3.0 Canonsburg, Pennsylvania, Disposal Site

3.1 Compliance Summary

The Canonsburg Disposal Site, inspected on September 20, 2006, was in excellent condition. Repairs to flood damaged portions of the Chartiers Creek stream bank and the security fence, conducted in March 2005, were in as-built condition. Vegetation was reestablished on areas from which debris was removed in September 2005. Beaver damage to mature trees was noted on the creek bank north of the site. Stakeholders and regulators approved stream bank stabilization proposed and conducted by the Borough of Canonsburg. Sale of Area C property in the southeastern corner of the site was completed. Undesirable vegetation (Canada thistle and poison hemlock) was reduced compared to 2005, but ongoing control is recommended. Trash was removed from along Strabane Avenue. Ground water and surface water monitoring continued at the site to monitor ground water quality; results indicate elevated uranium in ground water does not extend beyond the site boundary or exceed the alternate concentration limit. Monitoring program modifications presented in the revised LTSP were conditionally concurred in by NRC with one additional requirement; continued annual monitoring of manganese in ground water at well MW−0412 and in surface water at location SW−0602 through the next 5-year evaluation period. No other maintenance needs or cause for follow-on inspection was noted.

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* [LTSP] *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
Ground Water Monitoring	Section 4.0	Section 3.3.4
Corrective Action	Section 4.4	Section 3.3.5

Institutional Controls—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. 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.

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, 2006. 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

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 entrance gate, located at the southeast corner of the site along Strabane Avenue, was locked and in good condition. The vehicle gate on the northeast side of the site was inoperable due to a corroded padlock. The lock was cut off and the gate opened to allow access for pending stream
3A bank stabilization work. Gate rollers are corroded but the gate can be made operable. A new padlock was placed on this feature.

The site is surrounded by a chain link security fence with three strands of barbed wire at the top. The fence continues to rust but remains secure. Floodwater from the 2004 hurricanes damaged approximately a 400-foot-long section of the security fence between perimeter signs P6 and P8. In 2005, DOE replaced the damaged portion of the fence and moved it back from the top of the stream bank. The concrete boot at the bottom of several fence posts is exposed along the west and north sides, but the posts remain stable. Soil creep was observed along the base of the fence. This is a slow acting process that currently does not compromise site integrity, so no intervention is warranted but the stability will be monitored.

The site has an entrance sign at the entrance gate and 11 perimeter signs. The entrance sign was in good condition. Some perimeter sign are faded but remain legible. Perimeter signs will be replaced before they become illegible.

Site Markers and Monuments—The two site markers, three survey monuments, and four boundary monuments were undisturbed and in excellent condition.

Four pairs of erosion control markers (EMCs) were initially installed along the bank of Chartiers Creek. One of these markers, ECM–4A, was lost to erosion in 1997. This marker does not need to be replaced because the other marker in the pair, ECM–4, can be used for reference. Marker ECM–1A, difficult to locate because of thick vegetation, was found using global positioning system (GPS) equipment. ECM–2A was washed out in 2004 by flooding and was reset in 2005. All erosion control markers are in good condition.

Monitor Wells—The ground water 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). The wells were secure and in excellent condition.

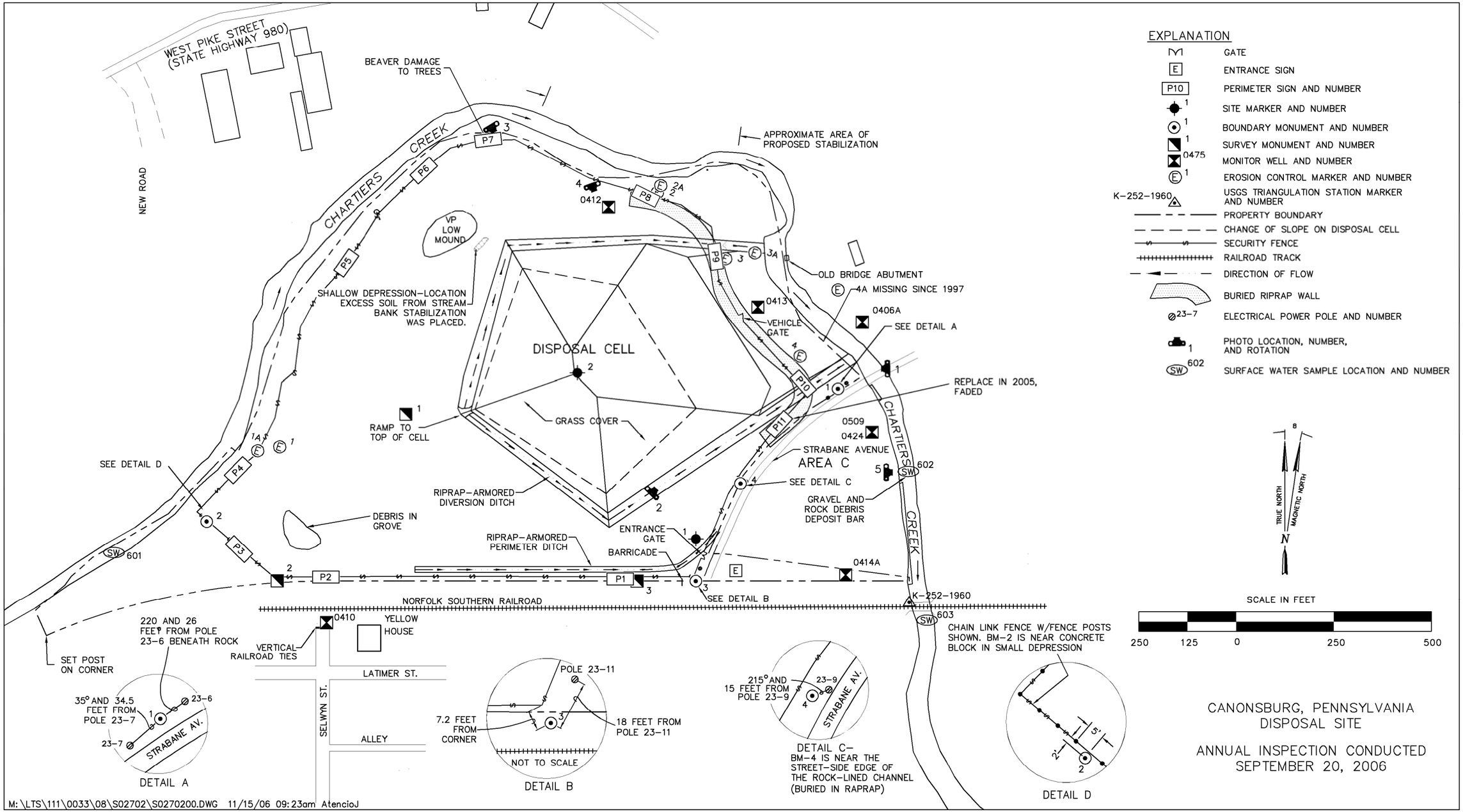

Figure 3–1. 2006 Annual Compliance Drawing for the Canonsburg, Pennsylvania, Disposal Site

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 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 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 annually. There was no evidence of slumping, settling, erosion, or other modifying process.

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 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. No fresh burrows were found in 2006.

The grass turf on the northeast side slope has been monitored for several years because it had appeared less healthy than that of the remainder of the site. For the past three years, including 2006, the inspections were conducted earlier in the growing season and the turf appeared healthy (PL–1). The condition of the turf in this area will continue to be inspected to verify that the vegetation is providing adequate erosion protection.

Areas on the northeast side slope of the disposal cell have scattered Canada thistle, a noxious weed. The affected areas were sprayed with herbicide in spring and fall 2006 and populations were found greatly reduced. The program of spraying and mowing in late spring and early fall will be continued.

3B

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. These structures functioned as designed during the hurricane-related storms in 2004 by diverting storm water away from the cell and conveying it off site.

As noted during previous inspections, individual rocks have deteriorated. Although the occurrences are few and rock deterioration is not considered to be a problem at this time, DOE will continue to monitor the rock condition in the channels and ditch.

Vegetation in the diversion channels and perimeter ditch was treated with herbicide in 2005. Vegetation continues to grow in these features but does not impede function (PL–2).

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 identified and 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 2006, noxious weed populations, primarily Canada thistle, were generally similar to what was found in 2005. Herbicide application and mowing will continue in an effort to control noxious weeds on site.

Site Perimeter—Trees, woody brush, and vines continue to encroach upon the security fence; however, the use of a tractor and brushhog is an effective and low-cost means of controlling vegetation in unwanted areas. Where terrain is too steep for the tractor, the vegetation is cleared by hand. Vegetation intertwined in the fence or weighing it down is also cleared by hand; it was last cleared in 2005. This activity also includes application of herbicide along the bottom of the fence to retard vegetation. Removal of vegetation helps preserve and maintain the fence. It also leaves the site appearing actively cared for and provides access to perform inspection of the fence and site perimeter. The base of the fence was treated with herbicide in 2006.

3C

Canada thistle plants interspersed with healthy vegetation along the outside of the security fence on the north side of the property were treated with a selective herbicide in 2006. No Canada thistle was found in this area at the time of the inspection. However, occasional poison hemlock plants were found along the fence. These plants will continue to be monitored to determine if control measures are required.

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 equilibrium was upset by the flooding in 2004. Local and state officials have arranged grant monies to be applied to stabilizing 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. The Borough of Canonsburg sponsored the work. The work, performed in November 2006, consisted of cutting back the slope of the bank and armoring the toe with riprap keyed into bedrock. Above the riprap, the slope was protected by stabilization matting and planting of live fascines. DOE gave permission to remove portions of the fence fabric for access and to relocate the fence back away from the regarded slope to leave a bench for access to the stream bank. All excess soil removed from the stream bank was spread inside the security fence, between the disposal cell and the low vicinity property material mound, and revegetated.

3D

Beavers have been felling mature hardwood trees along the Chartiers Creek stream bank (PL–3). Only occasional trees are affected, and the trees are north of the site where the bank slope is flatter and the cross section of the drainage appears to be greater than further downstream.

Abundant vegetation remains on this portion of the bank. Inspectors will continue to monitor this activity for threats to stream bank stability.

DOE found the railroad had cleared and graded land west of the security fence, pushing debris (including vegetation and railroad ties) toward the stream bank and onto DOE property. DOE informed the railroad of the encroachment and provided property maps. At the time of this inspection railroad crews were removing railroad ties from DOE property. DOE set a lath at the west property corner using GPS equipment. DOE will set a survey marker on this property corner.

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. No changes in land use were observed.

Area C is a triangular, grass-covered parcel of vacant property across Strabane Avenue east of the site. Strabane Avenue, Chartiers Creek, and the railroad bound Area C. The Commonwealth of Pennsylvania sold Area C to a private party—it was not part of the DOE-owned Canonsburg Disposal Site, although the Commonwealth acquired the parcel under UMTRCA as part of the designated processing site. Area C is remediated except for two thorium anomalies that lie at a depth of about 8 feet. When the Canonsburg site was remediated, ingrowth of thorium was not considered as a cleanup criterion for meeting the radium-in-soil standard in the future. Ingrowth calculations indicate the radium-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 of 40 CFR 192. Also, contaminated ground water was present beneath Area C, and DOE has an interest in preserving the configuration and integrity of the stream bank and maintaining access to monitoring locations on the parcel.

The Commonwealth put Area C up for sale to the public in 2001, but DOE informed the Commonwealth of restrictions on parcel transfers stipulated in UMTRCA and the Cooperative Agreement between DOE and the Commonwealth. Consequently, the sale was on hold while DOE conveyed to the Commonwealth specific instructions on implementing necessary land use controls. The state concurred that the deed for Area C, when transferred to another entity, will carry restrictions to limit excavation in the area and prevent the area from being used for residential purposes. The sale was completed in 2006.

3E

DOE has a monitor well in Area C (MW–0424) that is part of the ground water-monitoring network. DOE ensured ongoing access to this well through the sale agreement. (Monitor well MW–0414B is on the former Parcel Number 117, owned by DOE.)

The Chartiers Creek bank along Area C was reconstructed in 2001 to stop slumping. Reconstruction entailed rebuilding the bank 30 feet into the bank with alternating layers of drainage material, soil, and geotensile fabric, and keying riprap into the toe of the slope and placed it against filter fabric up to the height of normal high water. The reconstructed bank was revegetated with grasses, and native brush was allowed to establish.

In 2004, inspectors found that floodwater 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 but the structural system extends 30 feet into the bank. Floodwater scoured behind the riprap and fabric in places.

DOE notified NRC, performed a follow-up inspection of the damage, and developed recommendations for stream bank repair along the disposal cell and Area C. NRC concurred in the recommendations, and repair work was performed in April 2005. DOE restored the stream bank profile by filling scoured areas with riprap. Inspectors broadcast shrub and forb seed to further stabilize the bank with vegetation.

During the Chartiers Creek stream bank repair project, the surface of Area C was disturbed along the top of the bank and reseeded with the same grass mix used for the disposal cell. A good grass cover has become established in most areas. Along the top of the slope, however, scattered Canada thistle and poison hemlock plants have established. The infestations were treated in 2004, 2005, and 2006, along with the infested areas on the disposal site. In 2006, Canada thistle and scattered poison hemlock were found along most of the top of the bank in Area C. With transfer of property ownership, DOE has no further responsibility to maintain this property.

During the 2006 inspection, inspectors picked up trash along Strabane Avenue on and adjacent to DOE property. The maintenance subcontractor periodically picks up trash on and adjacent to DOE property to maintain the property's neat appearance. Spot cleanup of trash will be performed as needed during future inspections.

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 2006.

3.3.3 Routine Maintenance and Repairs

In 2006, DOE replaced the lock on security fence northeast gate, mowed grass on and adjacent to the disposal cell, removed vegetation along the perimeter fence, and sprayed noxious and invasive weeds.

3.3.4 Ground Water and Surface Water Monitoring

3F DOE monitors ground water (PL–4) and surface water (PL–5) at the Canonsburg site to comply with requirements in the LTSP and the subsequent GCAP. The LTSP only requires monitoring 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). To

achieve compliance with Subpart B of 40 CFR 192 at the site, the NRC approved action was no remediation in conjunction with the application of an alternate concentration limit (ACL) for uranium. Therefore, the purpose of monitoring at the site is to evaluate contaminant trends in ground water in the shallow unconfined uppermost aquifer, which consists of unconsolidated soils, stream deposits, and clean fill, and to ensure compliance with the ACL.

The 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 required best management practice sampling for two years after the site was licensed. This requirement 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 continued to monitor these locations annually. Monitoring requirements to verify compliance with the GCAP includes four wells, three of which are considered point-of-compliance wells, and one surface location, considered a point of exposure (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 was submitted to the NRC for concurrence.

Table 3–2. Ground Water 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]	Monitor wells: MW−0406 Downgradient MW−0412 Downgradient (POC) MW−0413 Downgradient (POC) MW−0414 Crossgradient (POC)	Monitor wells: MW−0406 Downgradient (BMP) MW−0412 Downgradient (POC) MW−0413 Downgradient (POC) MW−0414 Crossgradient (POC) MW−0424 Downgradient (BMP)
Surface water locations: SW−0601 Upstream SW−0602 Adjacent to Area C SW−0603 Downstream	Surface water location: SW-0602 Adjacent to Area C	Surface water location: SW-0602 Adjacent to Area C (POE)

[a]MW−0406 was destroyed during a sanitary sewer construction project in 2001 and replaced. The current designation is MW−0406A.
[b]MW−0414 has been replaced twice because of damage during construction. The current designation is MW−0414B.
BMP = best management practice
POC = point of compliance
POE = point of exposure

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

Analyte	Standard	ACL	Standard Source
Uranium – ground water	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

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

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. In the revised LTSP, uranium is the only constituent of concern (COC). 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 ground water in the GCAP for the point-of-compliance wells. An alternate concentration limit of 0.01 mg/L was established for uranium at the point-of-exposure surface water location.

Table 3–4. Analytes For Ground Water 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

The revised LTSP includes the following modifications to the ground water 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) Eliminating water quality indicators and analyzing only uranium as the sole COC, along with the routine field measurements performed at the time of sampling (Table 3–4). (3) Conduct monitoring annually for the next 5 years (through 2010) and then reevaluate the monitoring program.

The objectives of the revised monitoring program are to (1) evaluate downgradient contaminant trends in ground water in the shallow unconsolidated materials and in surface water, (2) demonstrate that concentrations of uranium at the point-of-compliance (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.

In 2006, NRC reviewed the revised LTSP and responded to recommended modifications to the
3G monitoring program in the *Technical Evaluation Report, Canonsburg Uranium Mill Tailings Disposal Site* (October 2006). Monitoring program modifications were approved with one additional requirement; continued annual monitoring of manganese in ground water at well MW−0412 and in surface water at location SW−0602 through the next 5-year evaluation period (through 2010). Additionally, an inconsistency found between the LTSP and the real estate documentation (LTSP, Appendix B) regarding responsibility for maintaining Area C stream bank required clarification, and the current property deed required amendment to grant access for stream bank repairs, if needed.

Monitoring Results—Analytical results for ground water and surface water monitoring are presented below. Analytical results from the October 2005 monitoring were not available for the 2005 compliance report and are included in this report. The 2006 results are considered preliminary; data validation had not been completed at the time of this report but no quality issues were reported by the analytical laboratory, or are apparent, so those data are presented in this report. Should any problems with the 2006 ground water and surface water monitoring data be identified during the validation process, they will be addressed in the 2007 compliance report. Time-concentration plots, from 1995 through 2006, for the three target analytes—uranium, molybdenum, and manganese in ground water are shown on Figures 3−2 through 3−4 and in surface water on Figures 3−5 through 3−7.

Uranium is the analyte of primary concern at this site because of the frequency with which it has exceeded its MCL of 0.044 mg/L in two of the downgradient ground water monitoring wells (MW−0412 and MW−0413). In 2005 and 2006, uranium concentrations in these two wells continued above the MCL, but considerably below the ACL (Figure 3−2). Following a downward trend from 1996 through 1999, concentrations of uranium at well MW−0412 had increased from 2001 through 2005. In 2005, the highest uranium concentration since the LTSP-required monitoring began in 1995 was reported at 0.259 mg/L from this well; however, still significantly below the ACL of 1.0 mg/L. In 2006, the concentration of uranium from this well decreased to 0.12 mg/L. No definitive trend has established in well MW−0412. From 1995 through 2001, uranium concentrations in well MW−0413 displayed a downward trend. Since 2002, uranium concentrations in well MW−0413 have fluctuated but remain below the initial 1995 concentration and have not exceeded the ACL. Uranium concentrations were substantially below the MCL at the rest of the ground water monitoring locations in 2005 and 2006. Uranium concentrations at all surface water sampling locations in Chartiers Creek, although reporting a sight increase in 2006, continue near the laboratory detection limit and have displayed a decreasing trend since 2001 (Figure 3−5).

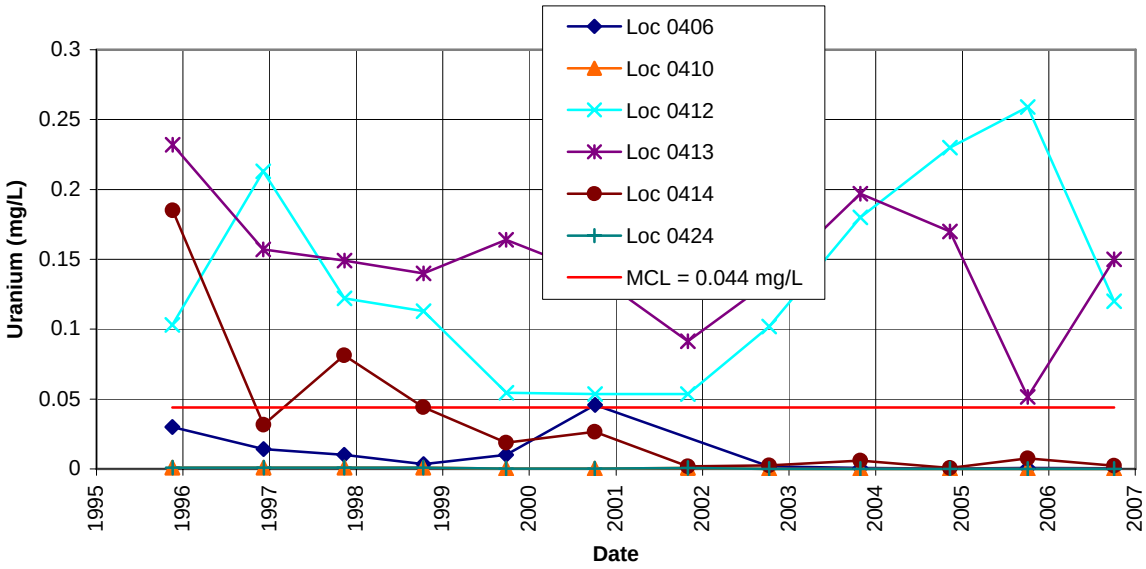

Figure 3–2. Time-Concentration Plots of Uranium in Ground Water at the Canonsburg, Pennsylvania, Disposal Site

DOE continues to consider the risk associated with uranium in ground water within the unconsolidated materials and shallow bedrock (defined as the uppermost aquifer for regulatory purposes) beneath the site to be negligible because neither unit is considered a viable aquifer from a water resource perspective, although the zone is capable of discharging to surface water (Appendix A to 10 CFR Part 40). Because the materials are not ideal for aquifer formation and the source of recharge to the shallow units is minimal, sustained yield to a well from these units would be limited. The shallow ground water is not used as a drinking water source in the area, although some domestic water is derived from a few private wells deeper than 100 feet. Institutional controls, in the form of government ownership of the site, prevent access to the ground water directly beneath the site. NRC concurred in deleting ground water use restrictions for Area C in 2003. Most of the residents in the area are connected to a municipal water system, which is supplied by surface water reservoirs upgradient from the site. Chartiers Creek, the discharge point for the shallow ground water beneath the site, is not a source of potable water. Additionally, uranium concentrations reported from samples collected from the creek are near the detection limit and have declined in recent years. Therefore, human health and the environment are adequately protected.

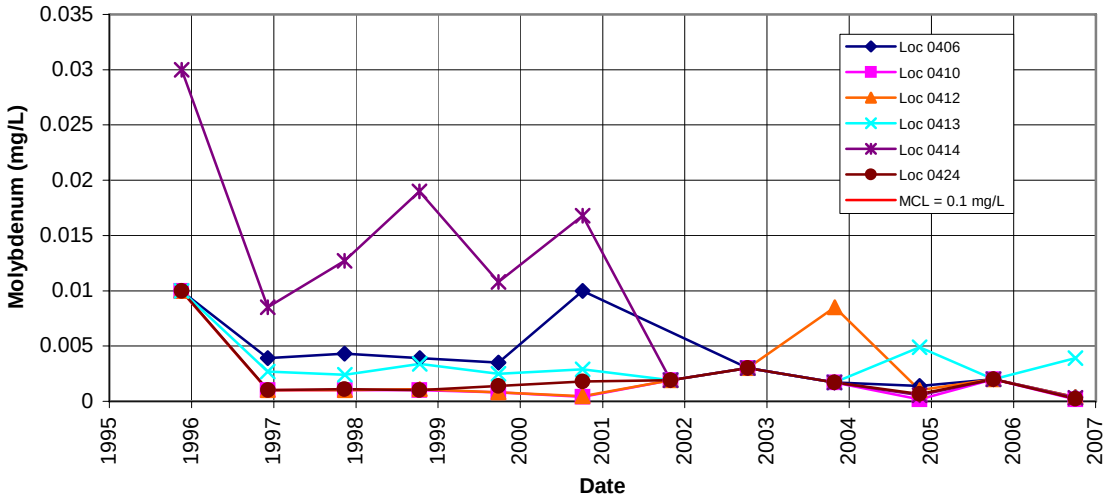

Figure 3–3. Time-Concentration Plots of Molybdenum in Ground Water at the Canonsburg, Pennsylvania, Disposal Site

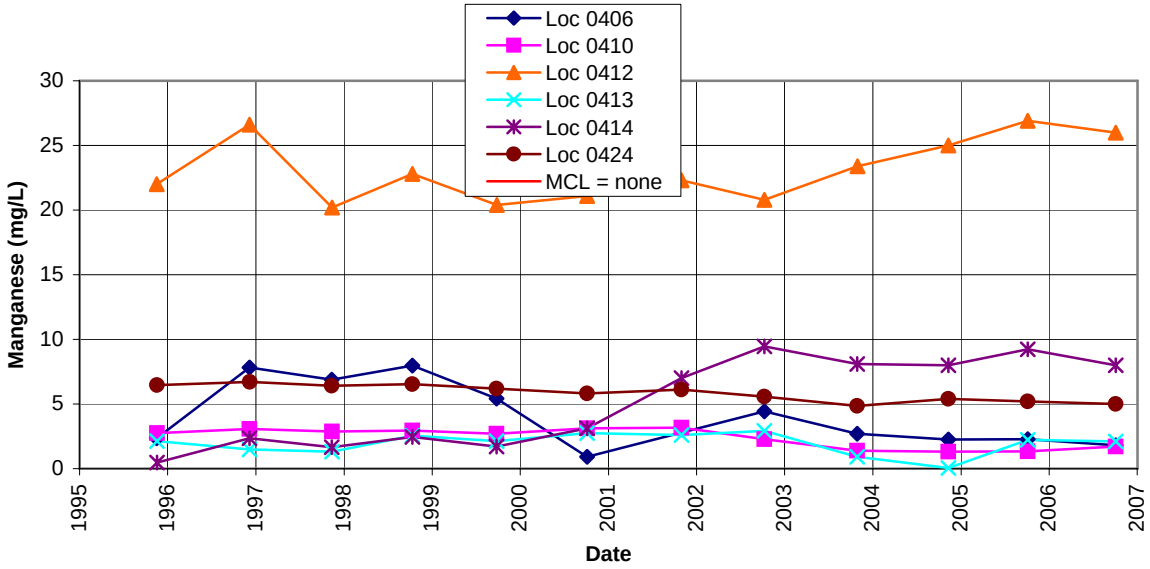

Figure 3–4. Time-Concentration Plots of Manganese in Ground Water at the Canonsburg, Pennsylvania, Disposal Site

Figure 3–5. Time-Concentration Plots of Uranium in Surface Water at the Canonsburg, Pennsylvania, Disposal Site

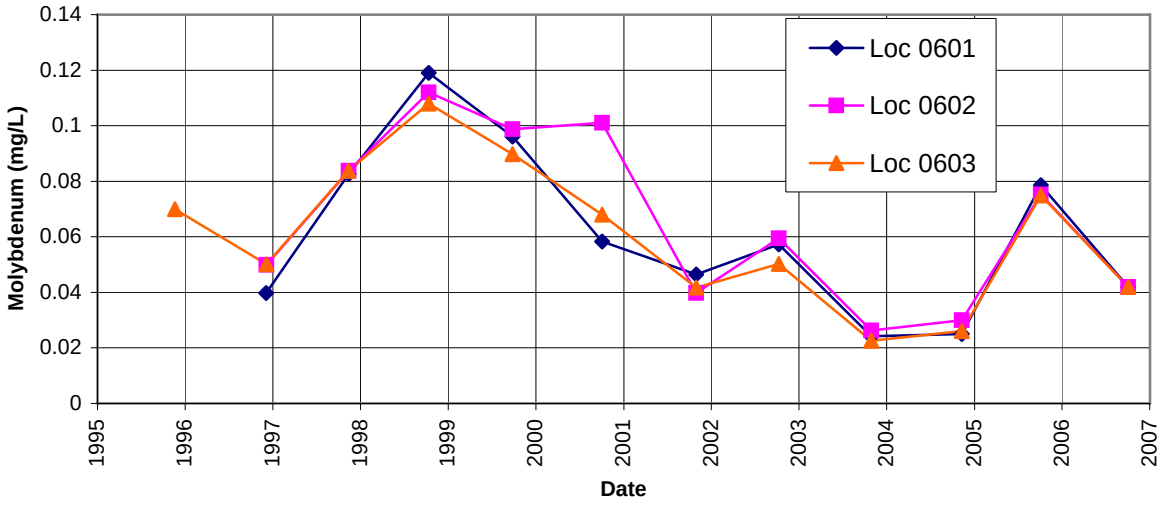

Figure 3–6. Time-Concentration Plots of Molybdenum in Surface Water at the Canonsburg, Pennsylvania, Disposal Site

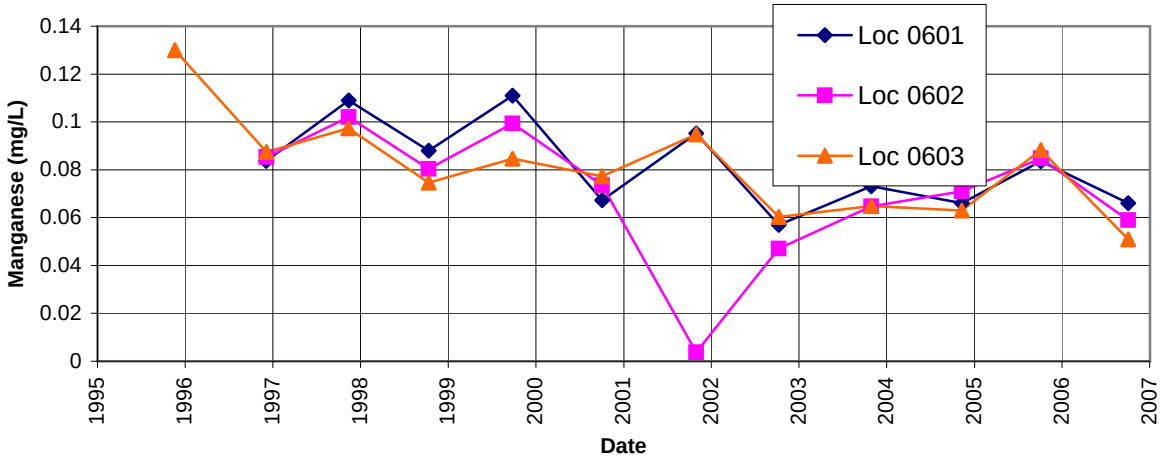

Figure 3–7. Time-Concentration Plots of Manganese in Surface Water at the Canonsburg, Pennsylvania, Disposal Site

In 2005 and 2006, molybdenum concentrations in ground water continued well below the MCL at all locations, with values remaining near the laboratory detection limit. Historically, the highest concentrations of molybdenum were reported from well MW−0414 during the initial years of monitoring. Concentrations in this well have decreased significantly in recent years and display an overall decreasing trend (Figure 3−3). In general, molybdenum concentrations at all other wells have remained relatively constant. The maximum concentration of molybdenum reported in 2006 was 0.0039 mg/L at well MW−0413.

The concentrations of molybdenum in the Chartiers Creek samples, as in the past, were higher than in ground water samples, though still well below the MCL of 0.1 mg/L. Concentrations at all locations exceeded the MCL in 1998 and again, although only slightly, at location SW−0602 in 2000 (Figure 3−6). Surface water concentrations both upstream and downstream of the site exceed concentrations in ground water. This indicates an ambient or upstream source of molybdenum rather than from site related activities. The surface water quality is indistinguishable between upstream and downstream locations. Molybdenum concentrations in both upstream and downstream locations display an overall decreasing trend, despite a relatively sharp increase at all locations in 2005.

Manganese concentrations in ground water continue to exceed the secondary drinking water standard of 0.05 mg/L at all point of compliance wells. In 2004, well MW−0413 had an apparent anomalous manganese concentration of 0.044 mg/L, just below the standard. Otherwise, results from 2005 and 2006 are generally consistent with results from previous years; no increasing or decreasing trends are observed with the exception of well MW−0414 where an overall increasing trend can be observed, which appears to have leveled off in recent years (Figure 3–4). Concentrations of manganese reported from well MW−0412 (26 mg/L in 2006) remain significantly above all other wells. The manganese concentration in the upgradient background well MW−0410 was below all other wells in 2005 and 2006; however, this well had exceeded the concentrations MW−0413 and MW−0414 from 1995 through 1999.

Manganese concentrations in surface water in Chartiers Creek (the point of exposure) display an overall decreasing trend at all three locations, although location SW−0602 appeared to have an anomalously low concentration in 2001 (Figure 3–7). With the exception of location SW−0602 in 2001 and 2002, all manganese concentrations in surface water remain above the secondary drinking water standard but well below the EPA risk based guideline of 1.7 mg/L.

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 2006.

3.3.6 Photographs

Table 3–2. Photographs Taken at the Canonsburg, Pennsylvania, Disposal Site

Photograph Location Number	Azimuth	Description
PL−1	290	Turf condition on northeast site slope.
PL−2	45	Vegetation in diversion channel.
PL−3	150	Beaver damage along Chartiers Creek.
PL−4	160	Ground water sampling.
PL−5	120	Surface water sampling.

CAN 9/2006. PL–1. Turf condition on northeast site slope.

CAN 9/2006. PL–2. Vegetation in diversion channel.

CAN 9/2006. PL–3. Beaver damage along Chartiers Creek.

CAN 9/2006. PL–4. Ground water sampling.

CAN 9/2006. PL–5. Surface water sampling.

End of current section