

### DEPARTMENT OF ENERGY Environmental Management Los Alamos Field Office (EM-LA)

Los Alamos, New Mexico 87544

EMLA-2022-BF164-02-001

Mr. Rick Shean Bureau Chief Hazardous Waste Bureau New Mexico Environment Department 2905 Rodeo Park Drive East, Building 1 Santa Fe, NM 87505-6313



September 27, 2022

Subject: Submittal of North Ancho Canyon Aggregate Area Phase II Investigation Progress Report

Dear Mr. Shean:

Enclosed please find two hard copies with electronic files of the "North Ancho Canyon Aggregate Area Phase II Investigation Progress Report." This report fulfills the fiscal year 2022 Milestone #14 in Appendix B of the 2016 Compliance Order on Consent under the Southern External Boundary Campaign.

If you have any questions, please contact Dwight Hollon at (505) 551-2939 (dwight.hollon@emla.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

ARTURO DURAN Digitally signed by ARTURO DURAN Date: 2022.09.26 15:26:43 -06'00'

Arturo Q. Duran Compliance and Permitting Manager U.S. Department of Energy Environmental Management Los Alamos Field Office

Enclosure(s):

1. Two hard copies with electronic files:

North Ancho Canyon Aggregate Area Phase II Investigation Progress Report (EM2022-0584)

cc (letter and enclosure[s] emailed): Laurie King, EPA Region 6, Dallas, TX Steve Yanicak, NMED-DOE-OB Chris Catechis, NMED-RPD Jennifer Payne, LANL Stephen Hoffman, NA-LA William Alexander, N3B Pamela Maestas, N3B Brenda Bowlby, N3B Michael Erickson, N3B Dwight Hollon, N3B Kim Lebak, N3B Joseph Legare, N3B Dana Lindsay, N3B Robert Macfarlane, N3B Tracy McFarland, N3B M. Lee Bishop, EM-LA John Evans, EM-LA Michael Mikolanis, EM-LA David Nickless, EM-LA Cheryl Rodriguez, EM-LA emla.docs@em.doe.gov n3brecords@em-la.doe.gov Public Reading Room (EPRR) PRS website

September 2022 EM2022-0584

# North Ancho Canyon Aggregate Area Phase II Investigation Progress Report



Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document pursuant to the Compliance Order on Consent, signed June 24, 2016. The Compliance Order on Consent contains requirements for the investigation and cleanup, including corrective action, of contamination at Los Alamos National Laboratory. The U.S. government has rights to use, reproduce, and distribute this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

# North Ancho Canyon Aggregate Area Phase II Investigation Progress Report

September 2022

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#### 1.0 PURPOSE OF REPORT

This progress report fulfills fiscal year (FY) 2022 Milestone #14 of the 2016 Compliance Order on Consent (Consent Order), Appendix B, under the Southern External Campaign. Milestone #14 is a progress report summarizing the fieldwork implementation and status of site investigations conducted under the approved 2011 "Phase II Investigation Work Plan for North Ancho Canyon Aggregate Area, Revision 1" (Phase II IWP) (LANL 2011, 201561; NMED 2011, 203447). The North Ancho Canyon Aggregate Area is one of five aggregate areas in the Southern External Boundary Campaign. All solid waste management units (SWMUs) and areas of concern (AOCs) within the North Ancho Canyon Aggregate Area are located at Technical Area 39 (TA-39). The SWMUs and AOC included in the Phase II IWP for North Ancho Canyon Aggregate Area are listed below:

- SWMU 39-001(a) Landfill
- SWMU 39-001(b) Material Disposal Area (MDA) Y
- SWMU 39-002(a) Storage Area
- AOC 39-002(b) Storage Area
- SWMU 39-006(a) Septic System
- SWMU 39-007(a) Storage Area
- SWMU 39-010 Excavated Soil Pile

#### 2.0 OVERVIEW

This progress report summarizes the field investigations conducted by the U.S. Department of Energy Environmental Management Los Alamos Field Office and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) under the Phase II IWP. This progress report presents the status of fieldwork implementation and site investigations completed to date for the North Ancho Canyon Aggregate Area.

Sampling was initiated in FY 2022 at SWMU 39-002(a) and AOC 39-002(b) (Figure 2.0-1). Additional sampling and any required remediation will occur once analytical data have been received and evaluated. The results from the investigation of SWMU 39-002(a) and AOC 39-002(b) will be included in the Phase II Investigation Report for North Ancho Canyon Aggregate Area.

#### 2.1 Mobilization and Investigations

Site mobilization by the subcontractor occurred on July 15, 2022. Between July 26 and August 23, 2022, 143 investigation samples were collected at SWMU 39-002(a) and AOC 39-002(b).

#### 3.0 SUMMARY OF FIELDWORK COMPLETED IN FY 2022

The following sections summarize the status of fieldwork initiated at SWMU 39-002(a) and AOC 39-002(b) in FY 2022.

#### 3.1 SWMU 39-002(a), Storage Area

#### 3.1.1 Site Description and Operational History

SWMU 39-002(a) consists of three former storage areas that were associated with former building 39-2.

Area 1 is a former unpaved, outdoor storage area and satellite accumulation area (SAA) next to the northwest corner of former building 39-2 at TA-39 (Figure 2.0-1). The site measured approximately 25 ft × 30 ft, and was used for storage for approximately 10 yr before being registered as an SAA. Small quantities of solvents (acetone and ethanol) and adhesives, along with rags and paper wipes contaminated with solvents or adhesives, were stored at the site. The area was also used to store lead-containing materials and damaged capacitors and transformers that may have contained polychlorinated biphenyls (PCBs).

This SAA was removed from service in April 1993. The approved "Investigation Work Plan for North Ancho Canyon Aggregate Area, Revision 1" (IWP) (LANL 2007, 101894; NMED 2007, 098948) recommended delaying site characterization and remediation at Area 1 until decommissioning and demolition of buildings 39-2 and 39-62 and removal of a base course pad with transportainers that were located on the surface of Area 1. Building 39-2 has been demolished and the transportainers referenced in the IWP have been removed. Building 39-62 has not been demolished and the base course has not been removed; all of Area 1 is now covered in base course.

Area 2 is a former indoor SAA, located in room 18-A of former building 39-2, that was used for storing waste chemicals from photographic processing (Figure 2.0-1). The building that previously housed Area 2 was demolished after the IWP was approved; therefore, the approved Phase II IWP did not contain investigation scope for Area 2. Characterization sampling of Area 2 was conducted during the 2019 Known Cleanup Sites (Above SSLs [soil screening levels]) Campaign. Review of the analytical data collected during the 2019 investigation has determined that additional characterization sampling is warranted at Area 2 to define nature and extent of contamination.

Area 3 is a former outdoor SAA and holding/receiving area that was located on the asphalt driveway at the north end of the loading dock on the southeast side of former building 39-2. It measured approximately 5 ft wide × 5 ft long (Figure 2.0-1). The approved Phase II IWP did not propose any additional site characterization of Area 3.

#### 3.1.2 Previous Investigations

During the 1993 Phase I RCRA (Resource Conservation and Recovery Act) Facility Investigation (RFI), five samples were collected from two locations in the storage area where the SWMU 39-002(a) Area 1 SAA had been located. Samples were submitted for analysis of target analyte list (TAL) metals, total uranium, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), PCBs, high explosives (HE), and cobalt-60. Data from the 1993 RFI are screening-level, and showed metals detected above background values (BVs), detected VOCs, SVOCs, PCBs, HE, and cobalt-60. Area 1 was recommended for corrective action in "RCRA Facility Investigation Report for TA-39: PRSs 39-001(a,b), 39-004(a,b,c,d,e), and 39-008" (Phase II RFI Report) (LANL 1997, 055633). The SWMU 39-002(a) Area 2 SAA was not sampled during the 1993 Phase I RFI because it was located inside an active office/laboratory building (39-02). The SWMU 39-002(a) Area 3 SAA was not sampled during the 1993 Phase I RFI because it was

In 1995, as part of preliminary fieldwork prior to the voluntary corrective action (VCA) (LANL, 056612) at the Area 1 storage area, the site was resampled to determine the extent of TAL metals and total uranium.

Samples were collected from multiple depths at 25 locations and field screened using x-ray fluorescence. Two additional surface soil samples were submitted for analysis of TAL metals and total uranium. The 1995 sampling data did not replicate the inorganic chemical and total uranium results from the 1993 Phase I RFI. Therefore, the proposed VCA activities included further site characterization to define the nature and extent of potential contamination.

In 1997, as part of the VCA activities conducted at the Area 1 storage area, a sampling grid was established over the site. Fifteen samples were collected from the center of 12 grid points, and submitted for analysis of TAL metals, total uranium, HE, isotopic uranium, PCBs, pesticides/PCBs, VOCs, SVOCs, total petroleum hydrocarbons (TPH), and isotopic uranium. No remediation activities were implemented at Area 1.

During the 2009 investigation conducted at SWMU 39-002(a) in accordance with the approved "Investigation Work Plan for North Ancho Canyon Aggregate Area, Revision 1" (LANL 2010, 108500.11; LANL 2010, 108500.4), the following sampling was performed:

- 39 samples were collected from 13 locations in Area 1, and submitted for analysis of americium-241, nitrate, gamma spectroscopy, tritium, explosive compounds, isotopic plutonium, isotopic uranium, TAL metals, PCBs, perchlorate, pesticides/PCBs, SVOCs, TPH, VOCs, and total cyanide.
- 17 samples were collected at 8 locations in Area 3, and submitted for analysis of nitrates, total cyanide, perchlorate, TAL metals, and dioxins and furans.
- Area 2 was not investigated because it was located within an active facility; characterization of the site was delayed until cessation of operations in building 39-2.

During the 2019 Known Cleanup Sites (Above SSLs) Campaign conducted at SWMU 39-002(a) Area 2 (N3B 2019, 700665), a total of 15 samples were collected from 3 depth intervals (0.0 to 1.0 ft, 2.0 to 3.0 ft, and 4.0 to 5.0 ft below ground surface [bgs]) at 5 locations. Samples were analyzed for TAL metals, nitrate, perchlorate, cyanide, SVOCs, VOCs, pH, HE, PCBs, and isotopic uranium.

The IR (LANL 2010, 108500.11; LANL 2010, 108500.4) concluded that the nature and extent of contamination have been defined at SWMU 39-002(a) Area 1, except for the vertical extent of mercury, zinc, copper, lead, and Aroclor-1254. SWMU 39-002(a) Area 1 poses a potential unacceptable risk from benzo(a)pyrene and dibenz[a,h]anthracene under the industrial and residential scenarios.

Preliminary risk assessment results using the 2019 analytical data for SWMU 39-002(a) Area 2 from the Known Cleanup Sites (Above SSLs) Campaign indicate potentially unacceptable human health risk, under the residential and construction worker scenarios, from Aroclor-1254, copper, and benzo(b)fluoranthene, and potentially unacceptable ecological risk, to the earthworm and to the generic plant, from copper.

The IR concluded that the nature and extent of contamination at SWMU 39-002(a) Area 3 have been defined and no further sampling for extent is warranted.

#### 3.1.3 SWMU 39-002(a) Area 1 and Area 2 Investigation Objectives

The objective of the investigation at SWMU 39-002(a) Area 1 is to define the nature and extent of contamination and to ensure that no unacceptable human health or ecological risk exists at this site. Therefore, a total of 111 samples from 37 locations are planned to be collected at SWMU 39-002(a)

Area 1. At each location, samples will be collected from three depth intervals: 0.0 to 1.0 ft, 1.0 to 2.0 ft, and 2.0 to 3.0 ft below the base course covering the area.

The objective of the investigation of SWMU 39-002(a) Area 2 is to define the nature and extent of PCB contamination and to ensure that no unacceptable human health or ecological risk exists at this site. Therefore, a total of 111 samples from 37 locations are planned to be collected from SWMU 39-002(a) Area 2. At each location, samples will be collected from three depth intervals: 0.0 to 1.0 ft, 1.0 to 2.0 ft, and 2.0 to 3.0 ft bgs.

#### 3.1.4 Fieldwork Completed

Fieldwork at SWMU 39-002(a) Area 1 began on July 26, 2022. A total of 111 samples have been collected from 37 locations at SWMU 39-002(a) Area 1, and analyzed for TAL metals, cyanide, nitrate, perchlorate, pH, VOCs, SVOCs, explosive compounds, PCBs, americium-241, isotopic uranium, isotopic plutonium, tritium, and gamma-emitting radionuclides. The sample locations are shown on Figure 2.0-1.

Fieldwork at SWMU 39-002(a) Area 2 began on August 23, 2022. A total of three samples have been collected from one location at SWMU 39-002(a) Area 2, and analyzed for PCBs and copper. The sample locations are shown in Figure 2.0-1.

#### 3.2 AOC 39-002(b), Former Storage Area

#### 3.2.1 Site Description and Operational History

AOC 39-002(b) is a former SAA that was located on a 5-ft × 5-ft concrete pad adjacent to a firing site support building (structure 39-6) [SWMU 39-004(c)] at TA-39. Beginning in 1953, the area was used to store small quantities of paper contaminated with waste solvents (ethanol, acetone, trichloroethane), copper sulfate, transformer oil, vacuum pump grease, and photographic waste. The date when the SAA was established is not known; however, it was removed from service in 1993. The concrete pad is intact; no staining is visible on the pad. AOC 39-002(b) is located within the blast radius of active firing site [SWMU 39-004(c)].

#### 3.2.2 Previous Investigations

During the 1993 Phase I RFI, two samples were collected from two locations downgradient of the concrete pad. Samples were submitted for analysis of TAL metals, total cyanide, total uranium, SVOCs, PCBs, HE, TPH, and by gamma spectroscopy. Data from the 1993 RFI are screening level and showed metals including total uranium detected above BVs, detected SVOCs, PCBs, and detected cobalt-60.

Samples were not collected at AOC 39-002(b) during the 2009 investigation performed in accordance with the approved "Investigation Work Plan for North Ancho Canyon Aggregate Area, Revision 1 (LANL 2010, 108500.11; LANL 2010, 108500.4). The proposed sampling locations at AOC 39-002(b) were beneath the concrete pad, directly outside of the door to building 39-06. The use of mechanical tools would disrupt operations at the adjacent active firing site [SWMU 39-004(c)]. An attempt was made to punch through the concrete pad, but the pad was too substantial to allow for sample collection with hand tools. However, during the 2009 investigation, 15 samples were collected from 5 locations within a tributary drainage channel downgradient of SWMUs 39-004(c) and 39-007(a) and AOC 39-002(b) to determine if contamination is migrating off-site (LANL 2010, 108500.11; LANL 2010, 108500.4). Samples were submitted for analysis of TAL metals, nitrate, perchlorate, total cyanide, perchlorate, VOCs, SVOCs,

PCBs, explosive compounds, americium-241, isotopic plutonium, isotopic uranium, tritium, and by gamma spectroscopy.

#### 3.2.3 Investigation Objectives

The primary objective of the investigation at SWMU 39-002(b) is to define the nature and extent of contamination and to ensure that no unacceptable human health or ecological risk exists at this site. Therefore, a total of 30 samples from 8 locations are planned to be collected at AOC 39-002(b). At each location, samples will be collected from three depth intervals: 0.0 to 1.0 ft, 2.0 to 3.0 ft, and 6.0 to 7.0 ft bgs.

#### 3.2.4 Fieldwork Completed

Fieldwork at AOC 39-002(b) took place between July 31 and August 17, 2022. A total of 29 investigation samples were collected from 10 locations at AOC 39-002(b). Samples were analyzed for TAL metals, cyanide, nitrate, perchlorate, pH, VOCs, SVOCs, explosive compounds, PCBs, dioxins/furans, americium-241, isotopic uranium, isotopic plutonium, tritium, and gamma-emitting radionuclides. Figure 2.0-1 shows the sample locations at AOC 39-002(b).

#### 4.0 PLANNED WORK IN FY 2023

Fieldwork at North Ancho Canyon Aggregate Area will continue in FY 2023 to complete the sampling planned in accordance with the Phase II IWP.

#### 5.0 REFERENCES

The following reference list includes documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID.ERIDs were assigned by Los Alamos National Laboratory's (the Laboratory's) Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above).

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- NMED (New Mexico Environment Department), December 21, 2007. "Approval With Modifications for the Investigation Work Plan for North Ancho Canyon Aggregate Area, Revision 1," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2007, 098948)

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Figure 2.0-1 North Ancho Canyon Aggregate Area site

North Ancho Canyon Aggregate Area Phase II Investigation Progress Report