

## 2.0 Burrell, Pennsylvania, Disposal Site

### 2.1 Compliance Summary

The Burrell, Pennsylvania, Uranium Mill Tailings Radiation control Act (UMTRCA) Title 1 Disposal Site was inspected on December 10, 2013. The inspection was originally scheduled to occur in October. However, the partial government shutdown required that the inspection be rescheduled later in the same calendar year. With the exception of some minor fence damage due to fallen trees, the Burrell 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.

An effective vegetation management program that aligns with requirements in the Long-Term Surveillance Plan (LTSP) remains successful. The continued combination of spot herbicide application and more frequent mowing has greatly reduced the extent of noxious weeds, including teasel, poison hemlock, and common reed. The approach used for control of Japanese knotweed is achieving desired results. The presence of resprouting weeds and rosettes indicates that continued diligence is needed. It is recommended that the spot-spray/mow process continue.

An eco-friendly pilot project for reseeding distressed areas along the southern perimeter fence began in 2009 and continues to be a success. Herbaceous cover in the pilot project area is well established and appears to have reduced reestablishment of noxious weeds following herbicide application. It is recommended that additional seeding be undertaken following herbicide application for noxious weeds sitewide as deemed appropriate.

### 2.2 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, Burrell Vicinity Property, Blairsville, Pennsylvania*, April 2000 (LTSP) and in procedures that the U.S. Department of Energy (DOE) established to comply with the requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). Table 2-1 lists these requirements.

Table 2-1. License Requirements for the Burrell Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.3 and 3.4	Section 2.4
Follow-Up Inspections	Section 3.5	Section 2.5
Routine Site Maintenance and Emergency Measures	Section 3.6	Section 2.6
Environmental Monitoring	Section 3.7	Section 2.7
Corrective Action		Section 2.8

### 2.3 Institutional Controls

The 72-acre 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 1994. 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: a site marker,

survey and boundary monuments, warning/no-trespassing signs, a site perimeter fence, and locked gates at the site entrances.

## **2.4 Inspection Results**

M. Miller and K. Broberg of the S.M. Stoller Corporation, the Legacy Management Support contractor for the DOE office in Grand Junction, Colorado, conducted the inspection.

C. Carpenter of the DOE Office of Legacy Management (LM) and M Roberts of NRC also participated in the inspection.

### **2.4.1 Site Surveillance Features**

Figure 2-1 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 2-1 by photograph location (PL) numbers.

#### **2.4.1.1 Entrance Gates, Entrance Signs, and Access Road**

Entrance gates were in good condition, and all gates were properly locked. The main gate lock was rusted and difficult to open, and inspectors replaced it with a new LM lock during the inspection. The entrance sign at the front gate was missing, and inspectors attached a new sign during the inspection (PL-1).

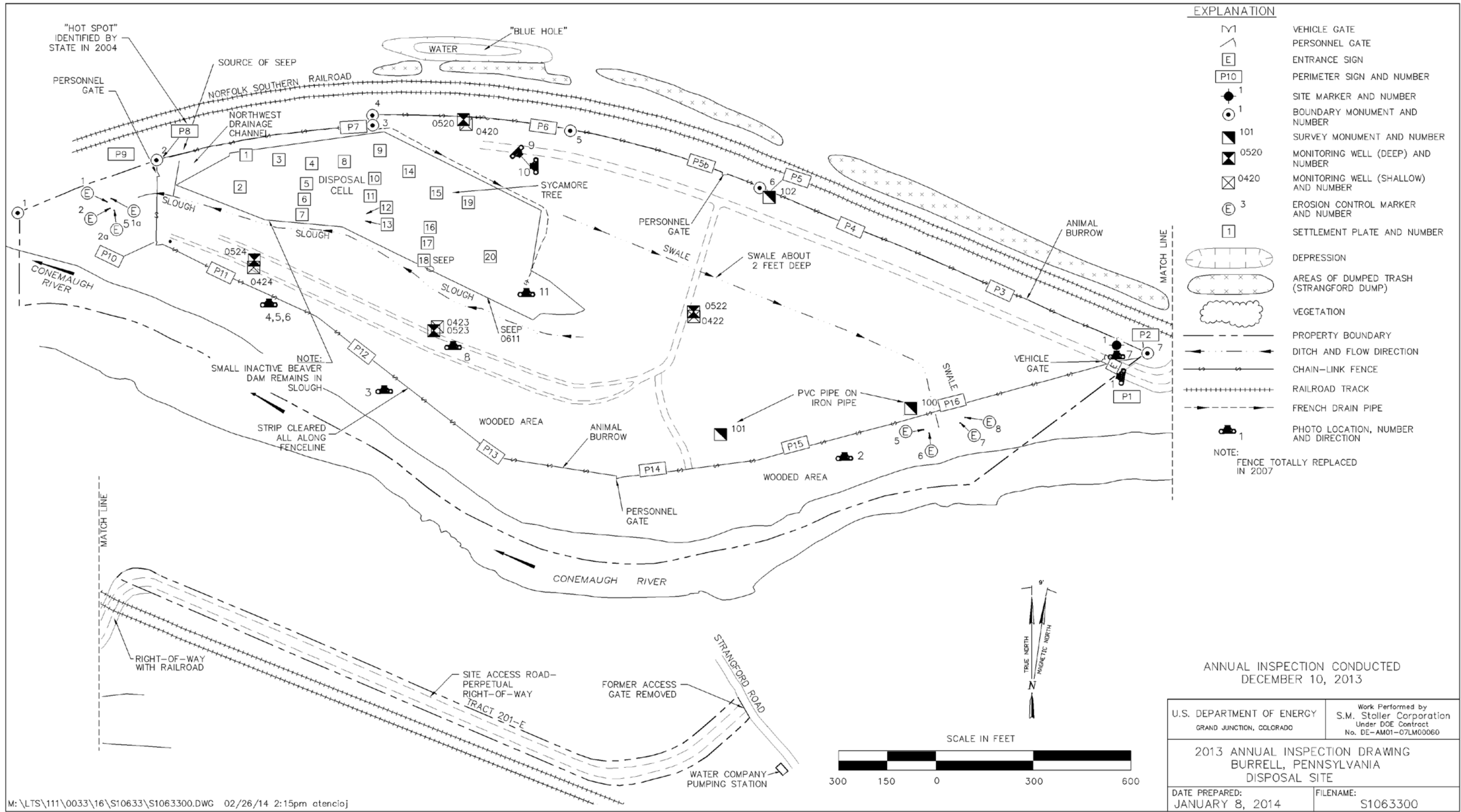
An access road leads from Strangford Road, along a DOE right-of-way through the Burrows' property (Tract 201-E) and across DOE's leased crossing over Norfolk Southern Railroad tracks, to the entrance gate in the east end of the chainlink perimeter fence. The access road was easily passable in a sport utility vehicle; however, use of a low-clearance passenger car is not recommended. Slight encroachment of vegetation was observed on the access road.

Local residents historically have used the area along the DOE right-of-way for unpermitted dumping, hunting, target practice, and riding all-terrain vehicles. Personnel associated with commercial interests use the road for access to the railroad tracks and several nearby natural gas wells. Previously, an attempt was made to control access across the right-of-way by maintaining a gate at Strangford Road and installing a guardrail on both sides of the gate. Local residents complained that the guardrail blocked access to parking areas and, consequently, DOE removed several sections. After years of replacing locks and after the gate was damaged beyond repair in 2002, DOE requested NRC concurrence in removing the gate and establishing institutional control for the site at the entrance gate of the perimeter fence. NRC concurred on April 28, 2003, and the gate along Strangford Road was removed in fall 2003.

#### **2.4.1.2 Perimeter Fence and Perimeter Signs**

The chain link perimeter fence that encircles the site was replaced in 2007. The fence had minor damage at several locations along the south fence line due to fallen trees (PL-2 thru PL-6).

Several of the fence perimeter signs remain damaged with bullet holes but are serviceable. Bullet holes in the perimeter fence signs were the only evidence of trespass noted during the inspection.



**EXPLANATION**

	VEHICLE GATE
	PERSONNEL GATE
	ENTRANCE SIGN
	PERIMETER SIGN AND NUMBER
	SITE MARKER AND NUMBER
	BOUNDARY MONUMENT AND NUMBER
	SURVEY MONUMENT AND NUMBER
	MONITORING WELL (DEEP) AND NUMBER
	MONITORING WELL (SHALLOW) AND NUMBER
	EROSION CONTROL MARKER AND NUMBER
	SETTLEMENT PLATE AND NUMBER
	DEPRESSION
	AREAS OF DUMPED TRASH (STRANGFORD DUMP)
	VEGETATION
	PROPERTY BOUNDARY
	DITCH AND FLOW DIRECTION
	CHAIN-LINK FENCE
	RAILROAD TRACK
	FRENCH DRAIN PIPE
	PHOTO LOCATION, NUMBER AND DIRECTION

NOTE:  
FENCE TOTALLY REPLACED IN 2007

ANNUAL INSPECTION CONDUCTED  
DECEMBER 10, 2013

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
2013 ANNUAL INSPECTION DRAWING BURRELL, PENNSYLVANIA DISPOSAL SITE	
DATE PREPARED: JANUARY 8, 2014	FILENAME: S1063300

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Figure 2-1. 2013 Annual Inspection Drawing for the Burrell Disposal Site

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### **2.4.1.3 Site Markers**

The Burrell site has one site marker. It is located just inside the main entrance gate and was in excellent condition (PL-7).

### **2.4.1.4 Survey Monuments and Boundary Monuments**

There are three survey monuments and seven boundary monuments at the Burrell site. A snowstorm and accumulated snow during the inspection prevented the inspectors from verifying the presence of survey and boundary monuments. Their presence was last verified during the 2012 inspection and a recent Facilities Information Management System (FIMS) site visit.

All three survey monuments (SM-100, SM-101, and SM-102) are located at points on the property that originally afforded a sweeping view of the site during construction. Several years ago inspectors installed tall pieces of white PVC pipe near SM-100 and SM-101 to aid in finding their location. Seven boundary monuments are located along the north perimeter fence.

### **2.4.1.5 Erosion Control Markers**

There are eight erosion control markers at Burrell. A snowstorm and accumulated snow during the inspection prevented the inspectors from verifying the presence of erosion control markers. Their presence was last verified during the 2012 inspection and a recent FIMS site visit.

### **2.4.1.6 Monitoring Wells**

All wells found during the inspection were properly locked (PL-8). The interior of the monitoring wells were not inspected this year. The interiors were last inspected by the water sampling crew in November 2013 and found to be in good shape.

## **2.4.2 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: (1) the disposal cell, (2) the area between the disposal cell and site boundary, (3) the site perimeter, and (4) the outlying area.

Within each area, inspectors examined specific site surveillance features, such as monitoring wells, boundary monuments, and signs. Inspectors examined each area for evidence of erosion, settling, slumping, or other disturbances that might affect the site’s integrity, protectiveness, or long-term performance.

### **2.4.2.1 Disposal Cell**

No indications of cell instability were noted by the inspectors (e.g., slumping, bulging, or differential settlement) (PL-9 and PL-10). Rock quality remains good; degradation of the riprap was not evident. No active seeps were found along the south slope of the disposal cell during the inspection.

Vegetation control (including woody vegetation) on the disposal cell is not required for protection of human health and the environment. DOE conducted a screening-level risk

assessment from 1996 to 1997 and determined that plant succession on the disposal cell does not present significant or credible risk to human health or the environment, and evapotranspiration may improve the long-term performance of the disposal cell. NRC suggested that DOE reevaluate the effects of vegetation on cover performance in 10 or 20 years (before 2017) to confirm performance parameters and predictions. A 2008 Vegetation Management Plan prepared for the Burrell site included control of noxious and invasive vegetation on the cell cap to facilitate inspections of the cap. DOE will revisit the issue of vegetation growth on the cell cap within the next 4 years (before 2017). Inspectors will determine if conditions on the cell cap remain protective of human health and the environment as a result of vegetation growth and whether the vegetation interferes with the inspectors' ability to determine cell cap stability.

Trees and large shrubs grow on the top and side slopes of the cell cap. Because of the increasing size of the trees, inspectors are taking circumference measurements of one of the larger trees, a sycamore, during annual inspections. The sycamore is located on the top of the cell cap and had a 14-inch circumference trunk in 2009 and a 16-inch circumference trunk in 2012 (as measured 4.5 feet above the ground). The location of this tree is noted on the inspection map, and the tree is identified with a survey ribbon so that future inspectors can record additional growth.

Although vegetation is allowed to grow on the disposal cell, the cell is sprayed for noxious weeds. Management efforts are effective at limiting the spread of Japanese knotweed, spotted knapweed, and tree of heaven. Other woody species continue to establish, including sycamore, maple, elm, cherry, aspen, and willow. Although control of woody noxious vegetation is progressing well, continued management is recommended. Species requiring control include tree of heaven, amur honeysuckle, and multiflora rose.

#### **2.4.2.2 Area Between the Disposal Cell and Site Boundary**

A French drain was installed north of the disposal cell in 1998 to prevent ponding of water next to the cell. The outlet for the French drain is located in the southeast corner of the disposal cell, and was in good condition at the time of the inspection (PL-11).

Inspections dating back to 1998 indicate that prior to installing the French drain, rainwater and snow melt collected off the north side of the disposal cell and entered into a shallow depression along the base of the north slope of the cell. Saturated soil and wetland vegetation (cattails and purple loosestrife) were present in a 3-foot-wide band along this depression. Design drawings indicated that this depression should have drained to the east, but final grading of the area around the northeast corner of the disposal cell left a high spot that prevented drainage from occurring. At the same time that water was ponding just north of the disposal cell, seeps had formed in the south slope of the cell. It was thought that the source of water for these seeps could be the ponded water. The French drain was installed in 1998 to correct this drainage problem, and from the time the drain was installed until the present, no water has been observed flowing from the drain outlet. From 1998 until 2010, no side slope seepage was evident, but in the spring of 2010, a seep was observed on the south side of the disposal cell (Seep 0611). The seep was sampled, and analytical results indicated that none of the constituents in the seep water exceeded maximum concentration limits of constituents listed in 40 CFR 192. Seep 0611 was not flowing during the 2013 inspection.

A small beaver dam remains in the slough south of the disposal cell. The dam appears to remain inactive, as no evidence of recent activity around the dam was observed (e.g., animal tracks, new cuts) during the inspection.

### **2.4.2.3 Site Perimeter**

An active seep is located near the north security fence about 60 feet east of perimeter sign P8 and west of the disposal cell. The seep was flowing during this year's inspection and appeared to have about the same flow as last year. This area will continue to be monitored to determine if the seep poses a threat to the integrity of the disposal cell. Conceivably, the seep could destabilize the nearby railroad embankment. The water for the seep along the fence line appears to be coming from the bluffs north of the railroad tracks.

### **2.4.2.4 Outlying Area**

The area beyond the site boundary was visually examined for signs of erosion, development, and other changes that might affect the site. North of the site, a dirt road parallels the railroad tracks and provides access to a long, narrow wooded area that has been used as an illegal dump in the past. No new fresh piles of trash were observed during the inspection. The dump is not a threat to the disposal site but is an indication of the overall level of activity near the disposal site and may be a predictor of vandalism. For this reason, inspectors will continue to note conditions at the dump.

In 2004, a representative from the Pennsylvania Department of Environmental Protection pointed out to inspectors the presence of a "hot spot" (having gamma radiation levels of 5 millirem per hour) in the rock ballast adjacent to the railroad tracks northeast of perimeter sign P8. After the inspection, DOE checked site records and determined that the area in question was addressed in a Uranium Mill Tailings Remedial Action Project property completion report. Supplemental standards were applied to contamination beneath the tracks because the benefit of removal did not justify the cost, and the contamination did not pose a risk. DOE communicated the results of the records search to the State in late 2004 and discussed the hot spot with State representatives again in 2006. The hot spot is not an area of concern because under current land use the risk is negligible, and land use is stable. The area is marked on the site inspection map for future reference.

## **2.5 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 follow-up or contingency inspections were required in 2013.

## **2.6 Maintenance and Repairs**

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

## **2.7 Environmental Monitoring**

### **2.7.1 Groundwater Monitoring**

- 2A** In accordance with the LTSP, DOE monitors groundwater at the Burrell site as a best management practice to evaluate the disposal cell's performance. The groundwater monitoring effort consists of eight wells (in four pairs) that are monitored for four target analytes: lead, molybdenum, selenium, and uranium. The revised LTSP stipulates that monitoring be performed every 5 years. DOE last conducted monitoring in 2013. Results for 2013 will be reported in next year's inspection report. The next round of groundwater sampling is scheduled for 2018. Sampling at the Burrell site is coordinated with sampling at the Canonsburg site to improve efficiency and decrease travel costs.

### **2.7.2 Vegetation Management**

- 2B** Vegetation management activities are mostly successful in controlling the extent of invasive species. A combination of spot herbicide application and more frequent mowing is effective, with the exception of purple loosestrife. This species continues to be found in the swale located south and west of the disposal cell and the area between the toe of the north slope of the disposal cell and the French drain. Some additional loosestrife was located east of the disposal cell, in or around the swale that drains to the east. Purple loosestrife is classified as a noxious weed in Pennsylvania.

Other species, such as teasel, poison hemlock, spotted knapweed, and bouncing bet, continue to be controlled. In some areas of heavy infestation, the bare spots left following control resulted in other invasive species moving in. Therefore, it is recommended that seeding activities follow spot herbicide application in areas of heavy infestation. Seeded areas in 2009 and 2010 have established well, and similar mixes can be used to prevent recurrent establishment of noxious weeds.

Wooded areas remained heavily infested with Japanese knotweed. Pursuant to the vegetation management plan, the fence line and access paths remain clear of Japanese knotweed. Additional progress was observed with control of tree of heaven.

As a precautionary measure, a dead sycamore tree in the southwest corner of the fenced area should be felled to prevent it from damaging the perimeter fence.

The spot-spray/mow process across the site should be continued. The vegetation inspection map may be used as a guide for herbicide application, but it is recommended that a complete site walkdown be conducted to ensure adequate coverage. Appropriate seed mix should be broadcast in heavily infested areas following herbicide application.

## **2.8 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.



## 2.9 Photographs

Photo Location Number	Azimuth	Photograph Description
1	280	Inspectors in front of entrance gate.
2	NA	Tree down on south fence.
3	NA	Tree across southern fence.
4	NA	Damaged fence east of perimeter sign P12.
5	NA	Damaged fence east of perimeter sign P11.
6	NA	Damaged fence east of perimeter sign P11.
7	NA	Inspector at site marker.
8	NA	Inspectors at monitoring well 0423.
9	135	Northeast face of disposal cell.
10	270	Northeast face of disposal cell.
11	NA	French drain outlet.



*BUR 12/2013. PL-1. Inspectors in front of entrance gate.*





*BUR 12/2013. PL-2. Tree down on south fence.*



*BUR 12/2013. PL-3. Tree across southern fence.*





*BUR 12/2013. PL-4. Damaged fence east of perimeter sign P12.*



*BUR 12/2013. PL-5. Damaged fence east of perimeter sign P11.*





*BUR 12/2013. PL-6. Damaged fence east of perimeter sign P11.*



*BUR 12/2013. PL-7. Inspector at site marker.*





*BUR 12/2013. PL-8. Inspectors at monitoring well 0423.*



*BUR 12/2013. PL-9. Northeast face of disposal cell.*





*BUR 12/2013. PL-10. Northeast face of disposal cell.*