



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
2100 RENAISSANCE BLVD., SUITE 100  
KING OF PRUSSIA, PA 19406-2713

June 18, 2019

Bryan C. Bower  
Director  
West Valley Demonstration Project  
U. S. Department of Energy  
10282 Rock Springs Road  
West Valley, NY 14171

SUBJECT: U. S. NUCLEAR REGULATORY COMMISSION MONITORING VISIT REPORT  
NO. 05000201/2019001, WEST VALLEY DEMONSTRATION PROJECT, WEST  
VALLEY, NEW YORK

Dear Mr. Bower:

On May 21 – 22, the Nuclear Regulatory Commission (NRC) conducted a monitoring visit at the U.S. Department of Energy's West Valley Demonstration Project site to review ongoing decommissioning activities. The monitoring visit consisted of observations by the NRC representative, review of documents, and interviews with personnel. The results of the monitoring visit was discussed with you on May 22, 2019, and are provided in the enclosed report. No public health and safety issues were identified.

No reply to this letter is required. Please contact Katherine Warner at (610) 337-5389 if you have any questions regarding this matter.

Sincerely,

**/RA/**

Raymond J. Powell, Chief  
Decommissioning, ISFSI, and Reactor HP  
Branch  
Division of Nuclear Materials Safety

Docket No. 05000201  
License No. CSF-1

Enclosure:  
Report No. 05000201/2019001

cc w/Encl: Craig Rieman, Deputy Director  
Moir Maloney, Regulatory Strategy  
and Environmental Compliance  
Janice Williams, Regulatory Affairs  
Paul Bembia, Program Director

U. S. NUCLEAR REGULATORY COMMISSION MONITORING VISIT REPORT NO. 05000201/2019001, WEST VALLEY DEMONSTRATION PROJECT, WEST VALLEY, NEW YORK DATED June 18, 2019

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Monitoring Visit No. POOM-032/2019001

Project No. POOM-032

NRC Docket No. 05000201

NRC License No. CSF-1

Location: West Valley Demonstration Project  
10282 Rock Springs Road  
West Valley, New York 14171

Monitoring Visit Dates: May 21 – 22, 2019

Monitoring Visit Exit Date: May 22, 2019

NRC Staff: Katherine Warner, Health Physicist  
Decommissioning, ISFSI and Reactor  
Health Physics Branch  
Division of Nuclear Materials Safety, Region I

Approved By: Raymond J. Powell, Chief  
Decommissioning, ISFSI and Reactor  
Health Physics Branch  
Division of Nuclear Materials Safety, Region I

## **EXECUTIVE SUMMARY**

U.S. Department of Energy (DOE)  
West Valley Demonstration Project (WVDP)  
NRC Monitoring Visit Report No. 2019001

An announced monitoring visit was conducted on May 21 – 22, 2019, by United States Nuclear Regulatory Commission (NRC) staff at the DOE WVDP site in West Valley, New York. NRC staff also participated in the DOE quarterly public meeting on February 28, 2019, via telephone and webinar and attended the May 22, 2019, public meeting. The program for conducting NRC monitoring visits at the WVDP is described in Inspection Manual Chapter (IMC) 0111, “Region I Monitoring Activities for the DOE West Valley Demonstration Project.” The monitoring visit included a review of programs and activities associated with the WVDP site decommissioning project. The monitoring visit consisted of interviews with DOE, DOE contractor, and New York State Energy Research and Development Agency (NYSERDA) personnel; a review of documents; tours of the facility; and observations of prepared work areas and in-progress work activities. Based on the results of these activities, no public health and safety issues were identified.

## **REPORT DETAILS**

### **1.0 Introduction**

In accordance with the WVDP Act of 1980 and as implemented by a Memorandum of Understanding between the DOE and the NRC, a routine, announced monitoring visit was conducted on May 21 – 22, 2019, by NRC staff at the DOE WVDP site in West Valley, New York. NRC staff also participated in the DOE quarterly public meeting on February 28, 2019, via telephone and webinar and attended the May 22, 2019 public meeting. The program for conducting NRC monitoring visits at the WVDP is described in IMC 0111. The monitoring visit included a review of programs and activities associated with the WVDP site decommissioning project.

### **2.0 Annual Site Environmental Report**

#### **a. Inspection Scope**

The NRC reviewed WVDP's Annual Site Environmental Report (ASER) for 2017 and discussed the report with DOE and DOE contractor personnel.

#### **b. Observations and Findings**

The radiological environmental monitoring program at the WVDP site focuses on measuring radioactivity from site activities in air, surface water, groundwater, food products, soil, and sediment. Direct radiation is also measured through a network of thermoluminescent dosimeters (TLDs) on the site and around the site perimeter. The monitoring program provides information about the environmental radiological conditions at the site and is intended to verify that public health and safety and the environment are protected and that relevant regulatory requirements have been met. The most recent ASER (issued September 2018) for the WVDP documents the calendar year 2017 environmental monitoring program data. Air and surface water pathways are the primary means by which radioactive material could move off site. The WVDP's on- and off-site monitoring program includes measuring the concentration of alpha and beta radioactivity in air and water effluents as well as specific radionuclide measurements in all environmental media.

Relevant radiological dose limits for the WVDP include U. S. Environmental Protection Agency (USEPA) regulations for air emissions and DOE limits regarding all exposure modes from DOE activities. Radiological air emissions (other than radon) from DOE facilities are regulated by the USEPA under the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation (40 CFR 61, Subpart H), which establishes a standard of 10 millirem/year effective dose equivalent to any member of the public (via the airborne pathway). In 2015, the USEPA gave final approval for WVDP's use of ambient air monitoring data to demonstrate compliance with the NESHAP regulations and stack effluent measurements were no longer required. DOE established sixteen low-volume ambient air samplers surrounding the site, one in each of the sixteen compass point sectors, and used the radiological analysis of air sampler filters and modeling assumptions to demonstrate compliance with the NESHAP

regulations. DOE Order 458.1 sets the DOE primary standard of 100 millirem/year effective dose equivalent to members of the public considering all exposure modes from DOE activities. For 2017, information in the ASER indicates that the estimated dose to a member of the public was less than 0.5 millirem/year from all WVDP sources. The ASER continues to document elevated Strontium-90 (Sr-90) concentrations in groundwater and groundwater surface seeps from the area north of the Permeable Treatment Wall (PTW). The results from direct radiation measurements from perimeter TLD locations were not significantly different compared to background levels.

As stated in previous reports, demolition of the vitrification facility began in September 2017 and continued in 2018. As stated in the ASER, two on-site ambient air monitors were used downwind of the vitrification facility to validate that emissions from demolition are below 0.1 mrem. This monitoring program was conducted to demonstrate this methodology for eventual MPPB demolition. While low levels of cesium-137 were observed on-site in December 2017, there were no detectable levels of cesium-137 at the off-site samplers and it should be noted that the levels detected on-site were less than DOE's Derived Concentration Standard for cesium-137.

c. Conclusions

No offsite public health and safety issues were identified. DOE conducted the environmental monitoring program for the WVDP site in accordance with regulatory requirements. Calculated doses from radiological air and liquid effluents were well below EPA or DOE limits.

**3.0 WVDP Radiological Worker Level 1 and 2 Training**

a. Inspection Scope

The NRC reviewed the radiological worker level 1 and 2 training programs. Monitoring activities consisted of reviewing the training manual and associated documentation and taking written and practical examinations.

b. Observations and Findings

NRC staff reviewed the WVDP radiological worker level 1 and 2 training manual and took the associated tests in order to gain full access to the site including inside the MPPB, where access has been severely limited. The tests consisted of two written multiple choice written tests and a practical examination. The monitor noted that the appropriate subjects were built into the training including: radiological fundamentals, biological effects, radiation limits, ALARA program, personnel monitoring program, radiological postings and controls, radiological emergencies, high and very high radiation areas, and radioactive contamination control. The practical examination consisted of demonstrating the ability to "dress out" in protective clothing commonly used at the site as well as demonstrating the ability to answer verbal questions about the appropriate conduct inside posted areas.

c. Conclusions

Radiological Worker Level I and 2 training appeared to address appropriate subjects to familiarize new radiation workers with an overview of important radiation safety

information. The monitor noted that the questions on the written test appropriately encompassed the topics from the training manual and were difficult enough to adequately test employees. The monitor also noted that the practical examination was similarly appropriately rigorous to test employees on their ability to “dress out” in protective clothing commonly used at the site.

#### **4.0 MPPB Deactivation**

##### **a. Inspection Scope**

The NRC reviewed DOE’s continuing progress for the deactivation of the MPPB in preparation for eventual demolition. The monitoring visit consisted of interviews with DOE and DOE contractor personnel including discussions on the overall status of the deactivation, radiological operations, and radiological engineering. NRC staff also discussed plans for continued deactivation of Product Purification Cell-South (PPC-S).

##### **b. Observations and Findings**

WVDP continues deactivation of the MPPB in preparation for eventual demolition. Additional deactivation work has been scoped into the current contract including work in the General Purpose Cell (GPC), PPC-S, and the Fuel Receiving and Storage (FRS) Facility. The NRC notes that DOE is currently reviewing input from CHBWV regarding MPPB demolition that was previously deferred. The NRC notes that during the project update at the May 22<sup>nd</sup> DOE quarterly public meeting, the MPPB deactivation was stated to be 98% complete.

Cognizant personnel gave an overview of CHBWV’s radiological operations and engineering programs including an overview of how a building is determined to be ready for demolition, an overview of how the material at risk is determined on a cell by cell basis, and the process of how and when the contractor’s plans are reviewed by DOE. The monitor noted that the PPC-S will be a primary focus to attempt to reduce the material at risk down to levels where open air demolition would be possible with normal means.

##### **c. Conclusions**

No public health and safety issues were identified.

#### **5.0 Radiation Protection Program**

##### **a. Inspection Scope**

The NRC reviewed selected aspects of the WVDP radiation program. In particular, the monitor reviewed the WVDP radiological controls manual, the latest audit of the radiation protection program, and selected occurrence reports. Monitoring activities consisted of interviews with cognizant personnel, tours of areas, and reviews of documentation.

##### **b. Observations and Findings**

The monitor reviewed the latest audit of CHBWV’s radiation protection program conducted by DOE. A triennial assessment of the radiation protection program is

required by 10 CFR 835.102. The NRC noted that DOE conducts audits yearly and reviews four of the twelve elements during each audit on a rolling basis to fulfill the triennial requirement. The 2019 audit focused on functional area elements 1-4, which included personnel dosimetry and dose assessment, portable and fixed instrumentation, contamination control, and radiological monitoring (item and area monitoring). The NRC noted that there were no findings found during this audit.

Cognizant personnel provided an overview of how issues are identified, dispositioned, and resolved at West Valley. If an issue rises above specified trigger points, an occurrence report is generated. The NRC discussed several occurrence reports to determine if appropriate and timely immediate corrective actions had been implemented to resolve the occurrence report events discussed.

The monitor also conducted tours of radiologically controlled areas, radioactive waste storage areas, and contaminated areas, including many of the readily accessible areas of the MPPB. The NRC found radiological postings were appropriate and radiological survey instruments and contamination monitors observed were within current calibration.

c. Conclusions

No public health and safety concerns were identified. DOE appears to be fulfilling their triennial audit requirement. The NRC found appropriate and timely immediate corrective actions had been implemented to resolve the occurrence report events discussed.

**6.0 Public Meetings**

DOE WVDP Quarterly Public Meetings

NRC staff also participated in the DOE quarterly public meeting on February 28, 2019, via telephone and webinar and attended the May 22, 2019 public meeting. During the public meetings, DOE, DOE contractor, and NYSERDA representatives provided updates on the progress of various project milestones.

**7.0 Exit Meeting Summary**

The NRC Region I representative discussed the monitoring visit results with Bryan Bower, DOE Project Director, on May 22, 2019. Mr. Bower acknowledged the monitoring visit results.

## **SUPPLEMENTAL INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

#### Department of Energy

B. Bower, Project Director  
J. Dundas, Safety & Site Programs Team Leader  
J. Forti, Regulatory Strategies  
D. Gray, Facility Representative  
A. Kornak, General Engineer

#### NYSERDA

A. Mellon, Project Manager  
B. Frank, WVDP & End-State Planning Program Manager

#### CH2MHILL-B&W West Valley, LLC and Contractors

T. Fontaine, Radiation and Industrial Safety Manager  
S. Kinsmen, Radiation Controls Supervisor  
D. Klenk, Regulatory Strategy  
J. Meppen, Radiation Operations Manager  
J. Prowse, DOE Contractor  
A. Steiner, Senior Environmental Regulatory Strategist  
R. Steiner, Regulatory Specialist  
K. Whitham, Environmental, Safety, and Quality Manager

### **PARTIAL LIST OF DOCUMENTS REVIEWED**

2017 Annual Site Environmental Report, dated September 2018  
Monthly WVDP Project Performance Report - April  
Weekly WVDP Project Status Reports (various)  
Presentations from the February 28 and May 22, 2019 DOE WVDP Quarterly Public Meeting  
S18-059E, Annual Radiation protection program, Functional Area Elements 1-4, dated January 9, 2019  
Occurrence Reports  
EM-OH-WVDP-CHBW-CF-2018-0005  
EM-OH-WVDP-CHBW-CF-2019-0001  
EM-OH-WVDP-CHBW-CF-2019-0002  
EM-OH-WVDP-CHBW-WM-2019-0001  
EM-OH-WVDP-CHBW-WM-2019-0002  
EM-OH-WVDP-CHBW-WM-2019-0003  
TR237Q/TR132Q, WVDP Radiological Worker Level 1 and 2 Training Manual, Revision 27  
WVDP-010, WVDP Radiological Controls Manual, Revision 41

## **LIST OF ACRONYMS USED**

ASER	Annual Site Environmental Report
CHBWV	CH2M HILL Babcock & Wilcox, LLC
NESHAP	National Emissions Standards for Air Pollutants
DOE	Department of Energy
IMC	Inspection Manual Chapter
MPPB	Main Plant Processing Building
NESHAP	National Emissions Standards for Air Pollutants
NRC	Nuclear Regulatory Commission
NYSERDA	New York State Energy Research and Development Authority
PPC-S	Product Purification Cell - South
TLD	Thermoluminescent Dosimeter
USEPA	U.S. Environmental Protection Agency
WVDP	West Valley Demonstration Project