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FINAL

Supplemental Environmental Project: Second Independent External Triennial Review

Los Alamos National Laboratory, Los Alamos, New Mexico

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EXECUTIVE SUMMARY

An independent, external environmental team prepared this Second Triennial Review Report to summarize their assessment of Los Alamos National Laboratory's (LANL's) compliance with permits and related regulatory requirements within six areas:

- Stormwater Discharge Associated with the Individual Permit (IP);
- Stormwater Discharge Associated with Industrial Activities;
- Industrial and Sanitary Point-Source Outfall Wastewater;
- Spills;
- Hazardous Waste; and
- New Mexico Solid Waste.

The Triennial Review Team (Review Team) used standard audit practices and developed a checklist tool to systematically evaluate compliance with the following permits and regulations.

- National Pollutant Discharge Elimination System (NPDES) Individual Stormwater Permit NM0030759 (EPA 2010)
- NPDES Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity (EPA 2021)
- NPDES Industrial and Sanitary Point-Source Outfall Permit NM0028355
- New Mexico Administrative Code (NMAC) 20.6.2.1203 Spill Regulations
- Resource Conservation and Recovery Act (RCRA) Hazardous Waste Facility Permit (HWFP) NM0890010515
- New Mexico Solid Waste Act including NMAC 20.9.8, New Mexico Special Wastes

Compliance responsibility is shared by key groups at LANL, with certain areas and permits handled by one or more of the groups. The key groups at LANL include:

- U.S. Department of Energy (DOE) – owner of LANL. National Nuclear Security Administration Los Alamos Field Office (NA-LA) has primary responsibility for LANL, and the Environmental Management Los Alamos Field Office (EM-LA) has responsibility for the legacy cleanup mission at LANL.
- Triad National Security, LLC (Triad) – management and operations contractor for LANL responsible for operating the laboratory
- Newport News Nuclear BWXT-Los Alamos, LLC (N3B) – Los Alamos Legacy Cleanup Contractor for DOE EM-LA

Permittees or responsible groups for the compliance areas reviewed are identified in Table ES-1.

Table ES-1: Second Triennial Review Focus Areas

Permit/Law/Regulation Focus Areas	Responsible Entities	Attention Areas
NPDES Individual Stormwater Permit NM0030759	N3B, DOE	Subset of 250 Sites / solid waste management units (SWMUs) / areas of concern (AOCs)
2021 NPDES Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity (EPA 2021)	N3B, Triad	All MSGP covered areas
NPDES Industrial and Sanitary Point-Source Outfall Permit NM0028355	Triad, DOE	
NMAC 20.6.2.1203 Spill Regulations	N3B, Triad	
Federal RCRA / New Mexico Hazardous Waste Act (HWA) / HWFP NM0890010515 (NMED 2020)	N3B, Triad, DOE	Permitted unit compliance of: • Operating record • Waste characterization • Compatibility documentation
New Mexico Solid Waste Act	N3B, Triad	• New Mexico Special Waste Compliance • Construction and demolition waste characterization • Deactivation and decommissioning waste characterization

The Review Team conducted site visits and interviews and reviewed supporting documentation, including required reports, inspection logs, training, procedures, and correspondence related to the permit and regulatory conditions. When the Review Team identified a potential deficiency or positive practice, a pre-decisional observation was generated and shared with key LANL personnel who were often able to help clarify or resolve the observation. This clarification resulted in two observations being removed. Overall, the Review Team identified 95 observations: 78 potential deficiencies and 17 positive practices. Table ES-2 summarizes the observations by focus area, the type of observation made, and the status of the observation.

Table ES-2: Triennial Review Observation Summary

Observation Type	Closed	Accolades	Open	Removed	Grand Total
Individual Permit	**20**	**2**	**1**	**4**	**27**
Best Management Practice		2			2
Erosion Control	2				2
Maintenance	9				9
Monitoring/Testing	1				1
Procedures	1				1
Recordkeeping	7		1	3	11
Release/Spill				1	1
Multi Sector General Permit	**7**	**6**	**1**		**14**
Best Management Practice	1				1
Control Equipment	2	2	1		5
Inspections		1			1
Recordkeeping		1			1
Reporting		1			1
Signage	1				1

Observation Type	Closed	Accolades	Open	Removed	Grand Total
Storage	3				3
Training		1			1
Industrial Outfall Permit	**6**	**2**			**8**
Best Management Practice	1	1			2
Maintenance	1				1
Procedures		1			1
Recordkeeping	2				2
Reporting	1				1
Signage	1				1
Spills	**1**	**2**			**3**
Procedures		1			1
Recordkeeping	1				1
Reporting		1			1
Waste Management	**37**	**5**	**1**		**43**
Inspections	8				8
Labeling	17				17
Maintenance	1		1		2
Procedures	1	3			4
Release/Spill	3				3
Signage	1				1
Storage	5	2			7
Training	1				1
Grand Total	**71**	**17**	**3**	**4**	**95**

The overall impression of LANL staff culture is one of cooperation and diligence. The LANL environmental teams demonstrated significant knowledge in their respective fields, awareness of permit requirements, transparency with regulating agencies, and the desire to improve beyond meeting the minimum requirements of the permits and regulations. During the Triennial discussions and observations, LANL personnel were prompt, courteous, and valued security and safety above all else.

A high-level summary of the Review Team's key observations and suggestions to enhance future environmental compliance for each focus area is provided below.

Individual Permit

Key observations: Most observations fell into maintenance of control measures and recordkeeping. At 2M-SMA-1, the Review Team discovered a freshly graded dirt road with insufficient controls to prevent the erosion of Solid Waste Management Unit (SWMU)-03-010(a), a permitted feature (former outfall area from a vacuum repair shop), or to prevent sediment from entering the Site Monitoring Area (SMA) during a storm event. At W-SMA-1.5, the Review Team found a gravel pad supporting transportainers eroding next to SWMU-16-028(d), a permitted feature (former outfall area from a machine shop) and depositing sediment into the adjacent drainageway.

Suggestions for enhanced environmental compliance: As inspections and maintenance occur, Site maps should be updated to reflect changes. Control measures should be monitored to ensure they are always functioning properly. All regulatory notifications should be well-documented. Inspection reports should be posted to the IP Stormwater public website (https://ext.em-la.doe.gov/ips).

MSGP

Key observations: The Review Team inspected all permitted facilities covered under the 2021 MSGP and had an opportunity to directly observe the routine facility inspections for compliance at Technical Area 54 (TA-54). The compliance team and Environmental Professionals were thorough and qualified to conduct inspections and evaluate stormwater control measures. Maintenance needs were noted as required. Forms were fully completed.

At the time of this report, eight non-positive observations were made, seven of which were closed. Triad's open observation falls into the category of stormwater control measure selection and design considerations. No N3B observations remain open.

Suggestions for enhanced environmental compliance: LANL would benefit from investing in stormwater controls when potential issues are identified. These controls might include improvements to open-sided shelter covers for stored materials, expansion of stormwater capture controls, and maintenance.

Industrial Outfall Permit

Key observations: The LANL NPDES Industrial and Sanitary Point-Source Outfalls team demonstrated an exemplary approach to monitoring, management, and reporting. The overall impression is that the team has a highly functional and collaborative approach striving for excellence through regular communication, implementation of lessons learned, and execution of pilot projects. While minor issues were noted during the field investigation, most observations related to best management practices (BMPs).

Suggestions for enhanced environmental compliance: To prevent future exceedances, the Review Team recommends that LANL install automatic total residual chlorine (TRC) monitoring systems prior to all outfalls and ensure adequate redundancy of monitoring equipment.

Spill Regulations

Key Observations: The spills teams are consistently meeting their required notifications and reporting deadlines for discharges, spills, and releases. Their tracking systems are robust. Communication within their teams is excellent.

The Review Team was able to review the records and details of any spills within the previous three years. No discrepancies were found in what was categorized as reportable. No reporting deadlines were found tardy or missing. The spills teams have a record of 100% compliance with NMAC 20.6.2.1203.

Suggestions for enhanced environmental compliance: To maintain preparedness, the Review Team recommends N3B organize an occasional spill response drill for a hypothetical reportable event to review and improve spill event procedures and responsiveness.

Hazardous Waste/New Mexico Special Waste

Key observations: As a result of the file review and site visits, the Review Team noted 43 waste management observations (28 Triad and 15 N3B). Most of the observations were categorized as labeling, inspections, signage, and recordkeeping and could become potential regulatory violations. N3B and Triad were responsive to suggestions. They corrected the identified issues and instituted procedural changes to prevent similar issues.

Suggestions for enhanced environmental compliance: The Review Team recommends the following primary actions.

- Review labels on drums whenever they are moved.
- Replace outside signs on a regular basis.
- Close out maintenance requests upon completion.
- Increase inspection frequency with qualified personnel.
- Ensure proper storage capacity, waste compatibility and location.
- Ensure that spill kits are appropriate for materials stored.
- Update training materials where deficiencies are noted.

The Review Team completed the Second Independent Triennial Review and found LANL to have successful environmental management programs and systems. The coordination and closure of the identified deficiencies noted in the observations and implementation of the suggestions will enhance regulatory compliance.

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ACRONYMS

The following acronyms are used in both the Second Triennial Report and its appendices. It serves as a comprehensive list for the Report in its entirety.

AIM	Additional Implementation Measure
AOC	area of concern
ATAL	average target action level
AR	Action Required
BAT	Best Available Technology
BCT	Best Conventional Pollutant Control Technology
BFE	Base Flood Elevation
BMP	best management practice
BPT	Best Practicable Control Technology
CAA	Central Accumulation Area
CBI	confidential business information
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
COD	chemical oxygen demand
CSU	container storage unit
CWA	Clean Water Act
DOE	U.S. Department of Energy
DMR	Discharge Monitoring Report
EDD	electronic data deliverable
EIM	Environmental Information Management (database)
EM-LA	Environmental Management Los Alamos Field Office
EMS	Environmental Management System
EPA	U.S. Environmental Protection Agency
EPC	Environmental Protection and Compliance Division
EPRR	Electronic Public Reading Room
ESA	Endangered Species Act
FFCA	Federal Facility Compliance Agreement
FOD	Facility Operations Director
GIS	geographic information system
HEWTF	High Explosive Wastewater Treatment Facility
HWA	Hazardous Waste Act
HWB	Hazardous Waste Bureau
HWFP	Hazardous Waste Facility Permit

HWMU	hazardous waste management unit
IP	Individual Permit
IPSP	Industrial Point Source Permit
IRF	Inspection Record Form
IRT	Integrated Review Tool
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
LDCC	Laboratory Data Communications Center
LEL	lower explosive limit
MainConn	Maintenance Connection
MDL	method detection limit
MFW	Maintenance Facility West
µg/L	microgram(s) per liter
mg/L	milligram(s) per liter
MPN	most probable number
MQL	minimum quantification level
MRF	material recovery facility
MS4	municipal separate storm sewer system
MSGP	Multi-Sector General Permit
MTAL	maximum target action level
NA	not applicable
NAICS	North American Industry Classification System
NA-LA	National Nuclear Security Administration Los Alamos Field Office
N3B	Newport News Nuclear BWXT-Los Alamos, LLC
NEC	No Exposure Certification
NHPA	National Historic Preservation Act
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMFS	National Marine Fisheries Service
NMSW	New Mexico Special Waste
NOEC	No Observed Lethal Effect Concentration
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRC	Non-Regulatory Concern
QA/QC	quality assurance/quality control
OB/OD	open burn/open detonation
OCC	Oil Conservation Commission
OCD	Oil Conservation Division
ONRW	Outstanding National Resource Water
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl

PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PLC	programmable logic controller
PRID	Permits and Requirements Identification (system)
QA/QC	quality assurance/quality control
QVA	quarterly visual assessment
RCRA	Resource Conservation and Recovery Act
Review Team	Triennial Review Team
RFA	request for analysis
RLWTF	Radioactive Liquid Waste Treatment Facility
SAA	Satellite Accumulation Area
SCC	Strategic Computing Complex
SCM	stormwater control measure
SDPPP	Site Discharge Pollution Prevention Plan
SEP	supplemental environmental project
SERF	Sanitary Effluent Reclamation Facility
SIC	Standard Industry Classification
SIDP	substantially identical discharge point
SIP	Sample Implementation Process
Sites	LANL AOCs and SWMUs
SMA	Site Monitoring Area
SME	Subject Matter Expert
SMO	Sample Management Office
SPCC	Spill Prevention, Control and Countermeasure
SWA	Special Waste Area (New Mexico)
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
SWQB	Surface Water Quality Bureau
TA	Technical Area
TAL	target action level
TEAM	The Environmental Assessment and Management (Guide)
TMDL	total maximum daily load
TRC	total residual chlorine
TRE	Toxicity Reduction Evaluation
TRI	Toxics Release Inventory
Triad	Triad National Security, LLC
TSDF	Treatment, Storage, and Disposal Facility
TSS	total suspended solids
UOA	Used Oil Area
URL	Uniform Resource Locator
USACE	U.S. Army Corps of Engineers

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWA	Universal Waste Storage Area
WCATS	Waste Compliance and Tracking System
WET	Whole Effluent Toxicity
WMC	Waste Management Coordinator
WQS	water quality standard

1 Triennial Review Introduction

1.1 Triennial Background

In 2014, an improperly packaged drum of transuranic waste originating at the Los Alamos National Laboratory (LANL) built up pressure and released radiation into the environment at the Waste Isolation Pilot Plant in Carlsbad, New Mexico. The Waste Isolation Pilot Plant closed for necessary investigation and repairs and reopened in 2017 (DOE 2017). Based on the investigation results, the New Mexico Environment Department (NMED) issued the LANL Order (NMED 2014) for alleged hazardous waste and regulatory violations of the LANL Hazardous Waste Facility Permit (HWFP). The Co-Permittees (U.S. Department of Energy [DOE] and the management and operations contractor for the laboratory, Los Alamos National Security, LLC [LANS])[1] each requested a hearing. They collectively entered into a Settlement Agreement (NMED 2016) to resolve the alleged violations.

The Settlement Agreement (NMED 2016), Section 11.B.38 (in part), states:

> *The Respondents, their constituent agencies, contractors, and affiliates agree to address any potential regulatory violations identified in the triennial reviews. NMED agrees to refrain from taking any enforcement action against the Respondents, their constituent agencies, contractors and affiliates for any potential regulatory violations, or operational deficiencies, that could lead to potential environmental regulatory violations identified in the triennial reviews so long as the Respondents and their facility operators correct any deficiencies identified in the course of such reviews within sixty (60) calendar days of the finalization of each triennial review report, or for good cause shown, within another period of time beyond sixty (60) calendar days, if approved by NMED.*

Although the National Pollutant Discharge Elimination System (NPDES) permits are not promulgated by the NMED, water protection is important to the parties. The intent of conducting a review of these permits was meant to be proactive and identify any issues or improvements that could be made to protect water resources.

The LANL Triennial Review scope (DOE 2020) was developed in accordance with the *Settlement Agreement and Stipulated Final Order* between the NMED, the DOE, and LANS dated January 22, 2016. As one of the five supplemental environmental projects (SEPs) of the Settlement Agreement, the Triennial Review is a systematic, independent, and documented process of objectively reviewing environmental regulatory compliance and related LANL operations.

The agreed upon SEP – External, Independent Triennial Review No. 2 Performance Work Statement (December 17, 2020) for LANL must be completed and the resulting Final Triennial Review Report made public by posting to the Electronic Public Reading Room (EPRR) (http://eprr.lanl.gov) before the end of federal fiscal year 2021 (September 30, 2021).

As stipulated by the agreed-upon Scope of Work and Guidelines (NMED 2017) for Post Triennial Review Activities, the NMED, DOE, and management and operations successor (i.e., Triad) "*will meet to discuss the review findings/issues, identify lessons learned, and opportunities for future reviews.*

[1] The HWFP Co-Permittees were DOE and LANS at the time of the alleged incident and subsequent settlement agreement. The Co-Permittees have since changed to DOE, Triad National Security, LLC (Triad), and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (NMED 2018). Under the current HWFP, the Co-Permittees remain DOE, Triad, and N3B.

A specific discussion topic should include the need for future reviews under this format and approach. It is anticipated that a minimum of two separate triennial reviews will be performed before enough data will have been generated to support a discussion on the need for additional reviews." Although N3B is not party to the Settlement Agreement and Stipulated Final Order, N3B is participating in this Triennial Review and is part of the Post Triennial Review activities.

1.2 Triennial Review Purpose and Scope

The purpose of the Second Triennial Review was to complete a comprehensive independent review of environmental compliance at LANL for six identified focus areas. Compliance responsibility is shared by key groups at LANL, with certain areas and permits handled by one or more of the groups. The key groups at LANL include:

- U.S. Department of Energy (DOE) – owner of LANL. National Nuclear Security Administration Los Alamos Field Office (NA-LA) has primary responsibility for LANL, and the Environmental Management Los Alamos Field Office (EM-LA) has responsibility for the legacy cleanup mission at LANL.
- Triad National Security, LLC (Triad) – management and operations contractor for LANL responsible operating the laboratory
- Newport News Nuclear BWXT-Los Alamos, LLC (N3B) – Los Alamos Legacy Cleanup Contractor for DOE EM-LA

The six focus areas summarized in Table 1-1, fall into water management and waste management categories, and are managed by the entities mentioned above.

Table 1-1: Second Triennial Review Focus Areas

Permit/Law/Regulation Focus Areas	Responsible Entities	Attention Areas
NPDES Individual Stormwater Permit NM0030759	N3B, DOE	Subset of 250 Sites / solid waste management units (SWMUs) / areas of concern (AOCs)
2021 NPDES Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity	N3B, Triad	All MSGP covered areas
NPDES Industrial and Sanitary Point-Source Outfall Permit NM0028355	Triad, DOE	
New Mexico Administrative Code (NMAC) 20.6.2.1203 Spill Regulations	N3B, Triad	
Federal Resource Conservation and Recovery Act (RCRA) / New Mexico Hazardous Waste Act (HWA) / HWFP NM0890010515	N3B, Triad, DOE	Permitted unit compliance of: • Operating record • Waste characterization • Compatibility documentation
New Mexico Solid Waste Act	N3B, Triad	• New Mexico Special Waste Compliance • Construction and demolition waste characterization • Deactivation and decommissioning waste characterization

The NPDES was established under the Clean Water Act by U.S. Environmental Protection Agency (EPA) to regulate point sources that discharge pollutants to the waters of the United States. LANL holds NPDES permits that were reviewed during the Second Triennial Review. The Triennial Review Team (the Review Team) assessed LANL compliance with the following water management NPDES permits and New Mexico state regulations related to discharges or spills.

- **NPDES Stormwater Individual Permit (IP) NM0030759.** The Review Team reviewed SWMUs and AOCs covered by the IP and associated records for permit compliance. The IP authorizes the discharge of stormwater associated with historical industrial activities at LANL from specified SWMUs and AOCs, collectively referred to as Sites. The IP was issued to LANS and the DOE on November 1, 2010 (EPA 2010). The IP expired on March 31, 2014 and has been administratively continued until the new permit is issued (EPA 2015). On April 30, 2018, responsibilities, coverage, and liability transferred from LANS to N3B (EPA 2018). The Permittees submitted an IP Renewal Application Package in July 2019, and issuance of the new permit is pending (N3B 2019a).
- **NPDES MSGP.** LANL, with LANS as the original Permittee, received coverage under the 2015 MSGP for specific eligible facilities within LANL (EPA 2015a). In 2018, Triad and N3B replaced LANS as operators of LANL and were granted coverage for their respective facilities (Triad 2018, N3B 2018). They manage their facilities separately under the 2015 MSGP. Facility descriptions, locations, and responsible operators are listed in Table 3-3. The 2015 permit expired in June 2020 and was administratively continued until March 2021. Compliance with the new 2021 MSGP (EPA 2021) began in the first full quarter following authorization to discharge in June 2021 for both Triad and N3B (N3B 2021a, N3B 2021b, Triad 2021). The Second Triennial Review was performed just as the 2021 MSGP compliance period was beginning. There are few differences between the 2015 and 2021 permits, which allowed for compliance reviews of both. While compliance with the 2015 MSGP since 2018 was reviewed, the Review Team placed emphasis on verifying that LANL was prepared to comply with the new 2021 MSGP. Any observations that would have been specific to the 2015 permit would have likely been classified as a compliance violation; however, no such observations were made during this Triennial Review.

  The MSGP applies to facilities in areas of the country where the EPA is the NPDES permitting authority, and the EPA has made the permit available to New Mexico. The MSGP covers industrial activities within several sectors. As of May 2021, sectors applicable to LANL facilities are:

  - Sector D: Asphalt Paving and Roofing Materials and Lubricant Manufacturing
  - Sector K: Hazardous Waste Treatment, Storage, or Disposal Facilities (TSDFs)
  - Sector N: Scrap Recycling and Waste Recycling Facilities
  - Sector P: Land Transportation and Warehousing
  - Sector AA: Fabricated Metal Products

- **NPDES Industrial and Sanitary Point-Source Outfall Permit No. NM0028355.** On behalf of DOE, Triad (Co-Permittee) manages and operates 11 NPDES Industrial and Sanitary Point-Source Outfalls located in seven technical areas (TAs). The Industrial and Sanitary Discharge permit became effective on October 1, 2014, with final modifications implemented in May 2015 (EPA 2015b). LANL submitted a timely reapplication before the 2015 permit expired on September 30, 2019 (LANL 2019). The 2015 permit was administratively extended and remains effective pending EPA approval of the re-application. The Review Team assessed compliance based on the 2015 permit.
- **NMAC 20.6.2.1203, Spill Regulations.** The New Mexico spill regulations were developed as part of water quality protections. The Second Triennial Review focused on the elements of the regulations related to the reporting requirements and deadlines associated with spills. The

Review Team assessed both N3B and Triad lists and databases of spills and unauthorized discharges to surface water and groundwater. Using internal communications, the Review Team gained an understanding and evaluated compliance of spill response from spill clean-up to external reporting.

The Review Team was also tasked with reviewing waste management compliance related to hazardous waste and New Mexico special wastes. Because waste activities for different types of waste streams and items for recycle are co-located, the Review Team assessed the waste management permit and associated regulations by physical location.

RCRA / New Mexico Hazardous Waste Act / HWFP NM0890010515. The Triennial Review Team evaluated relevant facilities at LANL for compliance with RCRA regulations (Protection of the Environment, 40 Code of Federal Regulations [CFR] 124, 260–268, 270, 273, and 279-280); state-specific regulations defined in NMAC 20.4.1 and the 2018 New Mexico HWA Sections 74-4-1 to -14; as well as the HWFP, EPA ID NM0890010515 (NMED 2020). NMED issued the HWFP to "DOE (owner and co-operator of LANL), Triad and N3B[2] (co-operators of LANL)". All CFR references in this hazardous waste section were incorporated into NMAC 20.4.1. Per the HWFP, Triad and N3B manage different hazardous waste management units (HWMUs) as shown in Table 1-2, are solely responsible for operating their respective permitted units, and do not share management, operational authority, or responsibilities at these units (NMED 2020).

Table 1-2: List of Hazardous Waste Management Units and Co-Operators (taken from HWFP [NMED 2020])

Location	Type of Permitted Unit	Owner/Co-operator
TA-3	Storage	DOE/Triad
TA-14	Interim Status Open Burning/Open Detonation	DOE/Triad
TA-16	Interim Status Open Burning	DOE/Triad
TA-36	Interim Status Open Denotation	DOE/Triad
TA-39	Interim Status Open Denotation	DOE/Triad
TA-50	Storage and Treatment	DOE/Triad
TA-55	Storage and Treatment	DOE/Triad
TA-63	Storage	DOE/Triad
TA-54-38 West	Storage	DOE/Triad
TA-54 Areas G, H and L	Storage and Disposal (Including Units Undergoing Closure)	DOE/N3B

Permittees Triad and N3B operate different permitted units at TA-54. Triad operates two permitted units at TA-54 West and N3B operates ten permitted units at Areas G and L. Observations made during the Second Triennial Review identified the responsible Permittee depending on the HWMU visited.

Based on the quantity, type, and activities associated with the generation, storage, treatment, and transportation of RCRA-regulated wastes, LANL is regulated as follows.

- Large Quantity Generator of Hazardous Waste

[2] N3B is the Los Alamos Legacy Cleanup Contractor and is one of the HWFP Co-Permittees and is not considered an operator of the laboratory in the sense of laboratory management and operations.

- Transporter of Hazardous Waste
- Interim Status Treatment Facility
- Permitted Hazardous Waste Treatment and Storage Facility
- Large Quantity Handler of Universal Waste
- Generator of Used Oil

The Review Team developed checklists for each RCRA-regulated and non-RCRA unit visited using either the direct text of the regulatory requirements, regulatory requirement interpretations by The Environmental Assessment and Management (TEAM) Guide (USACE 2019), the permit conditions, or a combination based on the regulated unit's applicability. The Review Team assessed compliance of the HWFP and associated regulation using the checklists.

- New Mexico Solid Waste Act and NMAC Waste Regulations. The Act and associated regulations such as NMAC 20.9.8 (New Mexico Special Wastes) help outline solid waste management practices and conserve resources. The Review Team visited LANL's New Mexico special waste areas and assessed management practices for compliance with these regulations. The Review Team used a checklist to capture compliance with the requirements of the Act and associated NMAC waste regulations.

2 Approach and Methodology

The Second Triennial Review focused on the six areas identified in the performance work statement shown in Table 1-1. The technical basis and foundation for the review are centered on permit and regulatory requirements and internal policies and procedures that LANL (Triad and N3B) implements as part of their environmental management program. The Review Team systematically evaluated and reviewed procedures, best management practices (BMPs), and regulatory communications to verify environmental compliance using standalone compliance checklists for each focus area.

2.1 Preparation Activities

The Review Team established a high-security electronic file sharing site to facilitate information exchange and collaboration. N3B and Triad provided key documents specific to the focus areas through an exchange portal on the file sharing site.

The Review Team developed environmental compliance checklists to capture the permit or regulatory requirements for each focus area. The United States Army Corps of Engineers' (USACE) TEAM Guide (USACE 2019) aided in creation of applicable compliance checklists.

The Review Team submitted requests for additional information through this portal or via email. They reviewed plans and procedures for consistency with the current permits and regulations prior to the preliminary site visit. These documents included laboratory programmatic environmental policies and plans and associated federal and state regulations.

The Review Team held weekly meetings with DOE, Triad, and N3B to discuss progress and preparations for the Review, address questions and identify any programmatic changes related to discharges and waste management.

The Review Team conducted a preliminary site visit in May 2021 to meet the LANL environmental compliance team members, better understand their roles and challenges, and identify priority review areas. LANL provided an overview of the tools they use for tracking compliance and reporting (e.g., the Waste Compliance and Tracking System [WCATS], Environmental Information Management database [EIM], Maintenance Connection [MainConn], and Permits Requirements Identification [PRID]). Additionally, the Review Team met with the LANL Subject Matter Experts (SMEs) to discuss the permits and related compliance activities.

2.2 On-Site Review Activities

The Review Team conducted the Second Triennial Review from June 21 through July 1, 2021, by visiting regulated facilities, documenting and verifying field observations, completing a review of records/documents, and completing informal interviews with LANL personnel. The Review Team also observed environmental management system activities related to operations, material use and handling, outfalls, sampling, waste streams, reporting, and recordkeeping.

2.3 Site Visits/Field Verification

The Review Team visited sites to make observations and gather evidence to provide improvement recommendations. The Review Team inspected activities related to water and waste management to evaluate environmental compliance and field verify compliance with the identified permits, laws, and

regulations. Areas visited included facilities and activities identified within each permit being reviewed, processes that are used to record and monitor compliance, and operational units or areas assigned to fulfill a regulatory requirement. During the site visits, the Review Team observed practices to determine whether LANL, N3B, and Triad are following their documented procedures and applicable regulatory requirements and to determine whether written records fulfill permit requirements.

Team members captured key information on focus area checklists and pre-decisional observation forms, took detailed notes, and requested occasional photographs. Authorized LANL personnel took the photographs which are not included in this report. The Review Team shared pre-decisional observations with key LANL personnel for review, discussion, and corrective action/response. All pre-decisional observations are documented in the appendices as shown in Table 2-1, summarized by focus area. For purposes of reporting observations and recommendations, the Federal RCRA and NM Solid Waste focus areas are combined in the remainder of the report.

Table 2-1: Observation Appendices

Focus Areas	Appendix	Observations
NPDES Individual Stormwater Permit NM0030759	Appendix A, Section A.2	IP-001 through IP-027
2021 NPDES MSGP for Stormwater Discharges Associated with Industrial Activity	Appendix B, Section B.2	MSGP-001 through MSGP-014
NPDES Industrial and Sanitary Point-Source Outfall Permit NM0028355	Appendix C, Section C.2	Industrial-001 through Industrial-008
New Mexico Spill Regulations	Appendix D, Section D.2	Spill-001 through Spill-003
Federal RCRA/NM Solid Waste Act	Appendix E, Section E.2	HW-001 through HW-043

2.4 Review of Records/Documents

N3B and Triad provided an extensive body of documentation to demonstrate their compliance within the focus areas. Documents included program policies, procedures, records, regulatory agency correspondence, facility layouts, flow diagrams, monitoring data, operation and maintenance manuals, plans, and training records. The Review Team examined procedures and records to ensure they were current, complete, and complied with the applicable regulations and permit requirements. The Review Team completed the environmental compliance checklists with records provided. The completed checklists can be found in Appendices A through E.

2.5 Interviews

During the site visits, the Review Team interviewed key staff to better understand the nature of facility operations. Team members used these discussions to clarify and support the detailed observations. Detailed observations are in Appendices A through E.

2.6 Reporting

The Review Team provided a daily debrief to key LANL personnel during the onsite Review. The debrief included specific instances of potential environmental compliance deficiencies and noteworthy practices. The debrief also provided an opportunity for others who were not present when the observation was made to discuss.

In addition to the daily debrief, the Review Team logged the observations to include the site, responsible party, requirement, potential deficiency or positive practice, supporting notes, and associated recommendation. Each observation related to the scope of the review was recorded and shared with key LANL personnel. The Review Team updated the status (OPEN/CLOSED) of the observations as LANL personnel made corrections or provided updated information.

3 Observations and General Impressions

The overall impression of LANL staff culture is one of cooperation and diligence. During the review, LANL personnel were prompt, courteous, and demonstrated their commitment to environmental compliance, safety, and security. LANL personnel demonstrated significant knowledge in their respective fields, awareness of permit requirements, transparency with regulating agencies, and the desire to improve compliance efficiency with permit requirements.

3.1 Stormwater Individual Permit

Over the course of two site visits conducted in May 2021 and June 2021, the Review Team visited 102 of 250 site monitoring areas (SMAs), located across seven watersheds, and made 27 observations, two of which were accolades and 24 have been closed/removed. Table 3-1 summarizes the sites visited, their watersheds, TA locations, and observer team members. The Review Team did not inspect the remaining SMAs due to weather and N3B personnel/escort limitations.

Table 3-1: Site Monitoring Area Visits

Date	Watershed	Technical Area	SMA No.	Observers
5/27/2021	Los Alamos	Townsite	LA-SMA-2.1	T. Cangelosi, S. Stewart, A. Czaplinski
		Townsite	LA-SMA-2.2	
		Townsite	LA-SMA-5.2	
	Rendija	Townsite	R-SMA-1	
6/21/2021	Two Mile	TA-3	2M-SMA-1	T. Cangelosi, S. Stewart, A. Czaplinski
		TA-3	2M-SMA-1.7	
		TA-3	2M-SMA-1.8	
		TA-3	2M-SMA-2	
		TA-3	2M-SMA-2.2	
	Los Alamos	TA-2	LA-SMA-5.51	
		TA-2	LA-SMA-5.52	
		TA-2	LA-SMA-5.54	
		TA-2	LA-SMA-5.53	
6/22/2021	Sandia	TA-3	S-SMA-0.25	T. Cangelosi, G.Vondra, A. Czaplinski
		TA-3	S-SMA-1.1	
		TA-3	S-SMA-2.01	
		TA-3	S-SMA-2.8	
		TA-3	S-SMA-3.51	
		TA-3	S-SMA-3.52	
		TA-60	S-SMA-3.53	
		TA-60	S-SMA-3.6	
	Mortandad	TA-3	M-SMA-1	
		TA-3	M-SMA-1.2	
		TA-3	M-SMA-1.21	
		TA-3	M-SMA-1.22	
		TA-48	M-SMA-3	

Date	Watershed	Technical Area	SMA No.	Observers
		TA-48	M-SMA-3.1	
		TA-55	M-SMA-3.5	
		TA-48	M-SMA-4	
6/23/2021	Two Mile	TA-6	2M-SMA-1.42	T. Cangelosi, S. Stewart, A. Czaplinski, G. Vondra
		TA-6	2M-SMA-1.44	
		TA-6	2M-SMA-1.45	
	Pajarito	TA-9	P-SMA-1.05	
	Starmer	TA-9	STRM-SMA-4.2	
		TA-9	STRM-SMA-5.05	
	Water Canyon	TA-16	W-SMA-1.5	
		TA-16	W-SMA-7	
		TA-16	W-SMA-7.8	
		TA-16	W-SMA-7.9	
		TA-16	W-SMA-8	
	Sandia	TA-53	S-SMA-3.7	
		TA-53	S-SMA-3.71	
		TA-53	S-SMA-3.72	
		TA-53	S-SMA-4.1	
		TA-20	S-SMA-4.5	
		TA-20	S-SMA-5	
6/24/2021	Mortandad	TA-35	M-SMA-6	T. Cangelosi, S. Stewart, A. Czaplinski, G. Vondra
		TA-35	M-SMA-7	
		TA-35	M-SMA-7.9	
		TA-35	M-SMA-9.1	
		TA-35	M-SMA-10	
		TA-35	M-SMA-10.01	
		TA-35	M-SMA-10.3	
		TA-35	M-SMA-11.1	
		TA-35	M-SMA-12	
	Ten Site Mesa	TA-35	T-SMA-2.5	T. Cangelosi, S. Stewart, A. Czaplinski, G. Vondra
		TA-35	T-SMA-2.85	
		TA-35	T-SMA-3	
		TA-35	T-SMA-4	
		TA-35	T-SMA-5	
		TA-35	T-SMA-1.05	
6/25/2021	Chaquehui	TA-33	CHQ-SMA-0.5	T. Cangelosi, S. Stewart, G. Vondra
		TA-33	CHQ-SMA-1.01	
		TA-33	CHQ-SMA-1.02	
		TA-33	CHQ-SMA-1.03	
		TA-33	CHQ-SMA-2	
		TA-33	CHQ-SMA-3.05	
		TA-33	CHQ-SMA-4	
		TA-33	CHQ-SMA-4.1	

Date	Watershed	Technical Area	SMA No.	Observers
		TA-33	CHQ-SMA-4.5	
	Ancho	TA-33	A-SMA-4	
		TA-33	A-SMA-6	
6/28/2021	Canada de Buey	TA-46	CDB-SMA-0.25	G. Vondra
		TA-46	CDB-SMA-0.55	
		TA-46	CDB-CMA-1	
		TA-46	CDB-SMA-1.15	
		TA-46	CDB-SMA-1.35	
		TA-46	CDB-SMA-1.55	
		TA-46	CDB-SMA-1.65	
	Los Alamos	TA-3	LA-SMA-0.85	
		Next to TA-3	LA-SMA-0.9	
		TA-3	LA-SMA-1	
		TA-3	LA-SMA-1.25	
		TA-43	LA-SMA-3.9	
		TA-43	LA-SMA-4.1	
		TA-43	LA-SMA-4.2	
		TA-43	LA-SMA-5.01	
		TA-41	LA-SMA-5.02	
		Townsite	LA-SMA-5.361	
		Townsite	LA-SMA-5.362	
	Pajarito	TA-09	P-SMA-2	
6/30/2021	Mortandad	TA-5	M-SMA-12.5	G. Vondra
		TA-5	M-SMA-12.6	
		TA-5	M-SMA-12.7	
		TA-5	M-SMA-12.8	
		TA-5	M-SMA-12.9	
		TA-5	M-SMA-12.92	
		TA-5	M-SMA-13	
	Ten Site Mesa	TA-35	T-SMA-6.8	
		TA-35	T-SMA-7	
		TA-35	T-SMA-7.1	
	Canada de Buey	TA-52	CBD-SMA-0.15	

Most IP observations fell into two categories: recordkeeping and maintenance of control measures. Table 3-2 lists observations by category. Detailed observation forms are in Appendix A.

Table 3-2: Individual Permit Observations

Category	Number of Observations
Recordkeeping	11
Maintenance	9
Process improvement/BMPs	2
Erosion control	2

Category	Number of Observations
Monitoring/Testing	1
Procedures	1
Release/Spill	1

Notable observations included:

- Observation IP-001, minimize sediment in runoff during construction project: At 2M-SMA-1, the Review Team discovered a freshly graded, dirt construction road with insufficient controls to prevent the erosion of SWMU-03-010(a), a permitted feature (former outfall area from a vacuum repair shop), or to prevent sediment from entering the SMA during a storm event (see Figure 3-1). The Review Team discovered gaps in communications between N3B and Triad during construction at this Site.
- Observation IP-006, minimize sediment in runoff: At W-SMA-1.5, the Review Team found a gravel pad supporting transportainers eroding next to SWMU-16-028(d), a permitted feature (former outfall area from a machine shop) and depositing sediment into the adjacent drainageway.
- Observations IP-011, -012, -019, -020, -021, -024, and -025, maintenance of control measures: The Review Team found several control measures in various states of disrepair. Note: there were heavy rains in the days preceding the inspection that might have contributed to the condition of the control measures.
- Observations IP-003, -004, -010, and -015 through -017, outdated maps: The maps did not reflect conditions for several drainage areas.
- Observations IP-008, -009, recordkeeping: During the records review process, the Review Team discovered that N3B was not documenting target action level (TAL) exceedance oral notifications to the EPA and was not posting inspection reports to the public webpage, as required by the IP.

Figure 3-1: Erosion at SWMU-03-010(a)

The Review Team reviewed rainfall data and laboratory reports for 2018 through 2021 and found no issues. N3B collected stormwater samples as required by the IP and sent them for analysis of IP listed parameters. They documented the required quality assurance/quality control (QA/QC) measures and data validations.

The Review Team and N3B reviewed several inspection reports and found no issues. N3B maintained inspection checklists and records electronically in the MainConn system. The inspection reports documented conditions at SMAs in drainage areas that experienced “storm rain events” as defined in the IP.

A review of N3B IP personnel training records revealed that required site-specific training was up to date, and annual permit refresher training requirements were met.

3.1.1 MONITORING

N3B uses EIM to track precipitation data and notify field personnel of sampling events. Inspections and sampling occur after "storm rain events." Inspections are documented in the MainConn system.

N3B tracks the progress of the stormwater sampling required by the permit and documents this information in the annual reports (N3B 2019b, 2020a). N3B maintains sampling data in the EIM system. Sampling has been limited in recent years due to lack of rainfall during the current, prolonged drought.

On several SMA site visits, the Review Team observed that the maps included in the associated Stormwater Pollution Prevention Plans (SWPPPs) needed updates (N3B 2020c, 2021d). Examples follow.

- S-SMA-2.01: The automated sampler was moved from its mapped location, possibly during construction work at the fence line.
- S-SMA-1.1: A new, large electrical substation was not included on the SMA map.

3.1.2 MANAGEMENT

N3B uses many internal protocols and multiple software systems to track IP compliance issues. N3B, Triad, and the DOE field offices participate in monthly interface meetings to discuss upcoming work impacting IP Sites and coordinate paths forward to minimize overall impacts. The Review Team discovered communication gaps in a couple instances between N3B and Triad and in relaying relevant information to field personnel. The Review Team identified opportunities for improving communication, automating notifications, and further formalizing processes.

N3B uses the EIM database to track analytical results from sampling events and required limits/detection limits. Any TAL exceedances trigger e-mail notifications to field personnel so that follow-up inspections may be completed. (Triad maintains environmental data in a separate EIM database.)

One of two positive practices the Review Team observed is use of the N3B MainConn database system to track SMA inspections in real-time. When work is required, the system generates work packages and notifies field personnel. As well as tracking upcoming work, the MainConn system tracks completed modifications and inspection documentation.

The other positive practice is that telemetry systems have been installed at some remotely located automated samplers to notify IP personnel when a sample is taken. Plans to expand the telemetry system to more sites are currently underway. The Review Team found that the use of the telemetry technology demonstrates a BMP for both convenience and efficient use of resources, further ensuring compliance with permit inspection requirements.

3.1.3 REPORTING

As shown by documentation posted to the IP Stormwater public website (https://ext.em-la.doe.gov/ips), N3B has submitted annual Site Discharge Pollution Prevention Plan (SDPPP) updates, annual reports (including analytical results, compliance reports for each SMA, documentation of baseline/corrective actions, and compliance statuses), requests for alternative compliance, force majeure, and site deletions to the NMED and/or EPA. Inspection reports (N3B

2021c) are summarized in the annual reports but not maintained on the website as required by the IP (IP-009).

TAL exceedances are submitted to the EPA via e-mail. However, N3B did not have consolidated e-mail notification records or a system for confirming the e-mails were received (IP-008).

3.2 NPDES MSGP for Stormwater Discharges Associated with Industrial Activity

In 2018, two operator transitions occurred affecting MSGP coverage at LANL. On May 1, 2018, three facilities at TA-54 (Area G, Area L, and Maintenance Facility West [MFW]) were transitioned to the DOE's Environmental Management Legacy Cleanup operator, N3B (N3B 2018). On November 1, 2018, the Laboratory's Management and Operating contract transitioned from LANS to Triad. Operated by N3B and Triad, LANL was covered under the 2015 MSGP and maintained its coverage under this permit through June 2021. The EPA issued a new MSGP in 2021 to regulate stormwater discharges associated with industrial activity for 11 sectors of facilities in specific states and regions of the U.S., including New Mexico (EPA 2021). N3B and Triad individually submitted a Notice of Intent (NOI) requesting authorization to discharge stormwater associated with industrial activity in May 2021 (N3B 2021a, N3B 2021b, Triad 2021). The Review Team recognized that the timing of the Second Triennial Review would offer an opportunity to evaluate LANL's readiness to maintain compliance during the transition to the 2021 permit.

The Review Team inspected all permitted facilities covered under the 2021 MSGP. Table 3-3 summarizes each facility.

Table 3-3: Multi-Sector General Permit Stormwater Discharge Points

Area	Subarea	MSGP	Watershed	Monitored Outfalls	SIDP[3]
TA-54 (N3B)	Area G	Sector K	Pajarito	053	073
				069	076, 077, 078, 079, 080, 081, 082, 083
				051	
			Canada del Buey	072	074, 075
	Area L	Sector K	Canada del Buey	050	
	MFW	Sector P	Pajarito	049	
TA-16 (Triad)	Stockpile Area	Sector P	Canon de Valle	078	
TA-03 (Triad)	Metal Fabrication Shops (38)	Sector AA	Sandia	076, 077	
TA-09 (Triad)	Metal Fabrication Shop (0214)	Sector AA	Arroyo de la Delfe	079	
TA-60 (Triad)	Material Recycling Facility	Sector N	Sandia	029	
	Salvage/ Warehouse (02)	Sector P	Sandia	026	027, 028
				075	
	Heavy Equipment Shop (01)	Sector P, AA	Sandia	022	021, 023, 024, 025
	Roads and Grounds, Sigma Mesa Staging Areas	Sector P	Sandia	039	
				032	033, 034, 035
				042	
				037	
			Mortandad	031	030
	Asphalt Batch Plant	Sector D	Mortandad	043	

[3] SIDP – substantially identical discharge point

3.2.1 OVERVIEW

The Review Team was impressed by the professionalism and competence of the compliance teams at LANL. The personnel have a long and strong working relationship with regulators, as reflected in the correspondence and feedback from agency representatives. This working relationship helps them resolve regional and statewide issues. LANL's transparency in reporting and working with the regulators has resulted in no notices of violation (see pre-2021 SWPPPs).

Control measures were in overall good condition and well designed to minimize the discharge of pollutants and prevent unauthorized discharges. The compliance teams and Environmental Professionals inspect the facilities for conditions requiring corrective action and identify opportunities for improvement (LANL 2020). Improvements have been made in recent years to slow or capture stormwater. Personnel continue to identify ways to improve the effectiveness of stormwater runoff prevention measures through BMPs, infrastructure improvements, or installation of additional measures.

3.2.2 MONITORING

The Review Team recognized a late development in the 2021 MSGP regarding the monitoring of per- and polyfluoroalkyl substances (PFAS). The 2021 MSGP contains a New Mexico-specific requirement that PFAS monitoring should be included in the first year of the permit. A settlement agreement (New Mexico Chamber of Commerce vs. New Mexico Environment Department, Surface Water Quality Bureau, Docket No. SWQB-20-71) was reached on May 24, 2021. The settlement limited the monitoring requirement to specific industry categories required to submit a Toxic Release Inventory (TRI) for PFAS. Since none of the LANL facilities covered under the MSGP are required to report PFAS under the TRI, the PFAS monitoring requirement is no longer applicable.

The Review Team had an opportunity to directly observe the routine facility inspections for MSGP compliance at TA-54. The compliance team and Environmental Professionals were thorough and qualified to examine the appropriate elements. Maintenance needs were noted as required. Forms were fully completed.

Observation MSGP-011, Section 5.2 of SWPPP: Quarterly visual assessments (QVAs) of stormwater discharges must be conducted for each outfall. During the deployment of sampling jars to capture discharges, the Review Team noted that one of the jars was placed at a location that was otherwise not marked. It was unclear how the person deploying the jars knew where to locate it. The Review Team discussed this with LANL, and the official outfall location was marked with a sandbag for future reference. The QVA location was a new location added for the 2021 MSGP. It should be noted that this observation was made prior to the beginning of the new required monitoring period on August 1, 2021. The observation was closed.

3.2.3 MANAGEMENT

Observation MSGP-001, Condition 1.3.5, Signage: The MSGP states that a sign or other notice of permit coverage must be posted at a safe, publicly accessible location in proximity to the facility. At the time of the review, no signage had been placed at several of the facilities. However, coverage under the 2021 permit had not begun. Due to 2021 MSGP language, there was some confusion as to where to post signs where outfalls and facilities are not publicly accessible. Before the review was

complete, permit-compliant signs were conservatively posted at all facilities. This observation was closed.

Observation MSGP-003, Condition 2.1.2.1, Minimize Exposure: Building 214 at TA-09 is a new addition to the MSGP. At the time of the review, the SWPPP included control measures and a map of runoff patterns. It also included the location of Outfall 079 and a monitoring station. The Review Team recognized new conditions on the ground, including topographical changes, reduction of a vegetated buffer, and the addition of a gravel area for shipping container storage units. The compliance team revised the maps and the proposed location of the outfall and monitoring station using best professional judgment. While further evaluation and adjustments may be necessary upon the installation of the outfall and response to precipitation events, the LANL team responded to the observation with the best and most current information available. This observation was closed.

Observations MSGP-003, -005, -012, Condition 2.1.2.1, Minimize Exposure: The Review Team recognized instances of uncovered raw materials (metal, debris, salvage) that should not be exposed to precipitation at TA-09-0214, TA-3-38, and TA-54. Prior to completion of the review, material was either covered or removed from potential contact with precipitation. These observations were closed. Expanding on this observation, some shelters are used for storing metal on racks that are open on at least one side with a roof covering the space above the racks. Some of these shelters need to be maintained and/or re-tarped on a regular basis. A larger, more contiguous shelter for these racks could be installed to minimize exposure and maintenance costs; however, there is no imminent risk of unauthorized discharge. A contiguous shelter would require capital improvements.

Observation MSGP-008, Condition 2.1.2.1.b, Minimize Exposure: The permit requires the location of materials, equipment, and activities so that potential leaks and spills are contained or can be contained or diverted before discharge. Large 10,000-gallon tanks storing beet juice and brine for anti-icing operations located outside the salt storage area at TA-60 Roads and Grounds did not have secondary containment. The Review Team observed leaking valves on a couple of the tanks where leaking contents are being captured with drip pans. In the event of a catastrophic failure, there was nothing preventing an unauthorized release. While no imminent risk of unauthorized pollutant discharge was observed, the Review Team recommended containment as an improvement rather than an observed compliance violation. Following the Review, Triad installed new 10,000-gallon tanks for storing anti-ice solutions that reduced the risk of leakage. LANL's response to invest in new infrastructure gives the Review Team confidence to close this observation.

Observation MSGP-009, Condition 2.1.1, Stormwater Control Measure Selection and Design Considerations: Using stormwater control measures in combination rather than in isolation may be more effective for minimizing pollutants in stormwater discharges. The review and compliance teams noted that the retention pond at the TA-60 Material Recycling Facility is likely undersized for the facility, in that the amount of runoff generated from the facility during heavier rains is not sufficiently slowed to promote sediment settling and reduce discharges. Adding storage staged along the lower end of the catchment area would allow for slower release of stormwater during a rain event. Because this may require capital improvements, this observation is open. However, since no imminent risk of unauthorized pollutant discharge was observed, this is a recommendation for improvement rather than an observed compliance violation.

Observation MSGP-010, Condition 2.1.2.1, Minimize Exposure: The eastern edge of the soil stockpile associated with Outfall 039 was threatening to overtake the stormwater control berm. The Review

Team recommended installing a buffer between the stockpiles and the berms to account for incidental sloughing from the stockpiles. The stockpile location was adjusted using heavy equipment to move the soil away from the berm. This observation was closed.

Publicly available electronic databases including the EPRR and IntellusNM are outstanding tools for accessing plans, reports, correspondence, maps, water quality data, and other materials related to LANL activities. Use of internal tools such as the PRID, Integrated Review Tool (IRT), MainConn, and EIM allow the compliance team to track, review, and maintain schedules, work orders, reporting requirements, and other responsibilities. The challenge of having such a large and diverse network of facilities is met through the implementation of these tools; yet the compliance teams are not overwhelmed by the complexity of operating these systems. Specifically, observations during routine facility inspections or exceedances in analytical results are tracked using these tools to ensure corrective actions, change control, and additional measures are implemented. Nevertheless, there will be an effort to consolidate some of these systems to simplify and create further efficiencies.

The compliance teams at TA-54 were well qualified and trained for their roles. In addition, newly instituted monthly environmental compliance workshops target site workers outside the team. These workshops have different subjects each month and are an effort to educate workers on environmental requirements the site is subject to. This additional training should reap benefits by empowering workers with the knowledge to better identify issues and understand the importance of environmental procedures.

3.2.4 REPORTING

Submittal of an electronic NOI for application of coverage under the new 2021 MSGP proved to be a challenge for the applicants (N3B and Triad). The electronic system may not always produce agreements between watersheds associated with discharge points and the most recent watershed impairments. Until the Net-DMR (Discharge Monitoring Report) database can be accessed for reporting, it is unclear whether the appropriate permit limits for compliance will be identified in EPA's electronic reporting system. If a required impaired water constituent is not included in the Net-MSGP system, the Permittee is required to manually enter the correct constituent via the NOI. It remains to be seen whether this will be an issue; however, the teams have an alternative approach and an open line of communication with regulators to navigate any potential initial reporting problems.

LANL has a customized and creative use of the EIM system for archiving and analyzing data results. The resulting database is above and beyond what is typically necessary for permit compliance but is probably needed for the complex regulatory environment of LANL. The compliance team developed the algorithms for determining changes in monitoring requirements and the status of additional implementation measures. The resulting toolbox is an extraordinary system. An electronic data deliverable (EDD) is generated by EIM, then submitted to Net-DMR. Comments can be added to the EDD submitted into Net-DMR entries to clarify or add information not provided by the EIM export format.

During preparation of the NOI and subsequent evaluation of changes needed in EIM to accommodate the 2021 MSGP, the compliance team identified potential inconsistencies between water quality standards for hardness-based metals referenced in the MSGP and those identified in NMAC 20.6.4, Standards for Interstate and Intrastate Surface Waters. NMED recalculated the water quality standards as part of the state's 401 Certification. However, the LANL compliance team has

evidence that those recalculations may have been done in error. EPA is aware of the perceived errors, but it is unclear whether there will be an eventual correction or resolution. Though this may continue to be a challenge, it stands as a testament to the compliance team's proactive approach to regulatory compliance through maintaining open channels with the agencies, the development of systems that can identify problems early, and a transparency that could reduce confusion for permit holders across the state.

3.3 NPDES Industrial and Sanitary Point-Source Outfall Permit

The LANL NPDES Industrial and Sanitary Point-Source Outfalls team demonstrated an exemplary approach to monitoring, management, and reporting. The overall impression is that the team has a highly functional and collaborative approach, striving for excellence through regular communication, implementing lessons learned, and executing pilot projects. While minor issues were noted during the field investigation, most observations related to BMPs.

3.3.1 OVERVIEW

Triad operates the LANL NPDES Industrial and Sanitary Point-Source Outfalls on behalf of the DOE and is identified as a Co-Permittee of this NPDES Permit. As Co-Permittee, Triad is responsible for LANL compliance with the regulatory requirements of the NPDES permit. The current LANL NPDES Industrial and Sanitary Discharge Permit No. NM0028355 became effective on October 1, 2014, with final modifications implemented May 2015 (EPA 2015b). The current permit expired on September 30, 2019 and was extended based upon the timely submittal of the renewal application in March 2019 (LANL 2019). The new permit is pending final approval by the EPA. The Review Team assessed the activities at LANL based on the 2015 permit. This permit includes 11 outfalls located at seven TAs as presented in Table 3-4. These outfalls are spread out over an approximately 36-square-mile area within the LANL boundaries.

Table 3-4: LANL's NPDES Industrial and Sanitary Discharge Permit NM0028355 Outfalls

Technical Area	Outfall Category/Effluent Type	Number of Outfalls	Outfall ID	Watershed
TA-3	Power Plant (001)	1	001	Sandia
TA-46	Sanitary Wastewater System Facility (13S)	1	13S	Canada del Buey
TA-35	Radioactive Liquid Waste Treatment Facility (051)	1	051	Mortandad
TA-3	Treated Cooling Water (03A)	6	03A027	Sandia
TA-53			03A048	Los Alamos
TA-53			03A113	Sandia
TA-35			03A160	Mortandad
TA-55			03A181	Mortandad
TA-3			03A199	Sandia
TA-3	Non-Contact Cooling Water, Stormwater, and Roof Drain Water (04A)	1	03A022	Mortandad
TA-16	High Explosive Wastewater Treatment Facility (05A)	1	05A055	Water/Canon del Valle

3.3.2 MONITORING

This permit requires weekly, monthly, quarterly, annual, and term sampling to demonstrate compliance with different outfall-specific effluent quality limits. Review of the LANL NPDES records and direct observation indicate that sampling is conducted in compliance of these requirements. The

Review Team observed instrument calibration (pH and total residual chlorine [TRC]) at building TA-59-1. All the procedures were followed in accordance with the technical procedures Calibration/Standardization of Instruments Technical Procedures (LANL 2021b). In addition, the Review Team checked the field logbooks (from May 5, 2017, through February 18, 2021) and calibration logs. The Review Team noticed that the serial numbers of the instruments calibrated were not recorded in the calibration log, although the equipment make and model were. The serial numbers associated with each pH and TRC meter were added to the front of the logbook during the observation period.

The Review Team observed the Whole Effluent Toxicity (WET) sampling evolution at Outfall 051 on June 22, 2021, and the WET sampling evolution at Outfall 001 on June 23, 2021. All the Technical Sampling Procedures (LANL 2021a) were completed as required. The field technician was organized and completed all the procedures (planning, calibration, preparation, mobilization to field location, sampling collection, and field parameter monitoring) safely and in the time allotted. The samples were shipped by the Sample Management Office (SMO) to a LANL-approved analytical laboratory required to use EPA approved methods and follow DOE contract requirements.

Operational sampling is conducted in advance of NPDES sampling as a control before releasing effluent to the outfalls. This ensures, to the greatest extent possible, that pollutants have been removed or reduced to comply with associated permits. In addition to reducing the possibilities for exceedances, this BMP serves as an early warning system for maintenance activities. For example, higher levels of copper may indicate that a component of the treatment system requires replacement. Proper maintenance reduces risk of exceedance. Operational sampling is particularly beneficial in identifying Outfall 001 issues of concern close to a point of origin. Outfall 001 continuously discharges cooling water from the power plant, treated sanitary wastewater effluent from the Sanitary Wastewater System, recycled sanitary effluent from the Sanitary Effluent Reclamation Facility (SERF), and treated cooling tower blowdown from the Strategic Computing Complex. If an exceedance occurs at Outfall 001, the root cause must be investigated at all potential generation points.

The LANL NPDES team tracks discharge monitoring data in EIM at Locusfocus.com. This management system allows the NPDES team to identify trends for outfall management and develop reports. The Review Team observed NPDES personnel enter field data as they provided an overview of the system interface and the procedures for entry. There are no concerns with the methods used for data entry.

3.3.3 MANAGEMENT

The Review Team observed a consistent execution of processes in document control, recordkeeping, and data management. Management of data and facilities are integral to each other. As data are collected and analyzed, they are also shared between facility managers. This data exchange allows for a cooperative approach to improve efficiency, reduce process chemical volume, reduce exceedance risk, and develop a systems wide understanding of the current situation and prospective gains.

Management of water sources and how they are treated has become a critical concern for operations. Los Alamos County water resources are generated from wells. One of these sources was identified as having high levels of arsenic. Arsenic and other heavy metals must be reduced prior to

use in industrial processes. Some of the thresholds identified in the NPDES Industrial and Sanitary Point-Source Outfalls Permit, such as TRC, are lower than quantities found in county water that is brought into LANL.

The programmatically owned outfalls provide the opportunity to use program funds to advance methods of industrial wastewater processing. Several pilot programs have been implemented over the past several years to increase treatment capacity, reduce risk, and maximize water reuse in industrial processes. For example, approximately two to three water cycles are used in cooling tower processes. Pilot program research shows signs of increasing the number of cycles to six or seven.

Additionally, several BMPs are used to reduce the potential for future exceedances. These BMPs include consistent processes, equipment redundancy, regular data sharing, and monthly NDPES Industrial Wastewater SME collaborative meetings.

Equipment redundancy is an effective means of ensuring that monitoring operations are not disrupted. The TRC levels historically incurred the most exceedances at LANL. To manage the risk of exceedances, the operational samples are always collected upstream of the final treatment and are grab samples. LANL NPDES team has installed ISCO™ automatic water samplers for Outfalls 001 and 13S to collect composite compliance samples. LANL has purchased two spare systems to minimize replacement downtime.

An additional example of an environmental reduction BMP is the use of evaporation to reduce the quantity of outfall water, thus minimizing the exceedance potential. This practice is used at Outfalls 051 and 05A055 in the form of mechanical evaporators. Solar evaporation tanks may be used as an alternative reduction BMP. A solar evaporation tank is awaiting final approval to operate at Outfall 051.

3.3.4 REPORTING

The DMRs are due to the EPA and NMED by the 28th day of each month. Flow data entry is entered into an EDD file starting on the 10th of each month. From there, the data are sent to the SMO and Database Manager to be uploaded into EIM. All documentation is kept in DMR binders in which shipping documents, qualifier reports, marked-up draft DMRs, and then the final DMR are tracked. On June 22, 2021, the Review Team observed the process of the DMR completion for May 2021.

The Review Team checked the LANL DMRs and exceedances from January 2018 through April 2021. All the reports were submitted in a timely manner. The overflows and any noncompliance events were properly reported and addressed. As a positive practice, the Review Team noticed that an email confirming the telephone call was submitted to the agency in addition to and within 24 hours of the oral notification. The Review Team also checked the field logbooks from May 5, 2017, through February 18, 2021, and analytical reports and chains-of-custody to confirm WET test sample quality.

Analytical laboratories conduct their Level 4 analyses and cross-check their results. If there is an exceedance, the SMO conducts a focused validation. The NPDES Manager then develops a draft letter that is distributed to Administration for documented correspondence and sent over to the RASTII System for internal document classification review. Once complete, SMO will issue a Los Alamos Unlimited Release number for release. Finally, LANL routes the letter for signature and submits it via email to the EPA and NMED.

The NPDES Manager can run reports from EIM to determine trends. This is significant because Los Alamos has special permission to track samples not required in the permits. This identifies trends for preventative maintenance and exceedance avoidance.

Training documentation is considered personal information and is not releasable. To ensure compliance, the Review Team checked training records from the past 10 years for each LANL NPDES compliance team member in the LANL NPDES compliance office. On June 28, 2021, the Review Team also reviewed randomly selected training logs for environmental professionals. All required training was completed on time.

3.4 New Mexico Spill Regulations

NMAC requires discharges from any facility of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or use of property to be reported orally to the appropriate state agency within 24 hours. Within one week after the discharge, written notification of appropriate additions or corrections to the prior notification is required. Corrective actions are to commence as soon as possible to contain and remove or mitigate the damage caused by the discharge. If corrective actions are not completed within 7 days of the discharge, a 15-day notification report must be submitted with a status of corrective actions. Requirements detailing further reporting on corrective actions, if necessary, are described in the regulation (NMAC 20.6.2.1203).

3.4.1 OVERVIEW

The LANL teams responsible for reporting unauthorized discharges are well-informed and competently trained. Each of the teams has systems in place for tracking spills and communicating required actions that are suitably scaled for the areas of their jurisdiction. The spills notification and tracking systems have been consistent since Triad and N3B began managing their respective facilities.

3.4.2 MANAGEMENT

Upon the discovery of a spill, individuals immediately notify the Facility Operations Director (FOD) or Environmental Professionals associated with the facility.

A recent gap analysis of N3B procedures identified the necessity to update and create additional procedures and forms regarding the spill communications and reporting process. The Review Team was struck by the culture of continuous improvement. The compliance team and management are not afraid to evaluate their processes and systems. Their consistently critical management approach is reflected in the extension of their training programs, updates to their procedures, and receptiveness to new ideas from within their organization.

The Triad spills tracking database may be incorporated into the future integrated database. It is uncertain what challenges may arise with the integration; however, increased awareness of spill disposition between other teams should only serve to add redundancies to an already robust system.

Observation Spill-002, Improved Tracking: The N3B spills tracking matrix maintained specifically for TA-54 includes all reportable and non-reportable spills that have occurred since N3B began

operating the area. Although all relevant details were included in the tracking matrix, it was difficult to determine whether they were reportable. This observation was closed.

3.4.3 REPORTING

The spills teams are consistently meeting their required notifications and reporting deadlines for discharges, spills, and releases. Shared spreadsheets represent the basis of their tracking systems, allowing for intrateam communication of the status of ongoing response actions and provide a synopsis of previously closed responses.

The Review Team was able to review the records and details of any spills within the previous three years. No discrepancies were found in what was categorized as reportable. No reporting deadlines were found tardy or missing. The Review Team found the spills teams have a record of 100% compliance with NMAC 20.6.2.1203.

The Review Team was able to observe first-hand the response to a release at TA-09. The team acted quickly and followed all requirements per state regulation from the moment of discovery, to the notification of internal team members, to oral notification of the NMED, to corrective action and the written report to NMED.

3.5 Federal Resource Conservation and Recovery Act / New Mexico Hazardous Waste Act and New Mexico Solid Waste Act

The Review Team went over the HWFP with the Co-Permittees, Triad and N3B. Pertinent RCRA and New Mexico hazardous and solid waste regulations were reviewed, along with deficiencies noted in the recent NMED inspections and correspondence. The Review Team completed site visits to the following types of facilities.

- RCRA Permitted Storage Units (19)
- Interim Status Units (3)
- Satellite Accumulation Areas - SAAs (332)
- Central Accumulation Areas – CAAs (21)
- NM Special Waste Storage Areas – SWAs (25)
- Polychlorinated biphenyl (PCB) Waste Storage (9)
- Used Oil Storage Area – UOAs (31)
- Universal Waste Storage Areas – UWAs (48)

As a result of the file review and site visits, the Review Team made 43 waste management observations, 28 for Triad and 15 for N3B. Five of the observations were not applicable to compliance and were positive BMPs, and 37 were closed after further information was provided. The site visit log, detailed waste observations, observation status and closure may be found in Appendix E.

The observations are categorized as follows.

- Labeling (17 observations)
- Inspections, Signage and Recordkeeping (9 observations)
- Storage (7 observations)
- Procedures (4 observations)
- Release, Spill (3 observations)

- Maintenance (2 observations)
- Training (1 observation)

The observations noted in each area can be further characterized as follows.

- Efficiency/Improvement Recommendation (15 observations)
- Operational Deficiency (3 observations)
- Potential Environmental Regulatory Violation (20 observations)
- Positive Practice (5 observations)

These categories are discussed in the following sections.

3.5.1 CONTAINER LABELING

The Review Team identified labeling issues at the waste storage areas listed below. Most label observations are considered potential regulatory violations.

- SAAs (Observations HW-007, -013, -019, -020, -022, and -023)
- CAAs (Observation HW-001)
- Permitted storage areas (Observations HW-004, -005, -030, and -032)
- New Mexico solid and special waste storage areas (Observations HW-003, -010, -011, -024, -026, and -031)

Labeling issues at SAAs included instances where containers were labeled both “Empty” and “Hazardous Waste” and contained material (HW-007). There were also instances where product storage was intermingled with hazardous waste (HW-013, HW-019) and instances where labels were incomplete (HW-020 and HW-022).

Labeling issues at CAAs included a container stored with the label not visible (HW-001).

Labeling issues at permitted storage units included a hazardous waste container with incorrect paperwork resting on a drum indicating that liquid waste was present in a “solids only” storage area (HW-004). There was a storage cabinet labeled “Hazardous Waste” and “Empty” (HW-005). There was also a drum placed on a pallet such that it was possible for its label to become obscured if other drums were placed on the pallet (HW-032).

Labeling observations were closed during the review period through corrective actions taken by WMCs.

3.5.2 INSPECTIONS, SIGNAGE AND RECORDKEEPING

Six out of the nine observations were related to recordkeeping, documentation of inspections, or the approach taken regarding inspection protocols. In two sets of inspections at TA -54, Area L, Aboveground Container Storage Units, and Pads 5, 7 and 8, there was conflicting information recorded from week to week (HW-037, HW-041). In multiple cases, the Inspection Record Forms (IRFs) indicated items as “NA” (not applicable) for permit items that require weekly inspections (HW-021) such as eye wash and safety shower stations. Items on other IRFs were noted as Non-Regulatory Concern (NRC) that were either permit or contingency plan-required items (e.g., communications equipment and warning signs). In some cases, required fields were left blank (HW-037).

After inquiry, it was discovered that the N3B practice was to mark items as "NA" on the individual waste storage site inspections when they were being inspected as part of general inspections of the overall areas. Both Area L and Area G sites were handled this way. There was a single weekly IRF for the entire area as opposed to individual inspections for each active storage site (HW-040). This approach could lead to overlooked inspections and missed issues. Historically, trained Nuclear Operators have performed RCRA HWFP inspections. N3B has indicated that, going forward, these inspections will be conducted with appropriately trained RCRA inspectors working with Environmental Professionals to ensure RCRA protocols and specific HWFP inspection requirements are completed.

The training manual for N3B RCRA Inspections and Notifications (N3B 2020b) directs inspectors to only use the designator "NA" when an inspection criterion is not applicable to an item. Section 5.2 of the training manual also notes that all items being inspected must have a designator recorded, further indicating that blank fields are not acceptable per NMED.

Two other key observations were related to signage (HW-033) and inspections (HW-038). Faded signs were noted during the site walk at TA 54-033, TA 54-283 and Pad 10 and a few signs were missing at entrances. The Review Team noticed several items that were identified during inspections as deficiencies remained outstanding, continuing inspection after inspection and appearing to not be addressed. Some of these deficiencies were first noted in 2018 and included concrete cracks, asphalt cracks, uninspected windsocks, chipped floor paint, ripped fabric, and faded door signs. The inspection forms erroneously identified these as NRCs and not Action Required items. During the site walks and conversations with N3B representatives, they acknowledged that asphalt cracking is a continual issue on site due to weather conditions. Repairs are performed daily by a designated team. In some cases, repair requisition requests were in place and noted on the IRFs. On a positive note, some sites/domes showed evidence of recent asphalt crack repairs. Regular inspections identified areas of required maintenance. During the site visit, Area G domes were under repair being reskinned to prevent rain or snow from accumulating on the drums as required by the HWFP.

Inspections, Signage and Recordkeeping observations were closed out by revision of procedures to correct deficient inspections and recordkeeping and replacement of faded signs.

3.5.3 STORAGE

Storage observations include the following.

- Waste oil drums not fully on secondary containment (HW-006)
- Insufficient secondary containment (HW-008)
- A drum designated as a satellite accumulation area found outside of its designated location and not in immediate control of generator (HW-025)
- Stormwater leaking through containment curb into permitted storage area (HW-034)
- Lead acid batteries being accumulated outside of an area designated for universal waste storage (HW-035)

Two positive observations were made related to an innovative secondary containment solution (HW-014) and to the use of cone-shaped drum lids (HW-018).

Storage observations were closed by the respondent taking appropriate action to correct issues.

3.5.4 PROCEDURES

The Review Team recommended tying requests for analysis (RFAs) to the container that was sampled by labeling the container with the request-for-analysis information.

The Procedure observation regarding the BMP of including tracking of the RFA to the container were considered closed with WMC actions to include RFA# on the container label.

3.5.5 RELEASE/SPILL

Observations included inaccessible/hidden spill kits (HW-002), inadequate spill kit for waste being stored (HW-009), and no spill kit available (HW-039).

Release/Spills observations were closed by respondents taking appropriate actions to correct deficiencies noted for the observation.

3.5.6 MAINTENANCE

The Review Team identified maintenance issues recorded on IRFs specifying asphalt repairs that were outstanding since February 2020 in TA-55 (HW-012). This observation should also be considered to cover all of Areas G and L. Several inspection sheets for Areas G and L showed crack maintenance as being outstanding for a year or more, although these cracks were noted by the N3B area maintenance teams as having been promptly fixed but not closed out appropriately on the inspection form. N3B further noted that procedure N3B-DOP-TRU-1219 (N3B 2020b) will be revised to ensure Action Required items, when completed, are closed out on the inspection forms. The second observation (HW-029) included peeling sealant coating in secondary containment at TA-54-033 and TA-54-036 and cracked asphalt needing repair at TA-54 Pad 10.

Maintenance observations regarding secondary containment repairs were closed after appropriate actions were taken to repair epoxy sealant and curbs. However, one maintenance observation, HW-012- noted at TA-55, requiring asphalt repair remains open.

3.5.7 TRAINING

One observation (HW-028) was made regarding Triad's training. This observation suggests updating the training module (Triad, 2017) to reflect BMP improvements and P409 (waste characterization procedure) updates.

The Training observation was closed with a revision of the training module addressing the generator improvement rules and specifically the labeling requirements to include hazardous characteristics.

3.5.8 POSITIVE OBSERVATIONS

Overall, the LANL teams were very knowledgeable of both regulatory and LANL hazardous waste requirements. All were dedicated to continuous improvement in waste management especially around waste reduction. All LANL teams also shared a vision of working together to continually improve the program. WMCs who participated in the site visits readily interacted with the Review Team members and welcomed questions and input from the team. The waste management program itself is well organized and established. The LANL teams are well versed in the WCATS system. The Review Team made several positive observations were made by the Review Team during the Triennial Review as described below.

- "Green is Clean" – In this program, personal protective equipment generated during radiological process activities is stored for pre-screening prior to disposal and sent for radiological screening. Waste is then segregated into two streams. Materials below the radiological threshold are labeled as "GREEN is CLEAN" and can be managed as non-hazardous waste. This program has significantly reduced the overall volume of waste that would previously have required specialized disposal. Throughout the site walks, evidence of "GREEN is CLEAN" was apparent as an active program in place at radiological waste storage areas.
- SERF – Significant waste reduction has been achieved at the SERF through improved and added processes to reduce the overall volume of waste filter cake produced. SERF also reuses recycled wastewater during processing and uses reverse osmosis to further clean wastewater generated during processing. The changes made have resulted in over a 50% reduction in monthly filter cake waste. Prior to the change, the facility generated roughly two to three bins per week, or 12 bins per month. Current filter cake waste volume is roughly one bin for every eight to 10 days, translating to four bins per month or less.
- Sanitary Wastewater System Facility – "Zero Waste" facility - This facility has instituted enough waste reduction techniques to attain a zero-waste facility status.
- Cone-shaped drum lids - Triad instituted the use of cone-shaped drum lids at exterior storage areas in the TA-55 area, Site 480 (and elsewhere), to prevent accumulation of rainwater on drums. This equipment protects drums from future rust/potential release and will mitigate future potential spills/release.
- There is a shared vision with respect to development of updated protocols and practices. Representatives from both Triad and N3B readily welcome input from their team members and other workers to increasingly improve waste management practices. This kind of interaction empowers team members to become stakeholders in waste management, which translates into enhanced execution of policies and procedures. Examples include the updates to Triad's training procedures that are distributed to users for input before being finalized. Another example is the N3B team's institution of a "rapid improvement event" practice in February 2021 in which they use causal analysis to assess incidents or needs for improvement and formalize processes by putting them in procedures. N3B also described a focus on continuous workshops and asking for feedback from team members.

4 Suggestions by Focus Area

4.1 Stormwater Individual Permit

The Review Team communicated the following recommendations to the N3B stormwater monitoring program.

4.1.1 MONITORING

Control measures should be monitored more closely to ensure they are always functioning properly. Maps should be updated to reflect new conditions when they are identified in the field.

4.1.2 MANAGEMENT

N3B should continue to improve and formalize processes to respond to notifications from outside entities (e.g., Triad and Los Alamos County). Triad should notify N3B of all activities in and adjacent to the IP areas and add a related agenda item to the monthly interface meetings. N3B management should guarantee that procedures are followed fully so that all changes in field conditions are communicated to field personnel. All parties should continue to improve intra-organizational communication processes through sharing planned projects that could potentially impact legacy SWMU/AOCs and their associated control measures, as well as discussing lessons learned .

N3B is working to obtain "Completion of Correction Action" status for the Sites (historical SWMUs and AOCs) regulated under the IP and should continue to do so. "Completion of Corrective Action" may be achieved by meeting any of the following conditions.

- Analytical results from two confirmation sampling events show pollutant concentrations for all pollutants of concern at the Site to be at or below applicable target action levels.
- Control measures that totally retain and prevent the discharge of stormwater have been installed at the Site.
- Control measures that eliminate exposure of pollutants to stormwater have been installed at the Site.
- The Site has achieved RCRA "corrective action complete without controls/corrective action complete with controls" status or a Certificate of Completion under NMED's Consent Order.

If "Completion of Corrective Action" cannot be obtained by meeting any of these conditions, then LANL may request alternative compliance, which would be achieved on a case-by-case basis as approved by the EPA. Remedial actions have been conducted at Sites where possible, and confirmation sampling continues where alternative compliance has not been requested. N3B should continue to maintain control measures to minimize pollutants in stormwater discharges while confirmation monitoring continues.

4.1.3 REPORTING

N3B should document TAL exceedance reporting. All regulatory notifications should be well-documented. N3B should consider documenting e-mail receipt confirmations in a database or tracking log. N3B should add complete IP SMA inspection reports (N3B 2021c) to the IP public webpage, as required by the IP.

4.2 NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity

Both the N3B and Triad MSGP compliance groups have an excellent record of maintaining compliance with the 2015 general permit and are well-prepared to continue meeting regulatory requirements under the 2021 permit. Continuous improvements to infrastructure and stormwater control will be necessary, not only in response to monitoring results, but also in being proactive regarding recommendations made during inspections. The FODs should recognize the benefit of investing in stormwater control when potential issues are identified. Examples discussed during the Triennial Review included improvements to open-sided shelter covers for stored materials, secondary containment of tanks, expansion of stormwater capture controls, and maintenance. The compliance teams have the experience to recognize when existing controls may be insufficient to minimize pollutants in stormwater and prevent unauthorized discharges in the event of significant rain events. Investing in the prevention of permit violations is a practical strategy.

The seasonal precipitation patterns in the Los Alamos area present unique challenges. Runoff patterns may not be evident should there be a need to add a new facility for NPDES coverage. The teams should remain flexible in their planned approaches by adjusting the location of outfalls, adding or manipulating control measures, and re-evaluating runoff patterns at the beginning of the wet season and following extreme storm events.

Finally, challenges associated with the scope of managing coverage across the scale of LANL include accounting for multiple industrial sectors, several watersheds with their own surface water impairments and monitoring requirements, monitoring schedules evolving annually based on previous years' results, and the constraints of reporting all this using the required electronic format. It will be imperative for N3B and Triad to maintain open lines of communication with the EPA and NMED on their regulatory status as they try to meet the reporting requirements of the 2021 MSGP. The teams are aware of their reporting specifications. If the reporting tools cannot accommodate these requirements, LANL should, by any means necessary, communicate reports and results in an alternate way with the intent of finding a permanent solution. Transparency should work to avoid legal consequences, even if communication is complicated at the onset.

4.3 NPDES Industrial and Sanitary Point-Source Outfall Permit

The NPDES group demonstrated a superior, forward-thinking approach to wastewater management. This approach is exemplified by decades of research and development put forth into a Radioactive Liquid Waste Treatment Facility. The improvements over the years have led to the construction of a new, efficient Low Radiation Treatment Facility that is nearly complete, and a highly efficient High Radiation Treatment Facility that has been funded for construction. They will increase operational efficiency and safety and reduce maintenance costs. These projects are the result of program-funded pilot programs that have achieved results beyond the minimum permit requirements. The Review Team's suggestion is to continue pilot programs throughout LANL.

The Review Team also suggests that the NPDES team install automatic TRC monitoring systems prior to all outfalls as a BMP. Although many of the point-sources have them in place, the Review Team suggests having them at all locations with standardized equipment for ease of maintenance. This suggestion is not a permit requirement but will reduce exceedance risk. The NPDES team should

continue to maintain possession of backup controllers and essential maintenance parts for the TRC monitoring systems.

4.4 New Mexico Spill Regulations

The Review Team members for this focus area had no significant observations. Reporting requirements under NMAC 20.6.2.1203 were met in all instances reviewed. The personnel involved in reviewing and responding to spills and unauthorized discharges are well trained. The formal systems established for communication and delegation of responsibilities are effective. Future consolidation of Triad database systems for communicating work orders and responsibilities should recognize that the current procedures work well. Database consolidation should attempt to minimize the disruption as much as possible.

Because of the lack of reportable spills at TA-54, the Review Team recommends N3B organize an occasional drill using a hypothetical reportable event, "spill drill". This would be especially prudent in the event of staff turnover or reassignment. This exercise would be an excellent subject for one of the monthly environmental compliance workshops.

4.5 Federal Resource Conservation and Recovery Act / New Mexico Hazardous Waste Act and New Mexico Solid Waste Act

The following recommendations are suggested to improve hazardous waste management practices at LANL. These recommendations are based on observation categories and not individual observations, which should all be addressed according to the cited regulation.

4.5.1 LABELING

Seventeen observations were related to container labeling. The following recommendations are suggested.

- Incorporate the observations made during the Second Triennial Review into the labeling training to provide examples of issues that were identified and why they are issues. Include waste generators and WMCs in this training.
- Once a label is attached to waste, it should be reviewed by another waste generator or coordinator for accuracy.
- Review labels on drums whenever drums are moved, filled, or emptied.

4.5.2 INSPECTIONS, SIGNAGE AND RECORDKEEPING

Nine observations were made relating to inspections, signage and record keeping. The following recommendations are suggested.

- Completed inspection forms should be reviewed and initialed by a person familiar with the inspection, permit, and applicable regulatory requirements. Reviews should be completed monthly.
- The permit's inspection requirements should be reviewed to ensure inspection procedures and form format adhere to the permit.
- Extra signs should be kept at the facility. When a faded sign is observed, it should be replaced immediately.
- Maintenance requests should be closed out once maintenance is complete.

- Waste area inspections should be performed by personnel with RCRA waste management training who are familiar with the permit. Additional trained RCRA inspectors working with Environmental Professionals are recommended.
- The practice of performing area-wide inspections for certain items should be revised. Each active container storage site should have its own daily or weekly inspection documented on a site-specific IRF.
- The use of the NRC designator should be discontinued for permit-required inspection items and IRFs completed according to the inspection plan for the permit (Attachment E of permit).
- Recurring issues should be noted as "AR" (Action Required) on inspection forms (not NRC).

4.5.3 STORAGE

Seven observations were made related to storage of waste materials. The following recommendations are suggested.

- When storing drums containing liquids on secondary containment, ensure the bottoms of the drums are completely over secondary containment measures. If secondary containment is used, verify that the containment can hold the volume of material being stored in case of a leak.
- Ensure waste material and containers are stored in designated, easily identifiable storage areas and are labeled appropriately depending on the storage area.

4.5.4 Procedures

Four observations were made regarding procedures, three of which were positive findings. The Review Team suggests including RFA information on container labels that are pending analysis.

4.5.5 Release/Spills

Three observations were made in relation to spill control at the facilities. The following recommendations are suggested.

- Confirm the availability of spill kits at each area as required by regulation or permit and assure they are readily accessible.
- Ensure spill kits are appropriate for materials being stored.

4.5.6 MAINTENANCE

Two observations related to maintenance were observed. The following recommendations are suggested.

- Address maintenance items within 24 hours as required by the permit.
- Close out maintenance items in a timely manner. Open new maintenance items as needed and do not carry over maintenance items that are completed (this relates mainly to addressing cracks in asphalt and concrete pads).

4.5.7 TRAINING

One observation was made related to training programs. The following recommendations are suggested.

- Upgrade training material to include such elements as operations, testing, maintenance and inspection of alarms, and communication devices
- Upgrade training to include generator improvement rules and marking labels with an indication of the waste hazard characteristic.

5 Conclusions

This Triennial Review Report documents the systematic, independent process of objectively reviewing environmental regulatory compliance and procedural LANL operations. The Review Team assessed compliance of the NPDES Stormwater IP, NPDES MSGP for Stormwater Discharges Associated with Industrial Activities, NPDES Industrial and Sanitary Point-Source Outfall Permit, Spill Regulations, and Waste (Federal RCRA, HWFP, and New Mexico Solid Waste).

The Review Team conducted the review through a series of document and record reviews, interviews, and site visits. The team developed checklists specific to the permit conditions and programs for line-by-line compliance review. Observations of noncompliance and BMPs resulting from the review were prepared and communicated to key LANL personnel.

The Review Team issued 95 pre-decisional observations. These observations and their status are summarized in Table 5-1.

Table 5-1: Status of Pre-Decisional Observations

Focus Area	Accolade	Closed	Open	Removed	Grand Total
IP	2	20	1	4	27
MSGP	6	7	1		14
Industrial Outfall	2	6			8
Spills	2	1			3
Waste	5	37	1		43
Grand Total	17	71	3	4	95

The Review Team considers LANL in overall compliance in the focus areas charged in the Second Triennial Review. Environmental compliance by Triad and N3B is effective. Personnel were knowledgeable and responsive to feedback and candid about challenges. An interface team with members from Triad, N3B, and the DOE offices was created when responsibilities related to waste management and outfall monitoring was divided between the organizations. The interface team serves to enhance communications between the laboratory operations and legacy cleanup activities using systems to identify those activities that may impact the other organization and their compliance requirements. Triad, N3B, and the DOE offices have the opportunity to improve procedures and processes to communicate activities that affect regulatory compliance issues.

Interactions with LANL staff during the Triennial Review reflect a culture of cooperation, integrity, and a commitment to environmental compliance. During the review, requests for information were met with prompt and courteous responses. LANL personnel involved in all the Triennial Review focus areas have a long and strong working relationship with regulators, as reflected in the correspondence and feedback from agency representatives. Every individual interviewed demonstrated appropriate levels of expertise and awareness of their responsibilities. Moreover, both N3B and Triad strive to use systems and procedures to continue to improve compliance.

The coordination and closure of observations and implementation of the suggestions herein will enhance regulatory compliance. LANL's demonstrated commitment to the environment will protect our resources and our communities.

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7 Codes and Standards

7.1 Code of Federal Regulations

Title 40 CFR Protection of Environment

40 CFR 122 EPA Administered Permit Programs: The National Pollutant Discharge Elimination System

40 CFR 124 Procedures for Decisionmaking

40 CFR 260 Hazardous Waste Management System: General (2020)

40 CFR 261 Identification and Listing of Hazardous Waste (2020)

40 CFR 262 Standards Applicable to Generators of Hazardous Waste (2020)

- 40 CFR 262.15 Satellite Accumulation Area Regulations for Small and Large Quantity Generators (2020).
- 40 CFR 262.17 Central Accumulation Area Regulations for Small and Large Quantity Generators (2020)
- 40 CFR 262.34 Accumulation Time (2020)
- 40 CFR 262 Subpart C - Pre-Transport Requirements Applicable to Small and Large Quantity Generators (2020)
- 40 CFR 262 Subpart M - Preparedness, Prevention, and Emergency Procedures for Large Quantity Generators (2020)

40 CFR 263 Standards Applicable to Transporters of Hazardous Waste (2020)

40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (2020)

40 CFR 264, Subpart F—Releases from Solid Waste Management Units (2020)

- 40 CFR 264.98 Detection and Monitoring Program (2020)
- 40 CFR 264.99 Compliance Monitoring Program (2020)
- 40 CFR 264.100 Corrective Action Program (2020)

40 CFR 264 Subpart I—Use and Management of Containers (2020)

- 40 CFR 264.170 Applicability (2020)
- 40 CFR 264.171 Condition of Containers (2020)
- 40 CFR 264.172 Compatibility of Waste with Containers (2020)
- 40 CFR 264.173 Management of Containers (2020)
- 40 CFR 264.174 Inspections (2020)
- 40 CFR 264.175 Containment (2020)
- 40 CFR 264.176 Special Requirements for Ignitable or Reactive Waste (2020)

40 CFR 264.177 Special Requirements for Incompatible Wastes (2020)

40 CFR 264.178 Closure (2020)

40 CFR 264.179 Air Emission Standards (2020)

40 CFR 264 Subpart X—Miscellaneous Units (2020)

40 CFR 264.600 Applicability (2020)

40 CFR 264.601 Environmental Performance Standards (2020)

40 CFR 264.602 Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action (2020)

40 CFR 264.603 Post-Closure Care (2020)

40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (2020)

40 CFR 265 Subpart I—Use and Management of Containers (2020)

40 CFR 265.171 Condition of Containers (2020)

40 CFR 265.173 Management of Containers (2020)

40 CFR 266 Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste (2020)

40 CFR 267 Standards for Owners and Operators of Hazardous Waste Facilities operating under a Standardized Permit (2020)

40 CFR 268 Land Disposal Restrictions (2020)

40 CFR 270 EPA Administered Permit Programs: The Hazardous Waste Permit Program (2020)

40 CFR 273 Standards for Universal Waste Management (2020)

40 CFR 279 Standards for the Management of Used Oil (2020)

40 CFR 280 Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (2020)

7.2 U.S. Code

33 U.S.C. 1251 et seq. Clean Water Act

42 U.S.C. 6901 et seq Resource Conservation and Recovery Act

7.3 New Mexico Administrative Code

Title 20: Environmental Protection

NMAC 20.4.1 – Hazardous Waste Management

NMAC 20.6.2 Ground and Surface Water Protection

20.6.2.1203 – Notification of Discharge-Removal

NMAC 20.6.4 Standards for Interstate and Intrastate Surface Waters

NMAC 20.9.8 – Special Wase Requirements

7.4 New Mexico Statutes Annotated

NMSA 1978, Chapter 74 – Environmental Improvement or Environmental Improvement Act

Article 4, Hazardous Wastes or Hazardous Waste Act

Article 6, Water Quality or Water Quality Act