ANNUAL CHANGE REPORT 2018/2019

From July 1, 2018, to June 30, 2019

U.S. Department of Energy
Carlsbad Field Office

October 2019

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Approved by: _____ _____
Michael R. Brown Date
Director, Office of Environmental Protection

Prepared for:

The U.S. Department of Energy

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Nuclear Waste Partnership LLC

Regulatory Environmental

Services

Table of Contents

1.0 INTRODUCTION 4
2.0 INFORMATION REQUIRED BY 40 CFR 194.4(b)(4) 6
3.0 EXTRA-REGULATORY INFORMATION REQUESTED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY 25
4.0 REFERENCES 46

List of Tables

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) 7
Table 2: Procedure/Plan Revision 14
Table 3: Waste Emplacement Summary Report 18
Table 4: Performance Assessment, Software, and Hardware Changes 22
Table 5: Passive Institutional Controls Activity 26
Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019 28
Table 7: EPA Quality Assurance Audits by Site – January 2008 to June 2019 41

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) requires the U.S. Department of Energy (DOE) to provide information on any change in conditions or activities pertaining to the disposal system since the most recent compliance application. This requirement is identified in Title 40 Code of Federal Regulations (CFR) Part 194.4(b)(4) (EPA 1996), which states:

> "Not later than six months after the Administrator issues a certification, and at least annually thereafter, the Department shall report to the Administrator, in writing, any changes in conditions or activities pertaining to the disposal system that were not required to be reported by paragraph (b)(3) of this section and that differ from information contained in the most recent compliance application."

The DOE provides an annual report each November of applicable changes under this requirement. Applicable changes include non-significant changes to information in the most recent compliance application (the 2019 Compliance Recertification Application [CRA] [DOE 2019]). Significant planned changes are reported by the DOE to the EPA prior to implementation. Planned changes are submitted on an individual basis. Significant unplanned changes are reported to the EPA within 24 hours or ten days, depending on the severity of the activity or condition in accordance with Title 40 CFR Part 194.4(b)(3) (EPA 1996).

Proposed changes in activities or conditions are reviewed to determine if 40 CFR Part 194.4(b)(3) reporting is necessary. The report summarizes the items identified as requiring reporting under 40 CFR Part 194.4(b)(4) (EPA 1996). The majority of the items reported are inspections, reports, and modifications to written plans and procedures for Waste Isolation Pilot Plant (WIPP) operations.

This report captures the description of each change for the period July 1, 2018, through June 30, 2019 in the seven tables described below:

Information Required by 40 CFR 194.4(b)(4):

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4), documents EPA and DOE interactions during the reporting period with a high-level summary of each correspondence.

Table 2: Procedure/Plan Revision, documents changes to relevant plans and procedures during the reporting period.

Table 3: Waste Emplacement Summary Report, documents the transuranic (TRU) waste inventory for the waste parameters. The summary provides the total emplaced inventory in the repository as of June 30, 2019.

Table 4: Performance Assessment, Software, and Hardware Changes, documents the changes to relevant codes, software, and hardware that have occurred during the reporting period.

Extra-Regulatory Information Requested by the Environmental Protection Agency:

Table 5: Passive Institutional Controls (PICs) Activity, documents activities applicable to the development of PICs. This table was added at the request of the EPA. (Reyes to Moody, 2008a)

Table 6: EPA Waste Characterization Inspections January 2008 to June 2019, documents inspections performed by the EPA pertaining to Tier 1 changes to the baseline approvals at generator and storage sites for TRU waste. This table was added to the Annual Change Report at the request of the EPA during the EPA/DOE management meeting held July 29, 2010.

Table 7: EPA Quality Assurance Audits by Site January 2008 to June 2019, documents audits performed by the EPA for generator and storage sites for TRU waste. This table was added to the Annual Change Report at the request of the EPA during the EPA/DOE management meeting held July 29, 2010.

In accordance with the EPA's requests[1] and feedback, this report incorporates suggestions and guidance for capturing the appropriate level of detail and the layout of information with respect to the WIPP certification criteria. This report does not include administrative changes to procedures such as editorial changes, reformatting, correcting references, correcting inconsistency within a procedure, and other changes that do not change the substance or intent of the document.

The changes reported in this WIPP Annual Change Report do not represent significant changes pertaining to the disposal system.

[1] EPA to McFadden, 1998; Page to Klein, 1999a; Page to Triay, 1999b; Marcinowski to Triay, 2000; Marcinowski to Triay, 2001; Marcinowski to Triay, 2002a; Marcinowski to Triay, 2002; Marcinowski to Triay, 2003a; Marcinowski to Triay, 2003b; Marcinowski to Triay, 2003c; Gitlin to Detwiler, 2004; Gitlin to Triay, 2005a; Gitlin to Piper, 2005b; Gitlin to Moody, 2006a; Gitlin to Moody, 2006b.

2.0 INFORMATION REQUIRED BY 40 CFR 194.4(b)(4)

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4)

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) July 1, 2018 to June 30, 2019		
Regulatory Requirements	**Implementing Document or Activity that Changed**	**Description of the Change and DOE Assessment of the Impact of the Change**
40 CFR 194.4(b)(3), Conditions of Compliance Certification	Planned Change Notices and Planned Change Requests.	EPA to DOE, March 21, 2019. Approval of Planned Change Notice for Run-of-Mine Panel Closure System Installation and Abandonment of Waste Emplacement in Panel 9 at the Waste Isolation Pilot Plant
40 CFR 194.4(b)(4), Conditions of Compliance Certification	2017/2018 Annual Change Report	DOE to EPA, November 14, 2018. Submittal of the 2017/2018 Annual Change Report in accordance with 40 CFR 194.4(b)(4).
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Argonne National Laboratory (ANL)	None to report.
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Idaho National Laboratory (INL)	None to report.
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Los Alamos National Laboratory (LANL)	None to report.
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Oak Ridge National Laboratory (ORNL)	None to report.
40 CFR 194.8, Approval Process for Waste Shipment	Sandia National Laboratories (SNL)	EPA to DOE, April 6, 2019, Notification of the scope of EPA's baseline inspection of SNL Central

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) July 1, 2018 to June 30, 2019		
Regulatory Requirements	**Implementing Document or Activity that Changed**	**Description of the Change and DOE Assessment of the Impact of the Change**
from Waste Generator Sites for Disposal at the WIPP		Characterization Program (CCP) Remote Handled (RH) TRU waste characterization program inspection no. EPA-SNL-CCP-RH-04.19-8
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Savannah River Site (SRS)	None to report.
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Waste Control Specialists (WCS)	None to report.
40 CFR 194.8, Approval Process for Waste Shipment from Waste Generator Sites for Disposal at the WIPP	Lawrence Livermore National Laboratory (LLNL)	DOE to EPA, June 26, 2019. Carlsbad Field Office (CBFO) formal request for an EPA baseline inspection for LLNL CH TRU waste characterization operations. EPA to DOE, June 25, 2019. Notification of Scope of the EPA's 2019 Baseline Inspection of the LLNL-CCP.

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) July 1, 2018 to June 30, 2019		
Regulatory Requirements	**Implementing Document or Activity that Changed**	**Description of the Change and DOE Assessment of the Impact of the Change**
40 CFR 194.11-15	Certification/Recertification	EPA to DOE, October 9, 2018. Provided the status of issues relating to CRA-2014 and those that will be resolved in CRA-2019 and CRA-2024. EPA to DOE, December 14, 2018. Response to review of LANL report "Plutonium Oxidation State Distribution in the WIPP: Conceptual Model, Current Issues, and a Summary of Project- Specific Data." EPA to DOE, December 17, 2018. Summary of the status of the final two issues from CRA-2014. DOE to EPA, March, 2019. The EPA Administrator confirmed receipt of the 2019 Compliance Recertification Application.
40 CFR 194.14(b), Design of the Disposal System	Status of Experiments in the WIPP Underground July 1, 2018, to June 30, 2019.	**SEGA (Segmented Enriched Germanium Assembly) and MEGA (Multiple Element Germanium Array)** SEGA activities are currently on hold and the Q-room area of S-90 is partitioned off pending evaluation of the status of ground stability. **EXO (Enriched Xenon Observatory)** EXO completed high quality data collection in November 2018 and began decommissioning. EXO scientific equipment has been removed from the WIPP underground and returned to the appropriate member of the collaboration. Remaining items include several conexes, cleanroom modules, cryostat, and Lead (Pb) shielding that could not be removed

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) July 1, 2018 to June 30, 2019		
Regulatory Requirements	**Implementing Document or Activity that Changed**	**Description of the Change and DOE Assessment of the Impact of the Change**
		by hand. **LBRE (Low Background Radiation Experiment)** New Mexico State University (NMSU) experiments were conducted in June and July 2019 and the nematode population continues to be maintained in incubators. NMSU low background experiments were conducted from July 1, 2018 to June 30, 2019. **DMTPC (Dark Matter Time Projection Chamber)** DMTPC has completed data collection activities at WIPP and the Test Coordination Office is utilizing the space for office and equipment storage. **Salt Disposal Investigations (SDI)/Salt Defense Disposal Investigations (SDDI)** **Quarter 1** The prototype canister heater continued heating in June 2019 until it was turned off. The canister heater and salt pile will now cool until it is excavated for samples of the salt most affected by the heater. LANL, Lawrence Berkeley, and SNL turned on the borehole packer assembly heat. In addition, Electrical Resistivity Tomography (ERT) probes and heater were installed in preparation of conducting experiments next quarter. **Quarter 2** The next phase of the prototype

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) July 1, 2018 to June 30, 2019		
Regulatory Requirements	**Implementing Document or Activity that Changed**	**Description of the Change and DOE Assessment of the Impact of the Change**
		canister heater experiment will be to excavate samples from the salt pile to see the effects of the heater. LANL, Lawrence Berkeley, and SNL continued data collection from the borehole heater. In addition, initial tests of ERT were tested at WIPP successfully. Planning began on drilling a pattern of boreholes for a borehole heater test in the SDI drift. **Quarter 3** The prototype canister heater continued heating and data collection. LANL, Lawrence Berkeley, and SNL continued heating and data collection from the borehole heater in existing boreholes. The test location for initial testing of ERT was completed and equipment removed. The drilling pattern for boreholes for a borehole heater test in the SDI drift (N940 & ~E500) was completed. Drilling of borehole arrays in SDI (N940 & ~E500) was completed and will be followed by installation of the Brine Availability Test in Salt test equipment. One array will be heated and the other array maintained at ambient temperature. Three prototype tests are currently being conducted: (1) small-scale prototype canister (singular) heating test; (2) small-diameter borehole testing in an existing borehole; and (3) small-diameter (about 5 inches in diameter) borehole thermal tests. **Quarter 4**

Table 1: Changes in WIPP Conditions or Activities Reportable under Title 40 CFR Part 194.4(b)(4) July 1, 2018 to June 30, 2019		
Regulatory Requirements	**Implementing Document or Activity that Changed**	**Description of the Change and DOE Assessment of the Impact of the Change**
		LANL, Lawrence Berkeley, and SNL powered down the heater in the existing boreholes and are monitoring the cooling period. The recently drilled borehole arrays in SDI (N940 & ~E500) have most of the instruments installed and are awaiting power to begin the "Brine Availability Test in Salt" test equipment. One array will be heated and the other array maintained at ambient temperature.
40 CFR 194.21, Inspections	WIPP and Generator site inspections	EPA to DOE, August 2, 2018. EPA provided the oversight inspection results from the week of October 23, 2017. EPA found that "the DOE and its contract staff at the WIPP continue to meet commitments and regulatory requirements to track waste, monitor the disposal system, measure any radioactive releases, calculate potential dose to the public and document the results of these activities." EPA docket no. EPA-HQ-OAR-2001-0012-0477. EPA to DOE, March 14, 2019. EPA notification of inspection of compliance with public dose limits at 40 CFR Part 191, Subpart A on March 19-21, 2019.
40 CFR 194.22, Quality Assurance (QA)	Quality Assurance Audit	EPA to DOE, May 22, 2019. EPA provided audit results from the EPA audit of the CBFO. Audit No. AUD-CBFO-FEB-2019. February 26, 2019.
40 CFR 194.42, Monitoring	Ground Water Monitoring	None to report.

Table 2: Procedure/Plan Revision

Table 2: Procedure/Plan Revision July 1, 2018 to June 30, 2019		
Procedure/Plan	**Revision, Effective Date**	**Description of Change**
WP 12-RC.01, Quality Assurance Program Plan for Sampling Emissions of Radionuclides to the Ambient Air at the Waste Isolation Pilot Plant	Revision 12, July 10, 2018	Updated text to include Interim Ventilation System (IVS) qualification and testing. Added quarterly verification testing as required by ANSI/HPS N13.1-1999.
WP 05-WH1011, CH Waste Processing	Revision 60, July 31, 2018	Updated to include Documented Safety Analysis (DSA) Rev. 6A.
NP 9-1, Analyses	Revision 10, January 8, 2019	This procedure has been edited as part of the three-year review process. It has been revised to remove the "Long, 2003" reference as it is no longer applicable and removed a bullet in Section 2.1.3 that is not applicable.
WP 05-WH1058, CH Waste Handling Abnormal Operations	Revision 21, January 10, 2019	Added Section 5.16, Drum Wrapping Assembly during Contact Handled (CH) Waste Handling.
WP 09-3427, Waste Data System (WDS) User's Manual	Revision 19, January 10, 2019	• Divided the Shipper Generator dashboard into separate dashboards for the Waste Certification Official (WCO) and Transportation Certification Official (TCO). • Deleted the WDS Data Dictionary is maintained by Waste Information Tracking System (WITS) personnel and is updated for each WDS release in Section 2.1.1. • Deleted as of revision 5 in Section 2.1.4. • Corrected WD Access Request Form number listed in Section 4.2. • Modified Section 6.2 and Table 1 - WDS Roles and User Characteristics. • Replaced term Shipper Generator to WCO and TCO throughout the document. • Modified Section 6.3. • Replace Packaging Dashboard screen shot in Section 6.7. • Deleted QA records in Section 13.0. • Deleted Minimum requirements prior to assigning user access to a WDS role, which is not Read-Only role in Section 15.0.
WP 07-EU1301, Manually	Revision	Added inspection clarification with respect

Table 2: Procedure/Plan Revision July 1, 2018 to June 30, 2019		
Procedure/Plan	**Revision, Effective Date**	**Description of Change**
Acquired Geomechanical Instrument Data	13, January 15, 2019	to extensometers in Note of Section 5.6.
WP 07-EU1303, Geomechanical Instrument Data Processing	Revision 11, January 15, 2019	• Updated Job Hazard Analysis and Precautions and Limitations section. • Removed Steps 2.8 through 2.11, requirements for a ground assessment and notifications to be made following instrument polling. • Updated Hazardous Waste Facility Permit (HWFP) requirements to align with WP 02-RC.06, WIPP Hazardous Waste Facility HWFP Inspection Oversight Program.
CBFO Policy: Implementation of a Tracking Methodology to Ensure Compliance with the Total Capacity Limit for Transuranic Waste in Public Law 102-579, The Waste Isolation Pilot Plant Land Withdrawal Act, As Amended by Public Law 104-201 (H.R 3230, 104th Congress)	Issued January 16, 2019.	New Policy.
DOE/WIPP-97-2238, Periodic Confirmatory Measurement Protocol for the Waste Isolation Pilot Plant	Revision 12, January 21, 2019	• Updated document to reflect IVS qualification and testing. • Updated document to reflect Supplemental Ventilation System operation. • Updated Radiological Control and Dosimetry documents.
02-EM1012, Airborne Particulate Sampling	Revision 19, January 21, 2019	Added solar powered sampling trailer.
SP 9-7, WIPP Well Water-level Monitoring	Revision 8, January 30, 2019	This procedure was revised to incorporate portions of SP 12-5, "Depth-to-Water Measurement Using a Solinst Brand Electric Sounder." Any references to specific brands of equipment were removed.
WP 12-RL.01, Radiochemistry Quality Assurance Plan	Revision 22, February 22, 2019	• Removed Ortec™ detector from equipment list. • Updated training requirements for Staff Radiochemist.
WP 02-PC.05, Processing Changes to the EPA	Revision 6, March	Total rewrite. Changed the title of the plan. Changed the logo. Deleted all discussion

Table 2: Procedure/Plan Revision July 1, 2018 to June 30, 2019		
Procedure/Plan	**Revision, Effective Date**	**Description of Change**
Compliance Certification Plan	11, 2019	pertaining to Polychlorinated Biphenyl (PCB) disposal.
SP 12-12, Malvern Mastersizer Particle Analyzer 3000 and the Sample Dispersion Units	Revision 3, March 25, 2019	This revision includes updates to recognize the new Malvern Mastersizer equipment.
NP 17-1, Records	Revision 10, March 28, 2019	This procedure was modified for clarity and added resolution regarding the Records Inventory and Disposition Schedule (RIDS) program.
SP 17-1, Records Center Operations	Revision 10, March 28, 2019	This procedure was modified to be consistent with changes in the most recent revision of NP 7-1, Records.
SP 12-13, Revision 1, “Olympus BX60 Microscope.”	Retired, April 10, 2019	Retired procedure due to microscope no longer in use.

Table 3: Waste Emplacement Summary Report

Table 3: Waste Emplacement Summary Report, July 1, 2018 to June 30, 2019				
TRU Waste Inventory				
	Reporting Period[1] Emplaced Volume (m^3)*	**Cumulative[3] Emplaced Volume (m^3)**		
RH TRU	0 (TRU Mixed Waste Volume) 0 (LWA TRU Waste Volume)[2]	646 (TRU Mixed Waste Volume) 359 (LWA TRU Waste Volume)[2]		
CH TRU	770 (TRU Mixed Waste Volume) 211 (LWA TRU Waste Volume)[2]	95,682 (TRU Mixed Waste Volume) 67,826 (LWA TRU Waste Volume)[2]		
Waste Components Inventory				
	Reporting Period[1] Emplaced Mass (kg)*	**Cumulative[3] Emplaced Mass (kg)**	**Maximum Emplaced Limiting Value[4] (kg)**	**Percent of Limiting Value[4] Emplaced**
Cellulose, Plastic, Rubber Materials[5]	29,664	9,081,784	22,000,000	41.28%
	Reporting Period[1] Emplaced Mass (kg)*	**Cumulative[3] Emplaced Mass (kg)**	**Minimum Emplacement Limiting**	**Percent of Limiting Value[4] Emplaced**
Fe-Metals[6]	148,428	29,015,601	20,000,000	Minimum met
Non-Fe Metals	2387	446,397	2,000	Minimum met
Emplaced Radiological Activity Inventory (curies)				
Radionuclide	**Cumulative Activity in FY 2017/2018 Annual Change Report[7]**	**CH Repository Reporting Period Activity[7]**	**RH Repository Reporting Period Activity[7]**	**Total Activity as of June 30, 2019[7]**
^{241}Am	2.608E+05	4.30E+03	5.00E-01	2.652E+05
^{137}Cs	1.445E+04	4.01E+00	1.00E+01	1.447E+04
^{238}Pu	4.851E+05	4.00E+02	7.00E-01	4.855E+05
^{239}Pu	3.364E+05	9.00E+02	3.00E-01	3.373E+05
^{240}Pu	8.335E+04	2.20E+02	1.00E-01	8.357E+04
^{242}Pu	2.782E+01	3.40E-01	3.00E-04	2.817E+01
^{90}Sr	7.623E+03	6.474E+01	6.00E+00	7.694E+03
^{233}U	6.942E+00	6.40E-02	0	7.037E+00
^{234}U	8.810E+01	3.80E-01	1.00E-03	8.847E+01
^{238}U	1.765E+01	4.60E-01	3.00E-05	1.811E+01
Total	**1.188E+06**	**6.0E+03**	**2.00E+01**	**1.194E+06**

Magnesium Oxide (MgO)[8] and Cellulose, Plastic and Rubber (CPR) Mass Emplaced Per Waste Panel				
Panel	**Room**	**MgO (kg)**	**CPR* (kg)**	**Excess Factor**
1	all	4,482,356	1,237,685	2.01[9]
2	2-7	5,972,300	1,242,279	2.27[9]
2	1	691,515	186,469	1.71
3	7	960,120	109,685	3.83
3	6	954,405	229,646	1.93
3	5	1,022,985	284,651	1.70
3	4	960,120	255,172	1.79
3	3	931,545	243,860	1.89
3	2	942,975	228,067	2.02
3	1	662,940	183,088	1.76
4	7	942,975	248,903	1.90
4	6	925,830	267,494	1.71
4	5	948,690	265,302	1.71
4	4	1,049,655	290,739	1.76
4	3	1,015,365	285,755	1.70
4	2	931,545	374,327	1.22[8]
4	1	668,655	265,884	1.23
5	7	937,260	353,286	1.28
5	6	875,477	140,033	2.85
5	5	782,346	298,832	1.24
5	4	737,167	225,449	1.64
5	3	714,286	215,961	1.61
5	2	730,612	194,069	1.84
5	1	485,714	135,766	1.75
6	7	744,218	167,605	2.11
6	6	666,667	189,775	1.74
6	5	474,294	203,497	1.24
6	4	471,586	202,434	1.25
6	3	406,533	171,330	1.25
6	2	291,716	121,710	1.22
6	1	235,107	80,223	1.46
7	7	57,692	15,900	1.76
7	6	103,401	28,853	1.90

Magnesium Oxide (MgO)[8] and Cellulose, Plastic and Rubber (CPR) Mass Emplaced Per Waste Panel				
Panel	**Room**	**MgO (kg)**	**CPR* (kg)**	**Excess Factor**
7	5	310,204	76,159	1.77
7	4	163,265	32,358	2.12
7	3	104,762	29,540	1.50

Footnotes

1. Reporting Period is July 1, 2018, through June 30, 2019.
2. Pursuant to the 1/16/19 CBFO policy on Tracking Methodology to Ensure Compliance with Total Capacity Limit for TRU waste in the WIPP, Land Withdrawal Act (LWA) volumes will now be reported. Both the TRU mixed waste volume and the LWA TRU waste volume are represented in this report due to the issuance of the policy in the middle of the reporting period.
3. Cumulative period includes from the beginning of emplacement until June 30, 2019.
4. Limiting Value—Values from CRA 2019 Section 24. These values are based on inventory assumptions.
5. Cellulose, Plastic, Rubber Materials (CPR) includes the waste, container materials, emplacement materials and non-containerized waste.
6. Fe-Metals include both materials in the waste and containers in total.
7. There is no decay correction for the listed isotope activities. All isotopic activities reported are from the time of the original assay. It is understood that some isotopes may have reached secular equilibrium after disposal.
8. New minimum value for excess factor of MgO to be implemented as approved by EPA (February 11, 2008) reduces excess factor from 1.67 to 1.20 and ensures minimum reactivity of 94%.
9. MgO, CPR, and Excess Factor results for all of panel 1 and rooms 2-7 of panel 2 have been recalculated to replace averaged data with actual emplaced data.

Table 4: Performance Assessment, Software, and Hardware Changes

Table 4: Performance Assessment, Software, and Hardware Changes, July 1, 2018 to June 30, 2019			
WIPP Codes/Software and Code Version	**Version Date**	**Date of Change**	**Description of Change**
BRAGFLO Version 6.03	N/A		Implement changes to correct the calculation of reference pressure for the KRP=1 capillary pressure function, correct the calculation of minimum effective saturation for KRP=8 characteristic equations, and correct the KRP=5, 6, 7 capillary pressure functions per SPR18-002. Additionally, implement changes to enable certification calculations that involve radioactive decay and radiolysis.
PREBRAG Version 8.03			• Updated "Makefile" to ensure consistent compiler options for all cluster hardware. • Revised sorting of ISOIDX to correct element to radionuclide referencing error for solubilities. Updated default data for XLIM to 1E-7, consistent with documentation. • Added GDEPFAC to radiolysis deck to allow specification of the proportion of energy of solid (wetted) radionuclides contributing to radiolysis of brine. • Added test case (test 5) to test previously unqualified radiolysis and radionuclide decay functionality.
PANEL 4.04		April 02, 2019	Primary modifications to this code include: • Change the microbial colloid actinide solubility enhancement equation (see variable XMIC) to be consistent with the CRA-2014 CAPMIC parameter definition and units. • Add ability for PANEL to read the baseline solubility and solubility uncertain parameters as currently named in the (MATSET-generated) CDB file and to select the proper baseline solubility parameter based on the scenario and brine dilution factor. • Make the behavior of Np consistent with Solubility Model. • Add the elements Cf, Pm, Pa, Ra, Sm, and Pb to the array ELEMS. • Updated the default values for half-life and atomic masses to be consistent with those used in the WIPP PA parameter database. • Increase the sizes of the arrays TFLUX, TFLXOUT, and BRINEV to accommodate increased output frequency in the BRAGLFO-provided time, flux, and volume data.

Table 4: Performance Assessment, Software, and Hardware Changes, July 1, 2018 to June 30, 2019			
WIPP Codes/Software and Code Version	**Version Date**	**Date of Change**	**Description of Change**
NUTS 2.06		April 02, 2019	Code was modified to correct the time comparison with BRAGFLO ASCII input files with NUTS internal time variable.
PAPDB 2.00		April 04, 2019	PAPDB was moved from MySQL Server on Solaris to MariaDB Server on Linux.

3.0 EXTRA-REGULATORY INFORMATION REQUESTED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

Table 5: Passive Institutional Controls Activity

Table 5: Passive Institutional Controls Activity, July 1, 2018 to June 30, 2019	
Date	**Description of Activity**
September 12, 2018	In continuance of the efforts to obtain papers and opinions relating to the Records, Knowledge and Memory (RK&M) international initiative through the Nuclear Energy Agency (NEA), DOE has secured a full paper session and a half panel session (R8.6) at Waste Management Conference 2019. DOE will utilize papers in an expert elicitation to create a new Passive Institutional Controls conceptual model. This new model will be in coordination with the international guidelines currently under development by the NEA RK&M group.
March 4, 2019	The RK&M international initiative, with support from representatives of CBFO and CBFO contractors, held a full paper session at the 2019 Waste Management Symposia. Seven authors presented their peer reviewed papers in the session.

Notes:

In a 2008 letter from EPA to DOE (Reyes, 2008b), EPA changed the schedule for Passive Institutional Controls development as previously defined in Triay (2002c).

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
Advanced Mixed Waste Treatment Plant (AMWTP)/ Accelerated Retrieval Project (ARP)	March 2, 2010, Desk- top evaluation	Tier 1 evaluation adding BN510 waste stream	EPA Docket No. A-98-49; II-14-127, June 10, 2010
	November 17-18, 2010	EPA unannounced continued compliance inspection	EPA Docket No. A-98-49; II-A4-143, March 16, 2011
	October 30-November 1, 2012, and February 26, 2013	EPA Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-173, April 25, 2013
	October – December 2012	Tier 1 addition of ANLE-generated Summary Category Groups (SCG) S3000 and S5000 CH waste and SCG S5000 Materials and Fuels Complex (MFC) CH waste	EPA Docket No. A-98-49; II-A4-169, January 2013
	February 2013	Tier 1 Subsurface Disposal Area (SDA) waste stream	EPA Docket No. A-98-49; II-A4-174, July 9, 2013
	February 2013	Tier 1 adding LANL debris waste to the super-compacted CH AMWTP debris waste	EPA Docket No. A-98-49; II-A4-178, September 16, 2013
	February 11, 2014	Tier 1 adding INL-generated waste	EPA Docket No. A-98-49; II-A4-180, February 11, 2014
	November 3-5, 2014	Continued compliance inspection	Final document has not been released at this time
	No inspection performed	Tier 1 approval adding waste stream WDP-AMWTP-15-003, Load Management	No Docket No. assigned, approval February 9, 2015
	No inspection performed	Approval of assembly of CH waste pay loads of Product Drum Assembly-High Minimum Detectable Activity silvers	No Docket No. assigned, approval May 13, 2015
	May 13, 2015	Tier 1 change to allow	No Docket No. assigned

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
		assembly of CH waste payloads	
	July 14-16, 2015	Tier 1 to allow CH Retrieval Box Assay System	EPA Docket No. A-98-49; II-A4-200, October 19, 2015
	November 17-19, 2015	Continued compliance inspection of Idaho Treatment Group	EPA Docket No. A-98-49; II-A4-206, April 4, 2016
	No inspection performed	DOE closure of last item opened by EPA on Continued Compliance	No Docket No., June 13, 2016
	August 8-10, 2017	EPA baseline inspection	EPA Docket No. A-98-49; II-A4-218, May 4, 2018
	March 6, 2019	Approval of In Situ Object Counting System process	EPA Docket no. unknown, March 6, 2019
Argonne National Laboratory-Illinois (ANL)	May 28, 2008	Tier 1 SRS-CCP RH Visual Examination (VE) newly packaged waste	EPA Docket No. A-98-49; II-A4-102, July 10, 2008
	October 2008	Tier 1 addition of 100 drums of Alpha Gamma Hot Cell Facility debris waste to Argonne East Remote Handled Debris Mix (AERHDM) waste stream	EPA Docket No. A-98-49; II-A4-136, October 2008
	May 20-21, 2010, Desk-top evaluation	Tier 1 SRS-CCP addition of 30 containers to AERHDM waste stream	EPA Docket No. A-98-49; II-A4-132, September 13, 2010
	June 29, 2010, Desk- top evaluation	Tier 1 SRS-CCP addition of 120 containers to AERHDM waste stream	EPA Docket No. A-98-49; II-A4-134, September 28, 2010
	May 4 and 18, 2010, EPA Inspection	Tier 1 SRS-CCP addition of 30-gallon containers of Fuel Examination Waste (FEW) to previously approved RH debris AERHDM waste stream	EPA Docket No. A-98-49; II-A4-140, November 22, 2010

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
	September 2011 EPA Inspection	Tier 1 to add eight 55-gallon K-Wing FEW containers to RH debris waste stream AERHDM	EPA Docket No. A-98-49, II-A4-158, February13, 2012
	January 3, 2012 EPA Inspection (11-2060)	Tier 1 to evaluate Radiation Characterization Approach of Solidified Liquid Waste from K-Wing, Building 205, 55-gallon	EPA Docket No. A-98-49: II-A4-162, June 14, 2012
	February – June, 2012 EPA Inspection Desk-top Review	Tier 1 debris from the Reduced Enrichment Research and Test Reactor (RERTR) program and the second batch of FEW packaged in 30-gallon containers	EPA Docket No. A-98-49; II-A4-140, October 4, 2012
	February – June, 2012 EPA Inspection	Tier 1 to evaluate solidified liquid waste from K-Wing, Bld. 205, 55-gallon drum	EPA Docket No. A-98-49; II-A4-162, June 14, 2012
	May 8-9, 2012 EPA Inspection	Tier 1 to include Lot 2 waste ID-ANLE-S5000	EPA Docket No. A-98-49; II-A4-163, July 25, 2012
	EPA Inspection July 31-August 1, 2012	Tier 1 of the Analytical Chemistry Lab (ACL)	EPA Docket No. A-98-49; II-A4-165, September 4, 2012
	September, 2012 EPA Desk-top evaluation	Tier 1 evaluation of waste stream AERHDM RERTR and second batch debris (bldg. 212, 30-gallon container)	EPA Docket No. A-98-49; II-A4-167, October 4, 2012
	February 2014	Tier 1 evaluation of five containers of solidified liquid waste from K-Wing Bldg. 205 to be included in the AERHDM waste stream	EPA Docket No. A-98-49; II-A4-181, March 24, 2014
Bettis Atomic Power Laboratory	August 30, 2010, September 23,	EPA Baseline Inspection No. EPA-BAPL-CCP-RH-04.11-8	EPA Docket No. A-98-49; II-A4-151, July 2011

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
(BAPL)	2010, December 8, 2010 and April 12-13, 2011 EPA Baseline Inspection		
General Electric Vallecitos Nuclear Center (GEVNC)	December 2-4, 2008	CCP RH Initial Certification	EPA Docket No. A-98-49; II-A4-115, August 26, 2009
Hanford	April 27-29, 2010	CH Baseline Inspection	EPA Docket No. A-98-49; II-A4-138, December 21, 2010
	March 22-23, 2011	Tier 1 adding Super High Efficiency Neutron Counter (HENC) A	EPA Docket No. A-98-49; II-A4-146, May 2, 2011
	November 2011	Tier 1 adding CH S3000 RLCCPPUNIT waste stream	EPA Docket No. A-98-49; II-A4-154, November 10, 2011
Idaho National Laboratory (INL)	January 2008	Tier 1 K cell waste	EPA Docket No. A-98-49; II-A4-97, January 1, 2008
	April 11, 2008	Tier 1 high-range gamma probe for Dose-to-Curie (DTC)	EPA Docket No. A-98-49; II-A4-98, April 11, 2008
	June 9, 2008, Desk-top evaluation	Tier 1 Waste Area Groups (WAGs) density range extension	EPA Docket No. A-98-49; II-A4-107, October 7, 2008
	December 9-11, 2008	Tier 1 addition of VE CH S5000 retrievably stored waste stream	EPA Docket No. A-98-49; II-A4-110, March 4, 2009
	September 22, 2009	Tier 1 visual examination technique	EPA Docket No. A-98-49; II-A4-118, September 22, 2009
	September 22, 2009	Tier 1 recalibration of the HENC	EPA Docket No. A-98-49; II-A4-119, September 22, 2009
	December 8-9, 2009	Tier 1 addition of ID-HFEF-S5400-RH Lot 1A	EPA Docket No. A-98-49; II-A4-122, February 1, 2010

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
		and ID-ANLE-S5000 waste streams	
	April-May 2010 Desk-top evaluation	Tier 1 addition of ID-MFC-S5400-RH waste stream	EPA Docket No. A-98-49; II-A4-126, June 11, 2010
	December 8-9, 2009, January 12-13, 2010, and February 17, 2010	Tier 1 addition of ID-INTEC-RH waste stream	EPA Docket No. A-98-49; II-A4-130, August 17, 2010
	July 13, 2009, to June 2010 Desk-top evaluation	Tier 1 addition of Osprey and ID-HFEF-S5400-RH Lot 1B waste stream	EPA Docket No. A-98-49; II-A4-131, August 23, 2010
	July 1, 2009 Desk-top evaluation	Tier 1 High Efficiency Neutron Counter (HENC) operating range extension	EPA Docket No. A-98-49; II-A4-119, September 22, 2010
	September 22, 2009	Tier 1 addition of ID-RTC-S3000 waste stream	EPA Docket No. A-98-49; II-A4-137, November 1, 2010
	August 9-10, 2010	Tier 1 addition of IN-ID-NRF-153 waste stream	EPA Docket No. A-98-49; II-A4-135, November 1, 2010
	November 16-17, 2010	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-142, March 16, 2011
	March 23, 2011	Tier 1 addition of Lot 4A to waste stream ID-HFEF-S5400-RH	EPA Docket No. A-98-49; II-A4-145, March 23, 2011
	June 23, 2011	Tier 1 supplemental calibration for the WAGS to allow filters	EPA Docket No. A-98-49; II-49-150, June 23, 2011
	October 4-5, 2011	Tier 1 to include RH waste stream IN-ID-NRF-SPC	EPA Docket No. A-98-49; II-A4-159, March 12, 2012
	January 4, 2012	Inspection of Waste Stream	EPA Docket No. A-98-49; II-A4-157, January 4, 2012

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
		ID- NRD.1	
	May 8-9, 2012	Tier 1 radiation approach of 48 additional canisters for waste stream ID-ANLE-S5000 AERHDM (Lot 2)	EPA Docket No. A-98-49; II-A4-163, July 25, 2012
	February 2013	Tier 1 evaluate Stored Waste Examination Pilot Plant (SWEPP) Gamma-Ray Spectrometer (SGRS) new calibration	EPA Docket No. A-98-49; II-A4-172, February 26, 2013
	May 7-9, 2013	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-175, July 16, 2013
	December 3-5, 2013	Tier 1 adding waste stream IN- ID-BTO-030 (Lot 3)	EPA Docket No. A-98-49; II-A4-191, November 10, 2014
	April 16, 2014	Tier 1 addition of waste stream ID-EBR-S5000	EPA Docket No. A-98-49; II-A4-183, April 16, 2014
	May 5-7, 2014	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-190, July 15, 2014
	July 15, 2014	Tier 1 change for the addition of Lot 5C to waste stream ID- HFEF-S5400-RH	EPA Docket No. A-98-49; II-A4-185, July 15, 2014
	July 15, 2014	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-190, July 15, 2014
	June – October 2014	Tier 1 adding waste stream ID- TRA-W345-RH (Lot8B)	EPA Docket No. A-98-49; II-A4-194, November 5, 2014
	No inspection performed	Tier 1 approval for waste stream ID-HFEF-S5400-RH (Liner 3; Lot 5C)	EPA Docket No. A-98-49; II-A4-198, September 8, 2015
	May 19-21, 2015	Tier 1 adding waste stream ID- ANLW-W269-RH (Lot 8C)	EPA Docket No. A-98-49; II-A4-201, November 10, 2015
	No inspection performed	Approval of Tier 1 to include waste streams ID-RF-S5300-	EPA Docket No. A-98-49; II-A4-203, November 13, 2015

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
		RH and ID-RF-S5100-RH (Lot 8A)	
Los Alamos National Laboratory (LANL)			
	May 25-26, 2010	Tier 1 HENC unit 2 Report (non-approval)	EPA Docket No. A-98-49; II-A4-139, November 8, 2010
	May 25-26, 2010	LANL-CCP CH TRU Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-141, February 9, 2011
	April 28, 2010 (10-0810)	CH Tier 1 request expanding the calibration range to the HENC unit 2 to accommodate CH lead-lined 55-gallon drums	EPA Docket No. A-98-49; II-A4-139, April 30, 2012
	October 28, 2011	Tier 1 addition of the Super HENC	EPA Docket No. A-98-49; II-A4-153, October 28, 2011
	June 20-21, 2012	CH Tier 1 request for calibration range extension for the Super HENC and the extend ability for the HENC unit 1 to assay lead-lined 55-gallon drums containing solidified materials	EPA Docket No. A-98-49; II-A4-164, August 14, 2012
	September – November, 2012	Tier 1 approval to add summary category group S4000	EPA Docket No. A-98-49; II-A4-168, December 31, 2012
	June 4-5, 2013	Tier 1 to include the Mobile ISOCS for standard waste boxes (SWBs), Corrugated	EPA Docket No. A-98-49; II-A4-176, July 22, 2013

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
		Metal Boxes (CMBs), and 55-gallon drums	
	February 2014	Continued Compliance Inspection	Final document has not been released at this time
	No inspection performed	Tier 1 approval of HENC3	EPA Docket No. A-98-49; II-A4-199, September 8, 2015
	No inspection performed	DOE closure of last item opened by EPA on Continued Compliance	No Docket No., June 13, 2016
	February 7-9, 2017	Baseline inspection of TRU waste characterization program	EPA Docket No. A-98-49; II-A4-212, October 4, 2017
	May 23-25, 2017	Tier 1 approval High Efficiency Real Time Radiography (HERTR), HENC2, Super HENC, Mobile In-Situ Objects Counting System Large Container Counter (MILCC)	EPA Docket No. A-98-49; II-A4-213, October 13, 2017
	November 8, 2018	Approval of MILCC-03 equipment	EPA DOCKET No. UNKNOWN
Oak Ridge National Laboratory (ORNL)	(Desk-top evaluation)	Tier 1 CH Calibration Extension for segmented gamma scanner (SGS)	EPA Docket No. A-98-49; II-A4-108, October 8, 2008
	November 17, 2008	Tier 1 CH Calibration Extension for Drum Waste Assay System (DWAS) Imaging Passive Active Neutron (IPAN)	EPA Docket No. A-98-49; II-A4-109, January 8, 2009
	June 30-July 2, 2008	EPA RH Baseline Inspection No. EPA-ORNL-CCP-RH-06.08-8	EPA Docket No. A-98-49; II-A4-111, February 3, 2009
	May 6, 2009	Tier 1 OR-REDC-RH-HET to	EPA Docket No. A-98-49;II-A4-120, November 30,

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
		include Solvent Extraction Test Facility (SETF) Time Period (November 1978-November 1991) waste	2009
	August 11-12, 2009	Tier 1 addition of CH S4000 SCG waste	EPA Docket No. A-98-49; II-A4-117, October 7, 2009
	November 23, 2009	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-121, November 23, 2009
	February 23-24, 2010	Tier 1 addition of CH VE and adding the Isotopic System Gamma (IQ3)	EPA Docket No. A-98-49; II-A4-125, March 30, 2010
	February-March, 2010 Desk-top evaluation	Tier 1 addition of RH SETF Pre-79 waste stream	EPA Docket No. A-98-49; II-A4-124, April 21, 2010
	March 23, 2011	Tier 1 addition of Nuclear Fuel Services Trench B soils to waste stream OR-NFS- CH-SOIL	EPA Docket No. A-98-49; II-A4-144, March 23, 2011
	February 4-6, 2014	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-186, June 18, 2014
	June 18, 2014	Tier 1 Adding Refurbished IQ3	EPA Docket No. A-98-49; II-A4-186, June 18, 2014
	July 2014	Tier 1 evaluation of CH waste with addition of SCG S3000	EPA Docket No. A-98-49; II-A4-186, June 9, 2014
	August 5-6, 2014	Tier 1 adding MILCC2	EPA Docket No. A-98-49; II-A4-192, October 21, 2014
	No inspection performed	Tier 1 approval adding VE for S5400 and S5000 CH wastes	EPA Docket No. A-98-49; II-A4-193, November 10, 2014
	August 2-4, 2016	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-207, June 14, 2017
	No inspection performed	Approval of assembly of CH waste pay loads at ORNL Transuranic Waste Processing Center	No Docket No. given, June 19, 2017

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
	March 6-8, 2018	Continued Compliance Inspection	EPA Docket No. A098-49; II-A4-217, May 9, 2018
	June 18, 2014	Tier 1 Adding Refurbished IQ3	EPA Docket No. A-98-49; II-A4-186, June 18, 2014
	July 2014	Tier 1 evaluation of CH waste with addition of SCG S3000	EPA Docket No. A-98-49; II-A4-186, June 9, 2014
	August 5-6, 2014	Tier 1 adding MILCC2	EPA Docket No. A-98-49; II-A4-192, October 21, 2014
	July 7, 2017	Tier 1 approval for waste stream OR-REDC-RH-HET	EPA Docket No. EPA-HQ-OAR-2008-0820-0004 EPA-HQ-OAR-2001-0012-0471
	September 5, 2017	Tier 1 approval of TRU waste payload assembly of CH	EPA DOCKET No. UNKNOWN
	September 26, 2018	Waste Stream OR-REDC-RH-HET (Appendices G&H) Tier 1 approval on	EPA Docket No. EPA-HQ-OAR-2008-0820-0004 EPA-HQ-OAR-2001-0012-0471
	July 8, 2019	Waste Stream OR-CHEM-RH-HET Tier 1 approval	EPA DOCKET No. UNKNOWN
	No inspection performed	Tier 1 approval adding VE for S5400 and S5000 CH wastes	EPA Docket No. A-98-49; II-A4-193, November 10, 2014
Sandia National Laboratories (SNL)	March 8, 2011, May 10, 2011, June 7-8, 2011	Initial Baseline Inspection	EPA Docket No. A-98-49; II-A4-155, November 23, 2011
	December 2011-January 2012	Tier 1 to include RH containers generated from waste groups PKE00027/54 and PKE00047 to existing waste stream SNL-HCF-S5400-RH	EPA Docket No. A-98-49; II-A4-160, March 28, 2012
Savannah River Site (SRS)	March 24-26, 2009	Tier 1 addition of Non-destructive Assay Box Counter (NABC)	EPA Docket No. A-98-49; II-A4-114, August 4, 2009
	September 30, 2010 Desk-top evaluation	Tier 1 addition of CH S3000 waste	EPA Docket No. A-98-49; II-A4-123, March 23, 2010
	November 2009 –	Tier 1 addition of	EPA Docket No. A-98-49; II-A4-129, September 13,

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
	March 2010	SR-BCLDP.001.001, SR-BCLDP.001.002, SR-BCLDP.002, SR-BCLDP.003, SR-BCLDP.004.002, SR-BCLDP.004.003 waste streams	2010
	March 24-26, 2009	Tier 1 extension of calibration to the NABC	EPA Docket No. A-98-49; II-A4-133, September 14, 2010
	May 12, 2011 timeframe, EPA Desk- top evaluation	Tier 1 allowing use of American Society for Testing and Materials (ASTM) standard efficiency calibration method for NABC	EPA Docket No. A-98-49; II-A4-148, May 31, 2011
	July 26, 2011 (11-1419)	RH EPA Baseline adding SR- RH-FBL.01 (remainder of RH at SRS)	EPA Docket No. A-98-49; II-A4-161, April 18, 2012
	August 14-15, 2012	Tier 1 request for using 5-foot setback configuration of the NABC	EPA Docket No. A-98-49; II-A4-166, September 11, 2012
	February, 2013	Tier 1 to evaluate waste stream SR-RH-235F.01	EPA Docket No. A-98-49; II-A4-170, February 12, 2013
	February, 2013	Tier 1 NABC Box Segmented Gamma Scanner 5-foot setback for SWB's	EPA Docket No. A-98-49; II-A4-171, February 2013
	June – July, 2013	Tier 1 SR-RH-221H.01 waste stream	EPA Docket No. A-98-49; II-A4-177, August 20, 2013
	March, 2014	Tier 1 change calibration to include a 5-foot detector setback configuration on the Nondestructive Assay Box Counter to assay Standard Large Box's (SLB) Type 2	EPA Docket No. A-98-49; II-A4-182, March 2014

Table 6: EPA Waste Characterization Inspections – January 2008 to March 2019			
Generator Site	**Date of Inspection**	**EPA Inspection No./Tier 1 Evaluation**	**Docket Number/Approval Date**
	May 22, 2014	Tier 1 SR-RH-SDD.01 (Sealed Sources)	EPA Docket No. A-98-49; II-A4-184, May 2014
	August – October 2014	Continued Compliance Inspection	EPA Docket No. A-98-49; II-A4-195, February 23, 2015
	December 2014	Inspection SR-BCLDP.003	EPA Docket No. A-98-49; II-A4-196, December 31, 2014
	February 2015	Follow-up Continued Compliance Inspection for Real-time Radiography (RTR) Operations, 1-Drum BCO152	EPA Docket No. A-98-49; II-A4-195, February 23, 2015
	June 15, 2016	Tier 1 approval for waste stream SR-RH-MNOPAD1.01	EPA DOCKET No. UNKNOWN
	June 5, 2017	Tier 1 approval for waste stream SR-RH-773A.01	EPA DOCKET No. UNKNOWN
	No inspection performed	Tier 1 approval of RH-SWD.01 waste	EPA Docket No. A-98-49; II-A4-197, August 3, 2015
	No inspection performed	Tier 1 approval of RH-772F.01 waste	EPA Docket No. A-98-49; II-A4-202, November 25, 2015
	No inspection performed	Tier 1 SR-RH-MNDPAD1.01 waste stream	EPA Docket No. A-98-49; II-A4-204, June 15, 2016
	No inspection performed	Tier 1 approval of SR-RH-773A.01 waste containers	EPA Docket No. A-98-49; II-A4-210, June 5, 2017

Table 7: EPA Quality Assurance Audits by Site – January 2008 to June 2019

Table 7: EPA Quality Assurance Audits by Site – January 2008 to June 2019		
Site	**Audit Date**	**Purpose**
Advance Mixed Waste Treatment Plant (AMWTP)	August 18-20, 2009	Recertification Audit A-09-19
	August 23-26, 2010	Recertification Audit A-10-24
	November 1-3, 2011	Recertification Audit A-12-03
	October 15-18, 2012	Recertification Audit A-13-01
	October 1-3, 2013	Recertification Audit A-14-01
	October 7-9, 2014	Recertification Audit A-15-01
	September 24, 2014 to February 26, 2015	Remote audit of the AMWTP QA program for NQA-1-1989 compliance. EPA docket no: A-98-49; II-A1-121
	October 27-29, 2015	Recertification Audit A-16-01
	December 12-16, 2016	Recertification Audit A-17-04
Argonne National Laboratory East (ANLE)-CCP	July 10, 2008	RH VE Newly Packaged Waste Audit A-08-03
	August 5-7, 2008	CCP RH Recertification Audit A-08-24
	August 4-6, 2009	CCP RH Recertification Audit A-09-21
	August 3-5, 2010	CCP RH Recertification Audit A-10-23
	August 2-4, 2011	CCP RH Recertification Audit A-11-20
	August 28-30, 2012	CCP RH Recertification Audit A-12-16
	December 19, 2012	CCP Recertification Audit A-12-16
	August 27-28, 2013	CCP Recertification Audit A-13-24
	September 16-18, 2014	CCP Recertification Audit A-14-20
	November 1-3, 2016	CCP Recertification Audit A-17-08
	September 28, 2018	CCP Recertification Audit A-18-17
Bettis Atomic Power Laboratory (BAPL)	April 19-21, 2011	Initial Certification Audit A-11-12
	April 24-26, 2012	Closeout Audit A-12-10
Carlsbad Field Office (CBFO)	June 29-July 1, 2010 August 3-4, 2010	Audit of the DOE Peer Review used to qualify historical information for TRU waste streams SR-BCLDP-004.002 and SR-BCLDP-004.003. EPA Docket No. A-98-49; II-A1-108
	April 8-29, 2013	Remote records audit of CBFO Technical Assistance Contractor
	June 18-20, 2013	Audit of the quality assurance program relative to the American Society of Mechanical Engineers (ASME) Nuclear Quality Assurance (NQA) Standard NQA-1-1989. EPA Docket no. A-98-49; II-A1-112
	July 22-24, 2014	Audit of CBFO QA program for compliance with NQA-1-1989 elements. EPA Docket No. A-98-49; II-A1-117
	January 6-February 12, 2015	Audit of CBFO QA program for compliance with NQA-1-1989 elements. EPA Docket No. A-98-49; II-A1-120
	September 1-3, 2015	Audit of CBFO QA program for compliance with NQA-1-1989 elements. EPA Docket No. A-98-49; II-A1-121
	September 20-22, 2016	CBFO Document Control Audit A-16-27
	June 29-July 1, 2010	Audit of the DOE Peer Review used to qualify historical

Table 7: EPA Quality Assurance Audits by Site – January 2008 to June 2019		
Site	**Audit Date**	**Purpose**
	August 3-4, 2010	information for TRU waste streams SR-BCLDP-004.002 and SR-BCLDP-004.003. EPA Docket No. A-98-49; II-A1-108
	October 17-19, 2017	Audit of CBFO QA program for compliance with NQA-1-1989 elements. No docket number given
General Electric Vallecitos Nuclear Center (GEVNC)-CCP	December 2-4, 2008	Initial RH S5000 Certification Audit A-09-05
	January 26-28, 2010	Recertification Audit A-10-04
Hanford-CCP	April 6-8, 2010	Initial Certification Audit A-10-07
	April 5-7, 2011	Recertification Audit A-11-10
	May 14-17, 2012	Recertification/Closeout Audit A-12-11
	May 14-16, 2013	Recertification Audit A-13-15
	May 20-21, 2014	Recertification Audit A-14-16
	June 23-25, 2015	Recertification Audit A-15-19
	May 31-June 1, 2016	Recertification Audit A-16-11
	April 4, 2017	Recertification Audit A-17-20
Idaho National Laboratory (INL)-CCP	January 29-30, 2008	Expansion Audit (NMED approval of Acceptable Knowledge [AK]) Audit A-08-11
	May 13-15, 2008	Recertification Audit A-08-10 INL and A-08-22 ID Labs
	December 9-11, 2008	VE of Records Audit A-09-08
	May 5-7, 2009	Recertification Audit A-09-14 INL and A-09-13 ID Labs
	June 8-10, 2010	Recertification Audit A-10-16 INL and A-10-17 ID Labs
	June 7-9, 2011	Recertification Audit A-11-13 INL Labs and A-11-14 INL
	June 11-14, 2012	Laboratory Recertification Audit A-12-14 and CCP Recertification Audit A-12-13
	June 3-6, 2013	Recertification Audit A-13-18
	July 9-11, 2013	Analytical Laboratories Close Out Audit A-13-19
	June 3-5, 2014	Recertification Audit A-14-18
	June 16-18, 2015	Recertification Audit A-15-18
	June 14-16, 2016	Recertification Audit A-16-18
	June 13-15, 2017	Recertification Audit A-17-23
	March 25, 2019	(CH Only) Recertification Audit A-19-06
Los Alamos National Laboratory (LANL)- CCP	February 19, 2008	Initial Certification Audit A-07-12 and A-07-13
	April 15-17, 2008	CCP CH and RH Recertification Audit A-08-16
	December 9-11, 2008	Addition of VE CH S5000 Retrievably Stored Waste Audit A-09-08
	April 7-9, 2009	CCP CH and RH Recertification Audit A-09-12
	April 27-29, 2010	CCP CH and RH Recertification Audit A-10-14
	May 17-19, 2011	CCP CH and RH Recertification Audit A-11-11
	July 24-26, 2012	CCP CH and RH Recertification Audit A-12-12
	July 23-25, 2013	CCP CH and RH Recertification Audit A-13-23
	July 22, 2013	CCP CH Recertification Audit revised A-13-23

Table 7: EPA Quality Assurance Audits by Site – January 2008 to June 2019		
Site	**Audit Date**	**Purpose**
	June 10-July 8, 2014	Audit of the QA program for the WIPP as it pertains to NQA-1-1989. EPA Docket No. A-98-49: II-A1-116
	August 19-21, 2014	CCP CH Recertification Audit A-14-19
	March 1-3, 2016	Quality Assurance Program Documents (QAPD) Implementation Audit A-16-10
	March 7-9, 2017	QAPD Implementation Audit A-17-14
	May 16-18, 2017	Recertification Audit A-17-17
	May 17-19, 2017	CCP CH and RH Recertification Audit A-16-19
	August 12, 2019	CCP Recertification Audit A-19-18
Nuclear Waste Partnership LLC (NWP)	June 18-20, 2013	QA audit relative to the ASME NQA Standard NQA-1-1989. EPA Docket no. A-98-49; II-A1-113
	July 22-24, 2014	Audit of NWP QA program for compliance with NQA-1-1989 elements. EPA Docket No. A-98-49; II-A1-118
	January-November 2015	Audit of NWP QA program for compliance with NQA-1-1989 elements. Final document has not been released at this time
	August 6 – September 24, 2015	Audit of NWP QA program for compliance with NQA-1-1989 elements. Scope was limited and will be revisited at a later date. EPA Docket No. A-98-49; II- A1-123
	November 17-19, 2015	Environmental Resource Conservation and Recovery Act (RCRA)/Monitoring Program/Groundwater Audit A-16-04
	February 2-4, 2016	Calibration Audit A-16-06
	March 29-31, 2016	CCP QA Audit A-16-12
	April 26-28, 2016	Dosimetry/RADCON Program Audit A-16-16
	January 24-26, 2017	Industrial Safety Air Quality Monitoring Audit A-17-05
	February 7-9, 2017	Material Control and Stores Inventory Audit A-17-32 Calibration Audit A-17-15
	March 28-30, 2017	QA Audit A-17-13
	May 8-10, 2017	Environmental RCRA/Monitoring Programs/Groundwater Audit A-17-01
	February 13-15, 2018	Audit of NWP QA program for compliance with NQA- 1-1989 elements. No docket number given
Oak Ridge National Laboratory (ORNL)-CCP	November 13-15, 2007	AK and NDA Activities Audit A-08-06
	June 30-July 2, 2008	Initial RH Certification Audit A-08-12
	January 13-15, 2009	CH Recertification Audit A-09-07
	June 23-25, 2009	RH Recertification Audit A-09-22
	July 28-30, 2009	Addition of S4000 SCG Audit A-09-24
	February 9-11, 2010	CH and RH Recertification Audit A-10-08
	February 8-10, 2011	CH and RH Recertification Audit A-11-08
	March 27-29, 2012	CCP CH and RH Recertification Audit A-12-08
	April 23-25, 2013	CH and RH Recertification Audit A-13-12
	January 14-26, 2014	CH and RH Recertification Audit A-14-03
	March 31- April 3,	CH & RH Recertification Audit A-15-09

Table 7: EPA Quality Assurance Audits by Site – January 2008 to June 2019		
Site	**Audit Date**	**Purpose**
	2015	
	April 19-21, 2016	Recertification Audit A-16-15
	October 4-6, 2016	Neutron DTC and RH Waste Sampling Audit A-17-09
	October 17-20, 2016	Waste Acceptance Criteria (WAC) Compliance Audit A-17-07
	April 18-20, 2017	Recertification Audit A-17-21
	June 25, 2019	Recertification Audit A-19-16
Savannah River Site (SRS)-CCP	October 28-30, 2008	CH and RH Recertification Audit A-09-01
	March 24-26, 2009	Addition of NABC Audit A-09-17
	June 23-24, 2009	Addition of RTR #4 Audit A- 09-16
	October 27-29, 2009	BCL RH Recertification and CH S3000 Initial Certification Audit A-10-01
	October 26-28, 2010	Recertification Audit A-11-01 and RTR Unit 4 for SLB2s and Large Container Non-Destructive Examination (LCNDE) for SWBs and SLB2s
	November 14-17, 2011	RH Recertification and Initial SR-RH-FBL-01 Audit A-12-04
	November 6-8, 2012	CH Recertification Audit A-12-02
	September 23, 2014	CH Recertification Audit A-14-04
	November 4-6, 2014	CH Recertification Audit A-15-02
	December 3-4, 2015	CCP Recertification Audit A-16-02
Sandia National Laboratories (SNL)-CCP	July 13-15, 2011	Recertification Audit A-11-23
	August 14-16, 2012	Closeout Audit A-12-15
	August 5-7, 2014	Initial Certification Audit A-14-26
	August 18-20, 2015	Recertification Audit A-15-25
	February 9-11, 2016	SNL-CPG Audit A-16-07
	November 15-17, 2016	RH S5000 Recertification Audit A-17-10
	December 6-8, 2016	Recertification Audit A-17-02
	February 14-16, 2017	QAPD Implementation Audit A-17-06
	August 15, 2019	CCP Recertification Audit. A-19-34
Sandia National Laboratories-Carlsbad Office (SNL-CO)	May 1-29, 2014 and July 22-24, 2014	Verification of implementation of SNL-CO's QA program relative to requirements of NQA-1 Standard NQA-1-1989. EPA Docket No. A-98-49; II-A1-115, EPA-HQ-OAR-2001-0012-0444

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