UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 6, 2014

MEMORANDUM TO: Docket File WM-00042

THROUGH: Marc S. Ferdas, Chief ***/RA/***
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety

FROM: Mark C. Roberts, CHP, Senior Health Physicist ***/MFerdas f/***
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Division of Nuclear Materials Safety

SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE CANONSBURG, PENNSYLVANIA, DISPOSAL SITE

On December 10, 2013, a U.S. Nuclear Regulatory Commission (NRC) Region I inspector conducted an observational site visit at the U.S. Department of Energy's (DOE) Canonsburg, Pennsylvania, Disposal Site in Washington County, Pennsylvania. This site visit was conducted in accordance with NRC guidance dated September 7, 2012. The purpose of the site visit was to observe DOE's routine and annual inspection of the facility. Enclosed to this memorandum is the NRC's trip report for this observational site visit.

In summary, DOE representatives conducted the annual inspection in accordance with the guidance provided in the Long-Term Surveillance Plan dated March 2013. No significant regulatory issues or safety concerns were identified during the site visit.

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Docket: WM-00042

Enclosure:
NRC Trip Report

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket No.:	WM-00042
Report No.:	WM-00042/13-002
Licensee:	U.S. Department of Energy
Facility:	Canonsburg, Pennsylvania, Disposal Site
Location:	Canonsburg, Pennsylvania
Date:	December 10, 2013
Inspector:	Mark C. Roberts, CHP, Senior Health Physicist Decommissioning and Technical Support Branch Division of Nuclear Materials Safety
Approved by:	Marc S. Ferdas, Chief Decommissioning and Technical Support Branch Division of Nuclear Materials Safety
Attachment:	Photographs Taken at the Canonsburg, Pennsylvania, Disposal Site

Enclosure

NRC TRIP REPORT

1. Background

The licensing, custody, and long-term care of residual radioactive material disposal sites closed under Title I of the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, as amended, can be found in 10 CFR 40.27. The U.S. Department of Energy (DOE) is the general licensee for these sites and conducts the program for the long-term surveillance and maintenance program for each inactive uranium ore processing site under a Long-Term Surveillance Plan (LTSP) that has been accepted by the NRC. The LTSP provides instructions for institutional control of the site. These controls include deed restrictions, site markers, survey monuments, boundary markers, gates, fences, signs and environmental sampling and analysis. The physical features of the site are inspected once per year by DOE staff. The "Long-Term Surveillance Plan for the U.S. Department of Energy Canonsburg Uranium Mill Tailings Disposal Site Canonsburg, Pennsylvania", March 2013, provides the guidance for DOE in fulfilling the general license requirements.

The Canonsburg, Pennsylvania Disposal Site is a former uranium ore-processing facility located in the Borough of Canonsburg, Washington County, Pennsylvania. The site lies between Chartiers Creek to the west, north, and east and the Pittsburgh and Ohio Central Railroad tracks to the south. The surrounding land is primarily residential and is moderately populated. The former mill processed uranium and other ores at various times between 1911 and 1957 to extract radium and uranium. The historical operations at the site generated radioactive mill tailings that contaminated the site and some surrounding vicinity properties. Some of the tailings were shipped approximately 50 miles away to Burrell, Pennsylvania for use as railroad fill. This material was consolidated and stabilized in place in a disposal cell at the Burrell site. Processing operations at the site ceased in 1957 and for the next nine years the site was used for storage under a U. S. Atomic Energy Commission contract. The site was subsequently sold and used for light industrial purposes.

Remediation at the site consisted of consolidating contaminated materials from the Canonsburg site and local contaminated vicinity properties into an onsite engineered disposal cell. The cell contains approximately 226,000 tons of contaminated material with a total activity of 100 curies of radium-226 (Ra-226). The cell occupies approximately 6 acres of the 37-acre site. The disposal cell was closed in 1985. A three-acre parcel outside the restricted area, Area C, was sold to a private party. The transfered property carries restrictions limiting excavation, disturbance of the creek bank, prohibits residential use, and allows access for monitoring.

The cell is lined with compacted clay to prevent groundwater contamination. The tailings were placed on the clay liner and covered with a multi-layer system designed to isolate the contaminated materials. The cover includes a low-permeability layer of compacted clay, a protective rock layer, and vegetated topsoil. The clay layer is designed to prevent the escape of radon-222 gas (from the decay of the Ra-226), and in conjunction with the other materials, provides for rapid runoff and minimizes infiltration of precipitation. The cell is graded to promote drainage away from the disposal cell and has been vegetated to further prevent erosion. A chain link fence with warning signs surrounds the property to prevent unauthorized access. Locked gates allow for vehicle and pedestrian access. Site markers placed near the entrance of the site and on top of

the cell identify the site and shows the date of closure and contents of the cell. Erosion control markers have been placed between the fence perimeter and the creek. Contractors perform routine, periodic landscaping maintenance activities (primarily mowing) during the year.

2. Site Status

The DOE conducted the last annual inspection of the Canonsburg, Pennsylvania, Disposal Site in October 2012. The inspection concluded that the disposal cell and all associated drainage diversion structures were in excellent condition and functioning as designed. No maintenance needs or cause for a follow-up or contingency inspection were identified.

The DOE monitors groundwater quality in samples from five monitoring wells and one surface water sample in Chartiers Creek. Past monitoring results have indicated uranium contamination in some groundwater samples, but results have been less than the site specific alternate concentration limit, and no milling-related constituents have been detected in samples of creek water. Based on the assessment of historical data from groundwater and surface water monitoring, the frequency of collection of samples has been reduced from annual to once every five years. The last groundwater sampling event occurred in October 2013, but analytical results are not yet available.

3. Site Observations and Findings

DOE and its contractors prepared an inspection checklist to identify items to review during the inspection. The checklist included requirements for the inspectors to observe the disposal cell, site perimeter, outlying areas, vegetation, and various site-specific features. The inspection staff included the DOE site manager and two contractors

The DOE inspectors checked the disposal cell for evidence of erosion, settlement, slumping, displacement, and any other feature that would require maintenance or repair. The rock surfaces armoring the diversion ditch and the banks of the creek were found to be in good condition. The DOE contractors noted occasional animal burrows that did not appear to significantly affect cell performance.

At the time of the observational site visit, the property was enclosed by a chain link fence and locked gates. Other institutional controls in place at the site included site markers, perimeter warning signs, and erosion control markers. These institutional controls were found to be in place and in good condition, with minor exceptions. In one location along the north perimeter fence, the access gate had been damaged, but the fence and gate were intact. No evidence of human intrusion was identified within the restricted area. No deep-rooted vegetation was identified on the top or side slopes of the cell that would impact cell performance. The DOE inspectors noted that a few feet of fill material had been placed in portions of Area C to raise the ground level further above the level of the creek, but noted no activities that were contrary to the restrictions on the parcel.

The NRC inspector measured the ambient gamma exposure rate at several locations using a Ludlum Model 19 micro R meter (NRC No. 033514, calibrated 08/06/13, calibration due date, 08/06/14). The background exposure rates ranged from 6 -15 microRoentgens per hour (µR/hr). The exposure rate at the base of the disposal cell, at various points on the cell, along the site perimeter fence, and in Area C of the site ranged

from 10 - 17 µR/hr and thus were not significantly different than background. Exposure rates along the Chartiers Creek ranged from 6 – 10 µR/hr.

4. Conclusions

The NRC inspector concluded that the DOE inspectors conducted the site inspection in accordance with the requirements specified in the LTSP dated March 2013. The disposal cell appeared to be structurally intact, and the cover was in good condition. No threats to the integrity of the disposal cell were identified. Minor maintenance needs were noted by the DOE representatives for future disposition.

5. Meeting Summary

The NRC inspector participated in a planning meeting with the DOE site manager and site contractors prior to commencing the site inspection. During this meeting, the participants discussed the site status, the inspection plan, potential hazards, and personal protective equipment. At the conclusion of the inspection, the DOE site manager and site contractors noted the site status and recorded minor maintenance needs.

6. Persons Contacted

K. Broberg, Hydrogeologist, S. M. Stoller Corporation.
C. Carpenter, Site Manager, DOE
M. Miller, Project Manager, S. M. Stoller Corporation

ATTACHMENT

Fig. 1: Canonsburg site – Disposal cell and riprap-armored diversion ditch (looking northwest)

Fig. 2: Canonsburg site - Riprap stabilization between site boundary fence and Chartiers Creek (looking west)