1. 2015 Annual Inspection Drawing for the Canonsburg Disposal Site*

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The perimeter security fence has 11 attached signs identifying the site. With the exception of perimeter signs P2 and P6, all perimeter fence 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 sign was stolen in 2011. The sign remains serviceable. Perimeter sign P6 was missing, and will be replaced.

#### 3.4.1.3 Site Markers

The site has two markers. Both site markers were in good condition (PL-7).

#### 3.4.1.4 Survey Monuments and Boundary Monuments

The site has three survey monuments and four boundary monuments. Survey and boundary monuments were in good condition, with the exception of boundary monument BM-1, which could not be located. It is believed that BM-1 was buried under gravel during the last stream bank stabilization action along Chartiers Creek. An effort will be made during the next inspection to dig and locate the monument.

The guardrail along Strabane Avenue near boundary monument BM-1 was repositioned a little during the last stream bank stabilization effort. A concrete footer remains that has a few metal pins protruding. The pins present a tire hazard and will be cut off flush with the ground surface. During the inspection, a safety cone was placed over the pins as a temporary measure until the pins can be cut off (PL-8).

#### 3.4.1.5 Erosion Control Markers

The site has 4 pairs of erosion control markers. All 4 pairs were in good condition.

#### 3.4.1.6 Monitoring Wells

The site has five groundwater monitoring wells (MW-0406A, MW-0412, MW-0413, MW-0414B, and MW-0424), which are inspected when the wells are sampled. The wells were last sampled in November 2013 and are scheduled to be sampled again in 2018. The 5-year sampling schedule is coordinated with sampling at the Burrell, Pennsylvania, UMTRCA Title I Disposal Site and the Parkersburg, West Virginia, Disposal Site to improve efficiency and reduce travel costs. All monitoring wells were properly locked during the inspection.

### 3.4.2 Inspection Areas

To ensure a thorough and efficient inspection, the site was divided 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.

The area inside each transect was inspected by walking a series of traverses. Within each transect, the inspectors examined specific site-surveillance features, drainage structures, vegetation, and other features. Inspectors also looked for evidence of settlement, erosion, or other disturbances that might affect the site’s integrity or long-term performance.

#### 3.4.2.1 Disposal Cell

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

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. The location and significance of burrows will continue to be monitored by inspectors each year. No new burrows were noted on the cell during the inspection.

#### 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 bridge was installed northeast of the disposal cell in 2010. The pedestrian bridge was in excellent condition. Inspectors painted the footbridge during last year's inspection. Some of the paint was peeling. The bridge will need to be repainted probably within the next 2 to 3 years. Inspectors conducted a Bridge Inspection and found it to be 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 2015.

The presence of woody vegetation in the channels and ditches was not observed (PL-10). Physical removal and spot herbicide applications have been effective at reducing woody vegetation. Periodic walkdowns and spot herbicide applications will continue.

#### 3.4.2.4 Site Perimeter

**Southwest Parcel:** In 2007, a radiological survey was conducted on this small parcel of land to evaluate the potential opportunity to release it for industrial reuse. The survey identified isolated radium-226 (Ra-226) contamination in soil, in excess of established average criterion for the property. Under current property usage these radiological conditions do not pose a level of risk to personnel and no corrective measures are required. Due to the isolated areas of Ra-226 contamination, the entire parcel of property did not satisfy established radiological criteria for release for beneficial reuse. The decision was made in 2008 to take no action, and to remove this small parcel as a candidate for reuse. Through ownership, DOE will control land use. Inspectors will check the area for evidence of trespass.

A plastics company has cleared some of DOE's property south of the railroad track and spread gravel to create a turnaround for their trucks. The size of the turnaround appeared to be slightly

larger during the 2015 inspection (PL-11). Also, some junk and trash is present in the wooded portion of the land parcel.

Trespass was observed during the inspection. A campsite was discovered in the southwest corner of the site, outside of the locked perimeter fence, hidden among the trees. The Canonsburg Police Department responded, but the occupant of the campsite could not be located. The Canonsburg Police Department will follow up and try to locate the camper. In addition, increased patrols in the future will help prevent further trespass events. Inspectors installed additional signage along
3B the perimeter fence in the southwest corner of the site as an additional deterrent to future trespass (PL-12).

### 3.4.2.5 Outlying Area

**Chartiers Creek Bank:** 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 along the east and north sides of the site between 2001 and 2009.

Heavy mowing equipment operating near the edge of the stream bank could be undermining the integrity of the bank. Inspectors installed four t-posts around the erosion area to make it more visible to the mowing crews (PL-13). Mowing crews will be instructed to keep heavy equipment back from the edge of the stream bank to avoid undermining the integrity of the bank. Vegetation growth on the riprap-armored southern bank is being controlled so that visual inspections of how well the riprap is holding up can be obtained. 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. The stream bank north of the perimeter fence is also in good condition. The planted vegetation within the floodplain appears to be well established. A small area of erosion (noted during last year's inspection) along the stream bank north of the disposal cell, believed to be caused by surface water runoff to the creek, was observed to be about the same size this year (PL-14).

**Area C and Tract 117:** Area C and Tract 117 form a triangular, grass-covered parcel of vacant property located east of the site that is bounded by Strabane Avenue, Chartiers Creek, and the Pittsburgh and Ohio Central Railroad. Both area C and Tract 117 have been sold to the same private owner. Area C (3.1 acres) was sold and transferred in 2005 and Tract 117 (0.431 Acres) was sold and transferred in 2009.

Area C is remediated except for two thorium anomalies that lie at a depth of about 8 feet. When the Canonsburg site was remediated, in-growth of thorium was not considered as a cleanup criterion for meeting the radium-in-soil standard in the future. In-growth calculations indicate the Ra-226 activities in soil will exceed the subsurface standard near the end of the 1,000-year longevity requirement for the disposal cell, which was taken to represent the intent of the rule for the soil standards for 40 CFR 192. DOE has an interest in preserving the configuration and integrity of the stream bank and maintaining access to monitoring locations on Area C and Tract 117. No evidence was observed during the inspection that any of the institutional controls in place for Area C and Tract 117 have been violated.

The landowner of Area C and Tract 117 has elevated the ground surface. The landowner is in the process of building above ground storage units (PL-1). The Property Deed shows that the ground

surface was raised approximately 6 feet using clean fill material prior to construction of the storage building. Excavation ICs call for no structure excavation deeper than 4 feet or utilities excavation deeper than 6 feet. These excavation ICs do not appear to be violated.

DOE has a two groundwater monitoring wells in 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 maintaining access to the wells, and has graded the land surface so that surface water will not collect and pool around the well pads. Inspectors noted that drainage from the storage unit foundation is directed behind monitoring well MW-0414B via a pipe (PL-3). Inspectors will continue to monitor this area to assess how/if the drainage pipe might impact the monitoring well area.

**Strabane Avenue:** The maintenance subcontractor shall periodically pick up trash on and adjacent to DOE property to maintain the property's appearance. Future inspectors will carry large, heavy-duty trash bags with them for spot cleanup. Inspectors observed Strabane Avenue, next to the site, to be relatively clear of trash. Collection of trash during the inspection was not conducted.

## 3.5 Follow-Up 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.

## 3.6 Maintenance and Repairs

A broken hasp on the southwest personnel gate near boundary monument BM-2 and the associated lock will be replaced. As a measure of added security, the gap currently present beneath the bottom of perimeter fence (north of perimeter sign P4) will be addressed. Steel pins protruding from the concrete footer near BM-1 will be removed to prevent tire accidents and perimeter sign P6 will be replaced.

## 3.7 Environmental Monitoring

### 3.7.1 Groundwater Monitoring

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 Alternative Concentration Limits for the Canonsburg, Pennsylvania, UMTRA Project Site* (UOO35901, DOE, February 2000). Monitoring described in the original LTSP was a best management practice because NRC determined the 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 groundwater compliance action plan 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.

In 2011, 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 annual to once every 5 years, for cell performance purposes. NRC approval for the sampling change was received in 2012. Groundwater and surface water sampling was conducted in November 2013. Sampling at Canonsburg is being
3C coordinated with the Burrell and Parkersburg sites to improve efficiency and decrease travel costs. The next sampling event is scheduled for 2018.

As reported in the 2014 Inspection Report, groundwater uranium concentrations in 2013 were considerably below the established alternate concentration limit. With the exception of monitoring wells MW-0412 and MW-0413, uranium concentrations in 2013 were also below the maximum concentration limit. Only one surface water location (0602) is sampled under the revised LTSP. The uranium concentration of surface water at location 0602 in 2013 remained below the target concentration of 0.01 milligrams per liter.

### 3.7.2 Vegetation Management

In accordance with the LTSP, vegetation management is conducted as needed (1) to eliminate shrubs and trees from establishing on the disposal cell and in the rock-lined diversion channels and perimeter drainage ditches and (2) to maintain the grass vegetative cover.

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 treated for eradication from the site. Physical removal and spot herbicide applications have been effective at reducing woody vegetation in the channels and ditches.

## 3.8 Emergency Response

Emergency response is action DOE will take in response to “unusual damage or disruption” that threatens or compromises site safety, security, or integrity (10 CFR 40, Appendix A, Criterion 12). No need for an emergency response was identified.

## 3.9 Photographs

| Photo Location Number | Azimuth | Photograph Description |
|---|---|---|
| PL-1 | 135 | Looking southeast from the top of the disposal cell toward Area C. |
| PL-2 | 180 | Monitoring well MW-0414B. |
| PL-3 | 90 | Drainage pipe from storage building, next to monitoring well MW-0414B. |
| PL-4 | 315 | Chain lock on southwest personnel gate, near boundary monument BM-2. |
| PL-5 | 10 | Repaired hinge on northeast vehicle gate. |
| PL-6 | 315 | Gap beneath fence fabric and ground in area of erosion. |
| PL-7 | NA | Site marker SMK-1 on top of the disposal cell. |
| PL-8 | NA | Cone over concrete with pins. |
| PL-9 | 265 | Looking west from disposal cell. |
| PL-10 | 315 | Armored diversion ditch on the southeast side of the disposal cell. |
| PL-11 | 320 | Truck turnaround near railroad tracks. |
| PL-12 | NA | New trespassing sign installed on the perimeter fence in the southwest corner of the site. |
| PL-13 | 315 | T-posts installed around erosion area. |
| PL-14 | 315 | Small area of erosion along the bank of Chartiers Creek, above armored riprap. |

*CAN 10/2015. PL-1. Looking southeast from the top of the disposal cell toward Area C.*

*CAN 10/2015. PL-2. Monitoring well MW-0414B.*

*CAN 10/2015. PL-3. Drainage pipe from storage building, next to monitoring well MW-0414B.*

*CAN 10/2015. PL-4. Chain lock on southwest personnel gate, near boundary monument BM-2.*

*CAN 10/2015. PL-5. Repaired hinge on northeast vehicle gate.*

*CAN 10/2015. PL-6. Gap beneath fence fabric and ground in area of erosion.*


*CAN 10/2015. PL-7. Site marker SMK-1 on top of the disposal cell.*

*CAN 10/2015. PL-8. Cone over concrete with pins.*

*CAN 10/2015. PL-9. Looking west from disposal cell.*

*CAN 10/2015. PL-10. Armored diversion ditch on the southeast side of the disposal cell.*

*CAN 10/2015. PL-11. Truck turnaround near railroad tracks.*


*CAN 10/2015. PL-12. New trespassing sign installed on the perimeter fence in the southwest corner of the site.*

*CAN 10/2015. PL-13. T-posts installed around erosion area.*

*CAN 10/2015. PL-14. Small area of erosion along the bank of Chartiers Creek, above armored riprap.*

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