ESHID-603814

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National Nuclear Security Administration
Los Alamos Field Office
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Los Alamos, NM 87544
505-667-5794/Fax 505-606-5948

Symbol: EPC-DO-24-022
Date: January 24, 2024
LA-UR: 24-20447

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

Subject: Class 1 Permit Modification Request to Amend the Closure Plan Schedule for TA-16-399 Burn Tray, Revision 2.2

Dear Mr. Maestas:

The United States Department of Energy (DOE) National Nuclear Security Administration Los Alamos Field Office (NA-LA), in association with Triad National Security, LLC (Triad) (the Permittees), submit to the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) this request for a Class 1 permit modification, with prior approval. The permit modification is for an extension of time to the schedule in the *Amended Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray, Revision 2.1* (Closure Plan); which was approved on September 6, 2023. The NMED-HWB approved an initial extension of time on March 10, 2023, regarding time allowed for closure activities for the unit located at the Los Alamos National Laboratory (EPA ID# NM0890010515).

Closure Plan, Section 4.2, *Closure Schedule* and Table 1, *Closure Schedule for the Technical Area 16-399 Open Burning Treatment Unit* includes a requirement to complete all additional closure activities within 180 days of approved extension of time granted in September 2023. Based on the amended Closure Plan approval date, the additional closure activities were to be completed by November 17, 2023. Excavation activities and soil verification sampling were completed by October 26, 2023. However, based on sample analytical results received on December 7, 2023, with a corrected and revised dataset received on January 18, 2024, additional excavation is necessary to meet the closure performance standards in the Closure Plan.

Analyses of the verification samples collected within the excavation area meet the residential soil screening criteria, except for a detection of Royal Demolition Explosive (RDX) at a verification sample location within the excavated area within the fence that surrounds the former unit. The detection is along the northwestern extent of the currently excavated area. Due to this detection, additional time is required to complete closure activities. The Permittees request an extension of 180 days to complete the necessary field activities. The extension will enable coordination of personnel and resources for excavation and

sampling to safely complete the closure activities. The Permittees respectfully request that the NMED-HWB approve this extension of time to provide a path forward for this important project.

If approved, the new deadline for the completion of additional closure activities will be May 15, 2024. Because the detection was after the end of closure activities, the Permittees missed the deadline to submit this Class 1 modification at least 30 days prior to the expiration date of November 17, 2023, in accordance with the requirement of 40 CFR § 265.113(c)(2). Closure Plan, Section 4.2, *Closure Schedule* requires that "[i]n the event, closure of the Unit cannot proceed according to schedule, the NMED must be notified in accordance with the extension request requirements in 40 CFR § 265.113(b) and comply with the applicable closure requirements in 40 CFR § 265.113(b)(1) and (2)." This permit modification request was prepared in accordance with 40 CFR § 270.42(a)(2); the change falls under the conditions of 40 CFR § 270.42 Appendix I, Item D.1(b) for a Class 1 modification with prior approval. A full description of the permit modification, the rationale for the classification type, proposed changes to the Closure Plan in redline, and a signed certification are included in the enclosure to this letter.

Three hard copies and one electronic copy of this submittal will be delivered to the NMED-HWB. The hardcopy submittal contains pages or sections where text has been changed, rather than copies of the entire Closure Plan. The electronic copy, provided only to the NMED-HWB, contains a reproduction of the hardcopy in portable document format (pdf) along with all the word processing files used to create the hardcopy.

Notice of this permit modification will be sent to the NMED-HWB maintained LANL facility mailing list in accordance with 40 CFR § 270.42(a)(1)(ii) within ninety days of the NMED-HWB incorporating the changes.

If you have any questions for Triad or NA-LA, please contact Jason Hill (Triad) at 505-551-2218, jshill@lanl.gov or Robert Gallegos (NA-LA) at 505-901-3824, robert.gallegos@nnsa.doe.gov.

Sincerely,

STEVEN STORY (Affiliate)
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Steven L. Story
Division Leader
Environmental Protection and Compliance Division
Triad National Security, LLC
Los Alamos National Laboratory

Sincerely,

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Robert A. Gallegos
Program Manager
Environmental Permitting and Compliance Programs
National Nuclear Security Administration
Los Alamos Field Office
U.S. Department of Energy

SLS/RAG/JSH

Enclosure: *Class 1 Permit Modification Request to Amend the Closure Plan Schedule for TA-16-399 Burn Tray, Revision 2.2*

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Mr. Ricardo Maestas, Acting Chief
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New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Class 1 Permit Modification Request to Amend the Closure Plan Schedule for TA-16-399 Burn Tray, Revision 2.2

Dear Mr. Maestas:

The United States Department of Energy (DOE) National Nuclear Security Administration Los Alamos Field Office (NA-LA), in association with Triad National Security, LLC (Triad) (the Permittees), submit to the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) this request for a Class 1 permit modification, with prior approval. The permit modification is for an extension of time to the schedule in the *Amended Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray, Revision 2.1* (Closure Plan); which was approved on September 6, 2023. The NMED-HWB approved an initial extension of time on March 10, 2023, regarding time allowed for closure activities for the unit located at the Los Alamos National Laboratory (EPA ID# NM0890010515).

Closure Plan, Section 4.2, *Closure Schedule* and Table 1, *Closure Schedule for the Technical Area 16-399 Open Burning Treatment Unit* includes a requirement to complete all additional closure activities within 180 days of approved extension of time granted in September 2023. Based on the amended Closure Plan approval date, the additional closure activities were to be completed by November 17, 2023. Excavation activities and soil verification sampling were completed by October 26, 2023. However, based on sample analytical results received on December 7, 2023, with a corrected and revised dataset received on January 18, 2024, additional excavation is necessary to meet the closure performance standards in the Closure Plan.

Analyses of the verification samples collected within the excavation area meet the residential soil screening criteria, except for a detection of Royal Demolition Explosive (RDX) at a verification sample location within the excavated area within the fence that surrounds the former unit. The detection is along the northwestern extent of the currently excavated area. Due to this detection, additional time is required to complete closure activities. The Permittees request an extension of 180 days to complete the necessary field activities. The extension will enable coordination of personnel and resources for excavation and

ENCLOSURE 1

Class 1 Permit Modification Request to Amend the Closure Plan Schedule for TA-16-399 Burn Tray, Revision 2.2

Los Alamos National Laboratory,

EPA ID# NM0890010515

EPC-DO-24-022
LA-UR-24-20447

U.S. Department of Energy,
National Nuclear Security Administration Los Alamos Field Office, and
Triad National Security, LLC

CERTIFICATION

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

STEVEN STORY (Affiliate)
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Steven L. Story
Division Leader
Environmental Protection and Compliance Division
Triad National Security, LLC
Los Alamos National Laboratory

Date Signed

Robert A. Gallegos
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Date: 2024.01.23 15:33:35 -07'00'

Robert A. Gallegos
Environmental Permitting and Compliance Program Manager
National Nuclear Security Administration
Los Alamos Field Office
U.S. Department of Energy

Date Signed

Class 1 Permit Modification Request to Amend the Closure Plan Schedule for TA-16-399 Burn Tray, Revision 2.2

This document contains a third Class 1 permit modification request, requiring prior approval from the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB), to update the *Amended Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray, Revision 2.1, August 2023* (Closure Plan). The United States Department of Energy (DOE) National Nuclear Security Administration Los Alamos Field Office (NA-LA), in association with Triad National Security, LLC (Triad), collectively the Permittees, provide the Closure Plan modification herein for a unit located at the Los Alamos National Laboratory (EPA ID# NM0890010515).

A certification page, in accordance with the requirements of Title 40 of the Code of Federal Regulations (40 CFR) § 270.11, is included with this enclosure. Attachment 1 of this modification request provides an updated title and footer for completeness, updated language in Closure Plan Section 4.2, *Closure Schedule,* and changes to the corresponding schedule in Closure Plan Table 1, *Closure Schedule for the Technical Area 16-399 Open Burning Treatment Unit*.

BASIS

This Permit modification was drafted in accordance with the extension request requirements in 40 CFR § 265.113(b)(1) and (2) and 40 CFR § 270.42 (a)(1) where the extension request meets the conditions for a Class 1 permit modification with prior approval (40 CFR §270.42 Appendix I, Item D.1(b)).

DESCRIPTION

Initial time extensions were requested due to a delayed project start as well as difficulty with coordination between personnel availability, weather restrictions, bin movement and shipping scheduling, space constraints for accumulation of waste, and disposal facility acceptance of waste that caused excavation delays. This extension of time is sought due to the detection of Royal Demolition Explosive (RDX) at a concentration greater than the soil screening level limits as published by the NMED-HWB. Additional excavation is necessary to remove this soil. Additional time is needed to make a qualified determination regarding the extent of additional excavation, complete the excavation, and collect final verification soil sample(s). To date the Permittees filled and disposed of 54 roll-off bins of waste within the required shipping and movement times. The 180-day extension is requested from the most recent closure activity deadline of November 17, 2023. If approved, the new deadline for the completion of additional closure activities will be May 15, 2024.

Closure Plan Section 4.2, *Closure Schedule* was updated to reflect the requested third extension of time. Closure Plan Table 1, *Closure Schedule for the Technical Area 16-399 Open Burning Treatment Unit* was also updated to reflect the requested third extension of time. Table 4, *Summary of Analytical Methods*, is updated to reflect the approved analytical methods for Polyfluoroalkyl and Perfluoroalkyl compounds. The Reference section is updated to include previous permit actions and approvals. All changes are identified in Attachment 1 using underlined, red text for additions and redline strikeout for deletions.

Attachment 1

Redline Edits of the Amended Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray, Revision 2.2, January 2024

Los Alamos National Laboratory,

EPA ID# NM0890010515

Amended Closure Plan
Open Burning Treatment Unit
Technical Area 16-399 Burn Tray, Revision 2.~~1~~2

~~August 2023~~January 2024

Los Alamos NATIONAL LABORATORY

iii. A description of all sample preservation, handling, labeling, and chain of custody procedures.

Closure of a Unit shall be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise removed and properly managed as waste; 2) closure has been completed in accordance with this Closure Plan and certified by an independent, professional engineer licensed in the State of New Mexico; and 3) a closure report including closure certification as required by 40 CFR 265.115, has been submitted to, and approved by, the Department. If residential clean-up levels are not achieved during closure, the Permittees shall submit a post closure care plan for approval by the Department. The proposed post closure care plan will be made available for public comment and opportunity for public hearing in accordance with applicable sections of 40 CFR §§ 265.118 and 270.

4.2 Closure Schedule

The following section provides the schedule of closure activities (also see Table 1 in this Closure Plan).

Closure activities must begin no later than 45 days after approval of this plan. However, in accordance with Permit Sections 9.4.1, 9.4.2 and 40 CFR § 265.112(e), removing hazardous wastes, decontaminating or dismantling equipment, in accordance with an approved Closure Plan, may be conducted at any time before notification of closure. The records review has been completed, and the structural assessment was conducted on July 19, 2012. The review and structural assessment are described in Sections 5.1.1 and 5.1.2 of the Closure Plan. An amendment to the plan allowing for soil removal at the site and the collection of verification samples to the extent necessary to meet closure performance standards was submitted to the plan in June 2022. Upon approval of the original Closure Plan, the Unit surfaces and related equipment was decontaminated or dispositioned as discussed in Section 5.2. Upon approval of the amended Closure Plan, soil removal, as discussed in Section 5.3, and associated confirmation sampling will be completed. All closure activities must be completed within 240 days of the first extension date granted by the NMED on March 10, 2023. The second extension of an additional 60 days was requested from the NMED in August 2023. A third extension was requested in January 2024 for an additional 120 days. The final submittal of the revised closure certification report must be submitted to NMED 60 days after the Permittees' receipt of verification soil sample analytical data. In the event, closure of the Unit cannot proceed according to schedule, the NMED must be notified in accordance with the extension request requirements in 40 CFR § 265.113(b) and comply with the applicable closure requirements in 40 CFR § 265.113(b)(1) and (2).

4.3 Amendment of the Closure Plan

The Permittees may amend this Closure Plan in accordance with the requirements in 40 CFR § 265.112(c). If the results of the review or assessment require any changes to this Closure Plan (e.g., the sampling and analysis plan), the Permittees shall submit an amended Closure Plan to NMED, for review and approval, in accordance with this Section (4.3). Associated public comment periods and opportunities for public hearing will be in adherence with 40 CFR § 265.112(c).

11.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

DOE, 2022. *PFAS Strategic Roadmap: DOE Commitment to Action 2022-2025* Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2000. US Environmental Protection Agency, Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, Authorization to Discharge under the NPDES, NPDES Permits No. NMR05A734 and NMR05A735, issued to the University of California and the DOE, respectively. Effective December 23, 2000.

EPA, 2002. *RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment,* EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

EPA, 2005. EPA, 2005. U.S. Environmental Protection Agency Region 6, *In the Matter of United States Department of Energy and the Los Alamos National Laboratory, NPDES Nos. NMR05A735, NMR05A734, and NM0028355, Federal Facility Compliance Agreement*. Effective February 2005.

EPA, 2005. U.S. Environmental Protection Agency Region 6, Administrative Order Docket No. CWA-06-205-1734, NPDES Permit No. NMR05A734. Effective March 2005.

EPA, 2007. U.S. Environmental Protection Agency Region 6, *Authorization to Discharge Under the National Pollutant Discharge Elimination System*, NPDES Permit No.. NM0028355, issued to the DOE and Los Alamos National Security, LLC. Effective August 1, 2007.

EPA, 2008. U.S. Environmental Protection Agency, *Multi-Sector General Permit for Storm Water Discharge Associated with Industrial Activities*, Notice of Intent to Discharge, Permit Tracking Number NMR05GB21, Los Alamos National Security, LLC. Effective January 8, 2009.

EPA, 2009. U.S. Environmental Protection Agency Region 6, *Individual Permit for Storm Water Discharge from SWMUs and AOCs*, NPDES Permit No. NM003075, issued to the DOE and Los Alamos National Security, LLC. Effective April 1, 2009.

EPA, 2010. U.S. Environmental Protection Agency Region 6, *Individual Permit for Storm Water Discharge from SWMUs and AOCs*, *Final Permit Modification Decision*, NPDES Permit No. NM003075, issued to the DOE and Los Alamos National Security, LLC. Effective November 1, 2010.

Gaines, G.T. 2022.*Historical and Current Usage of Per- and Polyfluroalkyl Substances (PFAS): A Literature Review*. American Journal of Medicine, SOI: 10.1002/ajim.23362. April 2022.

LANL, 2006. *Closure Plan for Technical Areas 16, 50, 54 and 55, Revision 0.0.* LA-UR-06-6913. September 26, 2006.

LANL, 2009. *Closure Evaluation of the Ecological Risk Screening Assessment for Dioxin/Furans for the Open Burn Treatment Units (TA-16-388 and TA-16-399 June 2009.* DCN: NMED-2009-13. June 30, 2009.

LANL, 2012. *Interim Status Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray, Revision 2.0.* LA-UR-12-26782. December 11, 2012.

LANL, 2015. *Ecorisk Database (Release 3.1)*, ESH ID600921Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 2016. *2017 Interim Facility-Wide Groundwater Monitoring Plan for the 2017 Monitoring Year, October 2016-September 2017*, Los Alamos National Laboratory documentEP2016-0045, Los Alamos, New Mexico).

LANL, 2022. *Request for Class 2 Amendment to the Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray*. June 7, 2022. EPC-20-22-145/LA-UR-22-24719.

LANL, 2023. *Request for a Class 1, with Prior Approval, Permit Modification, Extension of Time, Amended Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray, Revision 2, September 2022*. EPC-DO-23-063/LA-UR-23-21617.

LANL, 2023a. *Class 1 Permit Modification Request to Amend the Closure Plan Schedule for Technical Area 16-399 Open Burn Unit, Revision 2.1*. August 7, 2023. EPC-DO-23-260/LA-UR-23-28963.

NMED, 2010. *Los Alamos National Laboratory Hazardous Waste Permit*. November 2010, New Mexico Environment Department, Santa Fe, New Mexico.

NMED, 2017. *New Mexico Environment Department Risk Assessment Guidance for Site Investigations and Remediation.* March 2017, New Mexico Environment Department, Santa Fe, New Mexico.

NMED, 2019. *Final Action and Response to Comments Closure Plan for Technical Area 16-399 Open Burn Unit, Los Alamos National Laboratory, EPA ID #NM0890010515*. Letter. January 2019.

NMED, 2022. *Risk Assessment Guidance for Site Investigations and Remediation, Volume 1 Soil Screening Guidance for Human Health Risk Assessments*. June 2022.

NMED, 2022a. *Approval with Modifications Request for Class 2 Amendment to the Closure Plan Open Burning Treatment Unit Technical Area 16-399 Burn Tray Los Alamos National Laboratory EPA ID#NM0890010515*. September 6, 2022.

NMED, 2023. *Approval Extension of Time for Class 1, With Prior Approval, Permit Modification, Amended Closure Plan Open Buring Treatment Unit Technical Area 16-399 Burn Tray, Revision 2, September 2022*. March 10, 2023.

NMED, 2023a. *Modified Approval Class 1 Permit Modification Request to Amend the Closure Plan Schedule for Technical Area 16-399 Open Burn Unit, Revision 2.1.* September 6, 2023.

Vigil-Holterman, Luciana. State of New Mexico before the Secretary of Environment. *Application of the United States Department of Energy and Los Alamos National Security, LLC for Hazardous Waste Facility Permit for Los Alamos National Laboratory*, Testimony, April 5, 2012 (HWB-09-37(P) and HWB-10-04(P)). Exhibit JJ, page 9 and OB Testimony page 1282, line 8. Kathy Townsend Court Reporters

Table 1. Closure Schedule for the Technical Area 16-399 Open Burning Treatment Unit

Activity	Maximum Time Required
Begin closure activities	45 days after approval of the Closure Plan
Conduct records review	Completed November 2012
Conduct structural assessment	Completed on July 19, 2012
Documentation of structural assessment	Submit to Department no later than 45 days after approval of Closure Plan
Complete all closure activities	No later than 180 days of initiating closure activities
Submit closure certification report to the Department	No later than 60 days after completion of closure activities
Begin soil removal	Within 45 days of approval of the amended Closure Plan
Complete all additional closure activities	Within 180 days of approval of the amended Closure Plan on September 6, 2022, then a 180-day ~~e~~Extension (~~B~~beginning March 10, 2023), then within the additional 60-day ~~e~~Extension (no later than ~~11/5/2023~~November 17, 2023), and then a third 120-day extension (beginning November 17, 2023)
Submit final closure certification report to the Department	No later than 60 days after receipt of confirmation sample analytical data

Note: The schedule above indicates calendar days in which the listed activities shall be completed from the day closure activities are initiated. Some activities may be conducted simultaneously.

Table 2. Hazardous Waste Constituents of Concern at the TA-16-399 Open Burning Treatment Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
High explosives and associated compounds	D003	HMX, RDX, TNT, PETN, TATB, Tetryl, and mixtures of explosives including; ANFO, Composition B, Cyclotol, IMX-101, PBX 9404, PBX 9407, PBX 9501, PBX 9502, X0233, X0533, XTX 8003, XTX 8004, LX-02, LX-07, LX-10, and LX-14
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Semi-volatile Organic Compounds	D030, D036, F004	2,4-Dinitrotoluene, Nitrobenzene
Polyfluoroalkyl and Perfluoroalkyl Compounds		Perfluorobutanesulfonate, Perfluorobutanesulfonic acid (PFBS), Perfluorohexanesulfonate, Perfluorohexanesulfonic acid (PFHxS), Perfluorononanoate, Perfluorononanoic acid (PFNA), Perfluorooctanesulfonate,

		Perfluorooctanesulfonic acid (PFOS), Perfluorooctanoate, Perfluorooctanoic acid (PFOA), Potassium perfluorobutanesulfonate, Potassium perfluorooctanesulfonate
Other constituents of concern		Dioxins/Furans, Perchlorate, and kerosene

[a] Based on the Unit operating record 1980-2012.
PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate)
HMX = cyclotetramethylenetetranitramine (octahydro, 1,3,5,7-tetranitro, 1,3,5,7-tetrazocine)
RDX = cyclonite (cyclo-1,3,5-trimethylene-2,4,6-trinitramine)
TNT = 2,4,6-trinitrotoluene
TATB = 1,3,5-triamino-2,4,6-trinitrobenzene

Table 3. Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-hazardous solid waste	Subtitle D landfill
	Hazardous waste	The PPE must be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Decontamination water	Non-hazardous liquid waste	High Explosives Waste Treatment Facility (HEWTF) or sanitary sewer
	Hazardous waste	Waste must be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Metal covers/trays	Non-hazardous metals	Subtitle D landfill
	Hazardous waste	Treated to remove HE and recycled or disposed of in subtitle C or D landfill.
Firebrick associated with the Unit	Non-Hazardous/Hazardous	Firebrick must be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate
Soil and tuff	Non-hazardous solid waste	Subtitle D landfill
	Hazardous waste	Waste must be treated to LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Non-hazardous solid waste	Recycled, salvaged, or sent to a Subtitle D landfill
	Hazardous waste	Waste must be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded sampling and decontamination equipment	Non-hazardous solid waste	Subtitle D landfill
	Hazardous waste	Waste must be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table 4. Summary of Analytical Methods

Analyte	EPA *SW-846* Analytical Method[a]	Analytical Technique	Estimated Quantitation Limits[b] (mg/kg)	Rationale
Metal Analysis				
Aluminum	6010B	ICP-AES	20	Determine the environmentally available metal concentration in the soil samples following strong acid digestion.
Antimony	6010B	ICP-AES	0.03	
Arsenic	6020	ICP-MS	1.5	
Barium	6010B	ICP-AES	0.5	
Beryllium	6020	ICP-MS	0.1	
Cadmium	6010B	ICP-AES	0.03	
Calcium	6010B	ICP-AES	30	
Chromium	6010B	ICP-AES	0.5	
Cobalt	6010B	ICP-AES	0.5	
Copper	6010B	ICP-AES	1	
Iron	6010B	ICP-AES	30	
Lead	6010B	ICP-AES	1	
Magnesium	6010B	ICP-AES	50	
Manganese	6010B	ICP-AES	1.0	
Mercury	7471A	CVAA	0.01	
Nickel	6020	ICP-MS	0.4	
Potassium	6010B	ICP-AES	30	
Selenium	6020	ICP-AES	1.5	
Silver	6020	ICP-MS	0.01	
Sodium	6010B	ICP-AES	20	
Thallium	6020	ICP-MS	0.2	
Vanadium	6010B	ICP-AES	0.5	
Zinc	6010B	ICP-AES	1	
Organic Analysis				
VOCs	8260B	GC/MS	0.001 to 0.005	Determine the solvent-extractable VOCs concentration in the soil samples.
SVOCs	8270C	GC/MS	0.033 to 0.33	Determine the solvent-extractable SVOCs concentration in the soil samples.

Analyte	EPA *SW-846* Analytical Method[a]	Analytical Technique	Estimated Quantitation Limits[b] (mg/kg)	Rationale
Other Analysis				
Dioxins/Furans	8290A	HRGC/MS	0.00001 to 0.0003	Determine the solvent extractable dioxin/furan concentration in the soil samples.
Perchlorate [ClO_4^-]	6850 or 6860	HPLC/ESI/MS	0.002 mg/kg	Determine the water-soluble [ClO_4^-] concentration in the soil samples.
Polyfluoroalkyl and Perfluoroalkyl Compounds	NMED Approved Method	LC/MS/MS~~To Be Determined (TBD)~~	~~(TBD)~~Between 0.000112 and 0.00258	Determine the concentration in the soil samples, and establish baseline for 16-399.
High Explosives and associated degradation products	8330B or 8321A [c]	HPLC/TS/MS	0.5 to 2.0	Determine the solvent-extractable high explosives concentrations in the samples.
Nitrates	9056A	IC		Determine the water-soluble NO_3 concentration in the soil samples.
Diesel range organics (DRO), gas range organics (GRO), and Kerosene	8015C			Determine the DRO and GRO concentration in the soil samples.

[A] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846.
[B] Estimated quantitation limits listed for all methods are based LANL contract-required quantitation limits for subcontractor analytical laboratory services.
[C] Instrumentation published in Method SW-846-8321A can be used to identify the required analytes that would not be detected using Method SW-846-8330, thus a LANL-specific modification is used for Method SW-846-8321A to analyze for explosives compounds.

CVAA = Cold-vapor atomic absorption spectroscopy
ESI/MS = Electrospray ionization/mass spectrometry
GC/MS = Gas chromatography/mass spectrometry
IC=Ion Chromotography
HPLC = High performance liquid chromatography
HRGC/MS = High resolution gas chromatography/mass spectrometry
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
SVOC = Semivolatile organic compound(s)
TS/MS = Thermospray/mass spectrometry
VOC = Volatile organic compound(s)
mg/kg = milligrams per kilogram
LC/MS/MS = Liquid chromatography/tandem mass spectrometry

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