

3.0 Canonsburg, Pennsylvania, Disposal Site

3.1 Compliance Summary

The Canonsburg, Pennsylvania, Disposal Site, inspected on September 20, 2007, was in excellent condition. Modifications to the groundwater and surface water-monitoring program were proposed in a final draft of the revised Long-Term Surveillance Plan (LTSP); concurrence from NRC is pending. Vegetation control for noxious weeds is ongoing. DOE replaced the chain link security fence and gating. Approximately 0.5 acre of former Tract 117 is pending sale. No other maintenance needs or cause for a follow-up inspection or contingency were identified.

3.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Canonsburg, Pennsylvania, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site are specified in the *Long-Term Surveillance Plan for the Canonsburg, Pennsylvania, Disposal Site* (DOE/AL/62350–203, Rev. 0, U.S. Department of Energy [DOE], Albuquerque Operations Office, October 1995) and in procedures established by DOE to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). These requirements are listed in Table 3–1.

Table 3–1. License Requirements for the Canonsburg, Pennsylvania, Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Sections 3.1 and 7.0	Section 3.3.1
Follow-up or Contingency Inspections	Sections 3.2 and 6.2, Appendix E.4	Section 3.3.2
Routine Maintenance and Repairs	Section 6.1	Section 3.3.3
Groundwater Monitoring	Section 4.0	Section 3.3.4
Corrective Action	Section 4.4	Section 3.3.5

Institutional Controls—Institutional controls at the disposal site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site security fence, warning/no trespassing signs mounted on the security fence, and a locked gate at the entrance to the site. Verification of these institutional controls is part of the annual inspection.

The 30-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.

The Commonwealth of Pennsylvania sold Area C to a private party in 2006. DOE and the Commonwealth complied with restrictions on parcel transfers stipulated in UMTRCA and the Cooperative Agreement between DOE and the Commonwealth. The deed for Area C conveys restrictions to limit excavation in the area, prohibit disturbance of the stream bank, maintain access for monitoring, and prevent the area from being used for residential purposes. DOE has determined that an approximately 0.5-acre portion of former Tract 117 lying east of Strabane Avenue and between the railroad and Area C may also be sold, and the same Area C land use restrictions as will be imposed. NRC concurrence with the sale is pending.

Inspectors found no evidence that these institutional controls were ineffective or violated.

3.3 Compliance Review

3.3.1 Annual Inspection and Report

The site, located between the communities of Canonsburg and Houston, Pennsylvania, was inspected on September 20, 2007. Features and photograph locations (PLs) mentioned in this report are shown on Figure 3–1. Numbers in the left margin of this report refer to items summarized in the Executive Summary table.

3.3.1.1 Specific Site Surveillance Features

3A Access, Gates, Fence, and Signs—Access to the site is directly from Strabane Avenue, a public right-of-way within the borough of Canonsburg in Washington County, Pennsylvania. The security fence and the entrance gate were replaced just prior to the inspection and are in excellent condition. In addition three new gates have been installed and are shown on Figure 3–1. Because unauthorized entry has not been an issue at this site, and to reduce maintenance requirements, angle brackets and barbed wire were not installed on the new fence. The new fence was repositioned away from Chartiers Creek bank on the northwest side of the site to create an access corridor along the outside of the west fence line (PL–1). In the past, trees, woody brush, and vines encroached upon portions of the west fence line because it was too close to the steep drop off down to Chartiers Creek to provide maintenance access.

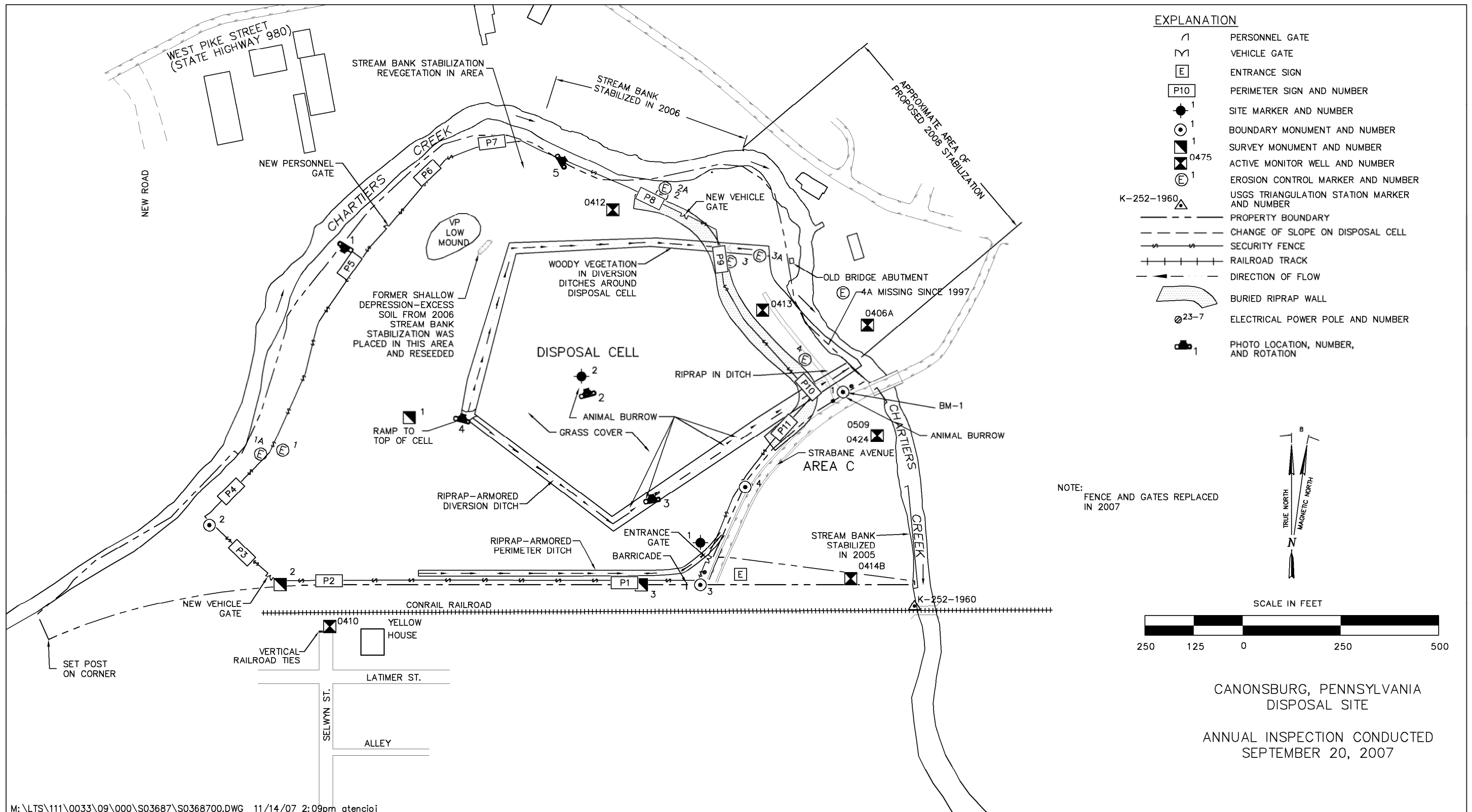
The perimeter security fence has 11 perimeter signs and one entrance sign attached to it that are in good condition.

Site Markers and Monuments—The site contains two site markers (PL–2), three survey monuments, and four boundary monuments. Both site markers and all three survey monuments were located and are in excellent condition. All four boundary markers are also in excellent condition. Boundary monument BM–1 is buried beneath approximately 1 foot of riprap.

Four pairs of erosion control markers (ECMs) were initially installed along the bank of Chartiers Creek. One of these markers, ECM–4A, was lost to erosion in 1997; however, erosion control marker ECM–4 can be used for reference. Erosion control marker ECM–2A, washed out in 2004 by flooding and reset in 2005, remains in good condition. All remaining erosion control markers are in excellent condition.

Monitor Wells—The groundwater-monitoring network consists of six monitor wells (MW–0406A, MW–0410, MW–0412, MW–0413, MW–0414B, and MW–0424) that are sampled annually in accordance with the LTSP and the *Ground Water Compliance Action Plan* (GCAP).

3B During the 2006 sampling, it was noted that several wells would not produce enough water to maintain water level during low flow pumping. Well redevelopment work was conducted in spring 2007. All of the groundwater monitor wells were pumped and/or bailed until water became clear and pH levels were acceptable. Following the redevelopment work, the yield from some of the wells was still quite low.



3.3.1.2 Transects

To ensure a thorough and efficient inspection, the site was divided into five areas referred to as transects: (1) the disposal cell; (2) the diversion channels and perimeter ditch; (3) the other areas on site; (4) the site perimeter; and (5) the outlying area.

The area inside each transect is inspected by walking a series of traverses. Within each transect, the inspectors examine specific site surveillance features, drainage structures, vegetation, and other features. Inspectors also look for evidence of settlement, erosion, or other modifying processes that might affect site integrity or the long-term performance of the site.

Disposal Cell—The grass-covered disposal cell surface was in excellent condition. The grass is mowed and mulched at least annually in accordance with the LTSP. There was no evidence of slumping, settling, erosion, or other modifying process.

3C In the past, occasional animal burrows have been found on the cell cover, but only topsoil material has been displaced. Because the buried tailings at this site 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 into the contaminated layer is unlikely and 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. This year, four animal burrows were discovered on the east side of the cell just above the diversion ditch (PL-3). Based on the size of the holes, the burrows were probably dug by woodchucks. The burrowing animals will be trapped and relocated off site. The burrows will be filled in and monitoring will continue.

Before 2004 and again in 2007, turf on the northeast side slope appeared less healthy than that of the remainder of the site. In 2004, 2005, and 2006, inspections were conducted earlier in the growing season, and the turf appeared as healthy as the remainder of the site. A few sumac shrubs are becoming established on the north face of the disposal cell. These will be removed.

Diversion Channels and Perimeter Ditch—Diversion channels around the disposal cell and the perimeter ditch along the south side of the site are armored with riprap and were in good condition. No indications of diminished rock durability were noted in 2007.

Woody vegetation has become established in most of the diversion ditches surrounding the disposal cell, but currently does not impede function. This vegetation (PL-4) has been removed approximately every 3 years since this site was licensed. This woody vegetation will be removed in 2008.

The riprap in the diversion ditch northeast of the cell requires re-establishment to its original configuration as designed. The size of the riprap was compromised during previous stream bank stabilization work, and will be repaired following completion of the upcoming stream bank stabilization project.

Other Areas On Site—Thick grass covers the area surrounding the disposal cell. The grass extends beyond the security fence to the north and east as far as the bank of Chartiers Creek. The grass inside the site boundary, mowed and mulched at least annually in accordance with the LTSP, was in excellent condition.

Poison hemlock has been controlled on the site as needed since 2003. This biennial weed is not a listed noxious species in Pennsylvania; however, it poses a safety hazard to personnel who must walk through or work within infested areas, as all plant parts are poisonous. Poison hemlock abundance and extent has been greatly reduced on site. Scattered poison hemlock was still present at several locations on site.

In 2007, noxious weed populations, primarily Canada thistle, were present, and DOE is continuing herbicide application and mowing in an effort to control noxious weeds on site.

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 the flooding in 2004 upset the equilibrium. In order to enhance the bank stability, local and state officials have arranged grant monies to stabilize the stream bank near perimeter sign P8. DOE and NRC representatives evaluated the proposed plan and agreed that the proposed work would not affect the integrity of the disposal cell, and would provide protection from further bank erosion. The work, performed in November 2006, consisted of cutting back the slope of the bank and armoring the toe above the 1000-year flood levels with riprap keyed into bedrock. Above the riprap, the slope was protected by stabilization matting and planting of live fascines. In 2007, the stream bank stabilization work was observed to be functioning as designed. However, based on the seed mix used, revegetation is not establishing as expected and will be reseeded (PL-5).

3D In 2008 a DOE-funded and Borough-sponsored stabilization of the creek bank between Strabane Avenue and the eastern edge of the 2006-stream bank control project will be undertaken. DOE will work with stabilization project personnel to ensure that the preferred bioengineering approach will provide the best possible stabilization of the bank.

Outlying Area—The site is surrounded by residential and commercial property. The area outward for a distance of approximately 0.25 mile was visually inspected for development or change in land use that might affect the safety or security of the site. Area C was sold to a private party in 2006, and with NRC concurrence, an approximately 0.5 acre portion of former Tract 117 will also be sold. No changes in land use were observed that would affect the integrity of the site.

During the 2007 inspection, inspectors picked up trash along Strabane Avenue on and adjacent to DOE property. The maintenance subcontractor will periodically pick up trash on and adjacent to DOE property to maintain the property's neat appearance.

3.3.2 Follow-up or Contingency Inspections

DOE 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) DOE is notified by a citizen or outside agency that conditions at the site are substantially changed. No follow-up or contingency inspections were required in 2007.

3.3.3 Routine Maintenance and Repairs

In 2007, DOE replaced the security fence, mowed grass on and adjacent to the disposal cell, removed vegetation along the perimeter fence, and sprayed noxious and invasive weeds.

3.3.4 Groundwater and Surface Water Monitoring

- 3E DOE monitors groundwater and surface water at the Canonsburg site to comply with requirements in the LTSP and the GCAP. The LTSP monitoring is implemented as a best management practice; NRC determined cell performance monitoring to ensure compliance with surface remedial actions conducted under Subpart A of 40 CFR 192 was not required because the design of the disposal cell was adequate to provide long-term protection of human health and the environment. The GCAP requires monitoring to ensure compliance with Subpart B of 40 CFR 192 (i.e.; legacy uranium processing site-related contamination). The Subpart B protection strategy is no remediation in conjunction with the application of an alternate concentration limit (ACL) for uranium.

The current monitoring network consists of six wells completed in the uppermost aquifer and three surface water locations in Chartiers Creek (Table 3–2 and Figure 3–1). The LTSP specified best management practice sampling for two years after the site was licensed. This was met by sampling in 1996 and 1997. However, because the concentration of uranium in some wells remained above the maximum concentration limit (MCL) of 0.044 milligrams per liter (mg/L), DOE has continued to monitor these locations annually. Monitoring requirements to verify compliance with the GCAP includes four wells, three of which are point-of-compliance (POC) wells, and one surface location, considered a point of exposure (POE) (Tables 3–2 and 3–3). The GCAP requires monitoring for a period no less than 5 years (through 2004) and up to 30 years (through 2029—the estimated time for natural attenuation to occur). The LTSP was revised in September 2005 to combine these separate monitoring requirements (i.e.; LTSP and GCAP) into a comprehensive site-wide monitoring program. The revised LTSP will become effective following receipt of final NRC concurrence.

Table 3–2. Groundwater and Surface Water Sampling Locations at the Canonsburg, Pennsylvania, Disposal Site

Sample Locations Current LTSP (October 1995)	Sample Locations GCAP (DOE 2000)	Sample Locations Revised LTSP (September 2005)
Monitor wells: MW-0410 Upgradient MW-0406 Downgradient ^a MW-0412 Downgradient MW-0413 Downgradient MW-0424 Downgradient MW-0414 Crossgradient ^b Surface water locations: SW-0601 Upstream SW-0602 Adjacent to Area C SW-0603 Downstream	Monitor wells: MW-0406 Downgradient MW-0412 Downgradient (POC) MW-0413 Downgradient (POC) MW-0414 Crossgradient (POC) Surface water location: SW-0602 Adjacent to Area C	Monitor wells: MW-0406 Downgradient (BMP) MW-0412 Downgradient (POC) MW-0413 Downgradient (POC) MW-0414 Crossgradient (POC) MW-0424 Downgradient (BMP) Surface water location: SW-0602 Adjacent to Area C (POE)

^aMW-0406 was destroyed during a sanitary sewer construction project in 2001 and replaced. The current designation is MW-0406A.

^bMW-0414 has been replaced twice because of damage during construction. The current designation is MW-0414B. Key: BMP = best management practice; POC = point of compliance; POE = point of exposure.

Table 3–3. Reference Standards for Groundwater and Surface Water Monitoring at the Canonsburg, Pennsylvania, Disposal Site

Analyte	Standard	ACL	Standard Source
Uranium – groundwater	0.044 mg/L	1.0 mg/L	40 CFR 192 — MCL
Uranium – surface water	0.044 mg/L	0.01 mg/L	40 CFR 192 — MCL
Molybdenum	0.1 mg/L	--	40 CFR 192 — MCL
Manganese ^a	0.05 mg/L	--	40 CFR 143.3 — Secondary drinking water standard

^aA risk-based concentration of 1.7 mg/L has also been established for surface water based on EPA documentation (included in the revised LTSP).

Key: mg/L = milligram/liter; MCL = maximum concentration limit; CFR = Code of Federal Regulations

Molybdenum and uranium are currently the target analytes identified in the LTSP (Table 3–4), with uranium being the analyte of primary concern. Target analytes under the GCAP are molybdenum, uranium, and manganese. MCLs for molybdenum (0.1 mg/L) and uranium (0.044 mg/L) are established in Table 1 to Subpart A of 40 CFR 192 (Table 3–3). There is no standard for manganese; however, the performance standard adopted by the GCAP for manganese (0.05 mg/L) is the secondary drinking water standard established in 40 CFR 143.3 (a risk-based concentration of 1.7 mg/L has also been established for surface water based on EPA documentation and included in the revised LTSP). An alternate concentration limit of 1.0 mg/L was established for uranium in groundwater in the GCAP for the POC wells. An alternate concentration limit of 0.01 mg/L was established for uranium at the POE surface water location.

Table 3–4. Analytes for Groundwater and Surface Water at the Canonsburg, Pennsylvania, Disposal Site

Field Measurements	Current LTSP		GCAP	Revised LTSP
	Water-Quality Indicators	Specific Analytes	Specific Analytes	All Analytes
Alkalinity Dissolved oxygen pH Specific conductance Temperature Turbidity	Calcium Chloride Magnesium Potassium Sodium Sulfate	Uranium Molybdenum	Uranium Manganese Molybdenum	Uranium Manganese ^a

^aMW-0412 and SW-0602 only.

The revised LTSP includes the following modifications to the groundwater and surface water monitoring program: (1) Eliminating the upgradient background well MW–0410 and two surface water sampling locations (the upstream location SW–0601 and the downstream location SW–0603) from the monitoring network (Table 3–2); (2) Reducing the analytes to uranium for the entire network and manganese for MW–0412 and SW–0602 only, while retaining routine field measurements performed at the time of sampling (Table 3–4); (3) Conducting monitoring annually for the next 5 years (through 2010) and then reevaluating the monitoring program.

The objectives of the revised monitoring program are to (1) evaluate downgradient contaminant trends in groundwater in the shallow unconsolidated materials and in surface water to ensure compliance with the ACL; (2) demonstrate that concentrations of uranium at the POC locations are decreasing as predicted and that the system remains in compliance with the GCAP; and (3) ensure that remedial actions at the disposal site and Area C continue to protect human health, safety, and the environment.

3F In 2006, NRC reviewed the revised LTSP and responded to recommended modifications to the monitoring program in the *Technical Evaluation Report, Canonsburg Uranium Mill Tailings Disposal Site* (October 2006). Monitoring program modifications were accepted with one additional requirement: continued annual monitoring of manganese in groundwater at well MW-0412 and in surface water at location SW-0602 through the next 5-year evaluation period (through 2010). The additional requirement was included in the final draft of the revised LTSP. Final NRC concurrence is pending.

Therefore, monitoring performed in 2007 was conducted in accordance with requirements of the October 1995 LTSP (i.e., the original, unrevised version).

Monitoring Results—Analytical results for the 2007 monitoring performed were not available in time for inclusion into this report and will be reported in the 2008 compliance report. A discussion of the groundwater and surface water monitoring results reported from 1995 through 2006 was presented in the 2006 compliance report.

3.3.5 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 2007.

3.3.6 Photographs

Table 3–5. Photographs Taken at the Canonsburg, Pennsylvania, Disposal Site

Photograph Location Number	Azimuth	Photograph Description
PL-1	210	View down outside of the security fence from perimeter sign P5.
PL-2	345	Site marker SMK-1.
PL-3	350	Animal burrow.
PL-4	15	Vegetation growing in west diversion channel.
PL-5	60	Vegetation encroaching on newly installed riprap along Chartiers Creek between perimeter signs P7 and P8.



CAN 9/2007. PL-1. View down outside of the security fence from perimeter sign P5.



CAN 9/2007. PL-2. Site marker SMK-1.



CAN 9/2007. PL-3. Animal burrow.



CAN 9/2007. PL-4. Vegetation growing in west diversion channel.



CAN 9/2007. PL-5. Vegetation encroaching on newly installed riprap along Chartiers Creek between perimeter signs P7 and P8.