



**UNITED STATES**  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
2100 RENAISSANCE BLVD.  
KING OF PRUSSIA, PA 19406-2713

November 23, 2016

MEMORANDUM TO: Docket File WM-000042

THRU: Raymond J. Powell, Chief */RA/*  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety

FROM: Mark C. Roberts, CHP, Senior Health Physicist */RA/*  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety

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

On October 26, 2016, U.S. Nuclear Regulatory Commission (NRC) Region I inspectors conducted an observational site visit at the U.S. Department of Energy's (DOE) Burrell, Pennsylvania Disposal Site near Blairsville, Indiana 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 annual inspection of the facility. The enclosure of 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 April 2000. No significant regulatory issues or safety concerns were identified during the site visit.

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Docket: WM-000042

Enclosure:  
NRC Trip Report

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**SUNSI Review Complete: MRoberts**

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Docket: WM-000042

Report: WM-000042/16-001

Licensee: U.S. Department of Energy

Facility: Burrell, Pennsylvania Disposal Site

Location: Blairsville, Pennsylvania

Date: October 26, 2016

Inspectors: Mark C. Roberts, CHP, Senior Health Physicist  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety  
Region I

Briana DeBoer, Health Physicist  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety  
Region I

Approved by: Raymond Powell, Chief  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety  
Region I

Attachment: Photographs Taken at the Burrell, Pennsylvania Disposal Site

Enclosure

## NRC Trip Report

### 1. Background

The licensing, custody, and long-term care requirements 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 Burrell Vicinity Property Blairsville, Pennsylvania," last revised in April 2000, provides the guidance for DOE in fulfilling the general license requirements.

The Burrell, Pennsylvania Disposal Site is a former railroad landfill located approximately one mile east of the Borough of Blairsville, Indiana County, Pennsylvania. The site is bordered on the south by the Conemaugh River and to the north by Norfolk Southern railroad tracks. The surrounding land is sparsely populated. The site was operated as a railroad landfill from the late 1940s through the late 1960s. The site was believed to have been used for typical railroad wastes, such as ties, cinders, and excess coal. In 1956 and 1957, approximately 11,600 tons of radioactive mill tailings material were removed from the former uranium ore processing site at Canonsburg, Pennsylvania, and transported approximately 50 miles to the Burrell site to be used as fill.

In 1986, the Federal government acquired the Burrell site through condemnation proceedings. Because of the large volume of material and the distance to the Canonsburg site, the DOE consolidated and encapsulated the contaminated material in an onsite disposal cell, designed to minimize precipitation infiltration and control erosion. The cell was constructed by excavating the original fill material and consolidating this material with additional material that had been brought from the Canonsburg site. The disposal cell contains approximately 86,000 tons of material, containing four curies of radium-226 (Ra-226) and occupies approximately 4-5 acres of the 72-acre site. The disposal cell was closed in 1987.

The contaminated materials in the cell are covered by a low-permeability layer of compacted clay, a bedding layer, and a protective rock layer. The clay layer is designed to prevent the escape of radon-222 gas (from the decay of the Ra-226) and infiltration of precipitation. The bedding layer allows water to drain down the sloped cell top and the rock cover protects the cell surface against erosion. The area surrounding the cell is graded to promote drainage away from the disposal cell and was vegetated with native species 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. A site marker placed near the entrance of the site identifies 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 river. Contractors perform routine, periodic landscaping maintenance activities (primarily mowing and tree pruning along the fence) during the year.

## **2. Site Status**

The DOE conducted the last annual inspection of the Burrell, Pennsylvania Disposal Site in October 2015. The inspection concluded that with the exception of a few minor maintenance items, the disposal cell and all associated drainage diversion structures were in good condition and functioning as designed. No evidence of erosion or slope instability were observed on the disposal cell.

The DOE monitors groundwater quality in samples from eight monitoring wells and two seeps from the cell every five years. Groundwater monitoring results from samples collected in November 2013 indicated that the disposal cell continues to isolate the contaminated waste from the groundwater environment. The next sampling event is planned for 2018.

## **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. Inspection observers included three NRC representatives and a representative from the Commonwealth of Pennsylvania SW Regional Office.

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 on the side slopes were found to be in good condition. The DOE contractors did not authorize any inspection of the rock surfaces at the top of cell due to the potential for slip and fall injuries. Seeps from the base of the cell were not observed to be active.

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 the site marker, perimeter warning signs, and the erosion control markers. These institutional controls were found to be in place and in good condition, with minor exceptions. No deep-rooted vegetation was apparent on the top or side slopes of the cell that would impact cell performance. Bullet holes were noted in a few of the perimeter warning signs. No evidence of human intrusion was identified within the restricted area. The DOE contractors replaced a few perimeter warning signs.

The NRC inspector measured the ambient gamma exposure rate at several locations using a Ludlum Model 19 micro R meter (NRC No. 033510, calibrated 07/20/16, calibration due date, 07/20/17). The background exposure rates ranged from 6-8 microRoentgens per hour ( $\mu\text{R/hr}$ ). The exposure rates at the base of the disposal cell, adjacent to selected monitoring wells, and along the site perimeter fence, also ranged from 6-12  $\mu\text{R/hr}$  and thus were not significantly different than background.

## **4. Conclusions**

The NRC inspectors concluded that the DOE inspectors conducted the site inspection in accordance with the requirements specified in the LTSP dated April 2000. 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.

**5. Meeting Summary**

The NRC inspectors 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, Site Lead, Navarro  
C. Carpenter, Site Manager, DOE  
J. Homer, Ecology Site Lead, Navarro  
D. Shearer, Commonwealth of Pennsylvania



Figure 1: Burrell Disposal Cell (looking east)