SAND2015-2176R

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National Nuclear Security Administration
by **Sandia Corporation**

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Michael W. Hazen
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Mr. Mark W. Hamilton
Acting Assistant Manager for Engineering
U. S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
P. O. Box 5400
Albuquerque, NM 87185

Dear Mr. Hamilton:

Subject: ***Certification and Submittal of Solid Waste Management Unit (SWMU) Assessment Report for Building 9960 Surface Discharge, Sandia National Laboratories/New Mexico, April 2015, Environmental Protection Agency, Identification Number NM5890110518***

The ***Solid Waste Management Unit (SWMU) Assessment Report for Building 9960 Surface Discharge, Sandia National Laboratories/New Mexico*** is being provided to the Department of Energy (DOE) for submittal to the New Mexico Environment Department (NMED). Sandia Corporation (Sandia) is requesting that the Department of Energy/National Nuclear Security Administration (DOE/NNSA) submit the enclosed information to the New Mexico Environment Department (NMED) on or before April 16, 2015.

The DOE on behalf of itself and Sandia submitted the Building 9960 Coyote Test Field Release/Discharge Notification 7/15 Day Spill Report (7/15 Day Spill Report) to the NMED on December 9, 2014. The 7/15 Day Spill Report was submitted to the NMED Groundwater Quality Bureau, which provided copies of the 7/15 Day Spill Report to the NMED Hazardous Waste Bureau (HWB).
The NMED in a February 16, 2015 certified letter to DOE determined that "*the release of wastewater from the secondary containment surrounding the holding tank has contaminated surface soils and creates the potential for migration of hazardous constituents into subsurface soils. Therefore, the release is subject to the reporting requirements of the Consent Order Section V*". The Consent Order also states DOE and Sandia must submit a SWMU Assessment Report (SAR) within 60 days of the notification; however, NMED, at its discretion, required the SAR to be submitted no later than April 16, 2015.

I have signed the certification to be sent to the NMED as the Operator at SNL/NM. If you agree, please sign the certification as the Owner. If you have any questions regarding the enclosed document, please contact David Gibson, Director, at (505) 844-8328/dwgibso@sandia.gov, Catherine Green, Senior Manager, at (505) 284-2218/cegreen@sandia.gov, or Pam Puissant, Manager, at (505) 844-3185/ pmpuiss@sandia.gov.

Sincerely,

Michael W. Hazen
Vice President

Enclosures:
1. Enclosure A – Solid Waste Management Unit (SWMU) Assessment Report for Building 9960 Surface Discharge, Sandia National Laboratories/New Mexico, Environmental Protection Agency, Identification Number NM5890110518 for Sandia National Laboratories/New Mexico, April 2015
2. Submittal of Solid Waste Management Unit (SWMU) Assessment Report for Building 9960 Surface Discharge, Sandia National Laboratories/New Mexico, Environmental Protection Agency, Identification Number NM5890110518 Certification Statement

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Solid Waste Management Unit (SWMU) Assessment Report for
Building 9960 Surface Discharge, April 2015

Sandia National Laboratories
EPA ID No. NM5890110518

CERTIFICATION STATEMENT

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

_____ _____

Michael W. Hazen, Vice-President
Sandia Corporation
Albuquerque, New Mexico
Operator

Date signed

_____ _____

Mark W. Hamilton, Acting Assistant Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
Owner

Date signed

Enclosure A

Solid Waste Management Unit (SWMU) Assessment Report for Building 9960 Surface Discharge, April 2015

Sandia National Laboratories
EPA ID No. NM5890110518

SWMU ASSESSMENT REPORT FOR BUILDING 9960 SURFACE DISCHARGE APRIL 2015

SANDIA NATIONAL LABORATORIES, NEW MEXICO

APRIL 2015

United States Department of Energy
Sandia Field Office

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ACRONYMS AND ABBREVIATIONS

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
ABCWUA	Albuquerque Bernalillo County Water Utility Authority
AOC	Area of Concern
CFR	Code of Federal Regulations
cm/yr	centimeters per year
Consent Order	Compliance Order on Consent
DOE	U.S. Department of Energy
EMF	Explosives Machining Facility
EPA	U.S. Environmental Protection Agency
ES&H	Environment Safety and Health
GEL	GEL Laboratories LLC
HE	high explosive(s)
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HWB	Hazardous Waste Bureau
ID	identification
mg/kg	milligrams per kilogram
N/A	not applicable
NFA	no further action
NMED	New Mexico Environment Department
ND	not detected
PETN	pentaerythritol tetranitrate
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
Sandia	Sandia Corporation
SAR	SWMU Assessment Report
SNL/NM	Sandia National Laboratories, New Mexico
SSL	soil screening level
SWMU	Solid Waste Management Unit

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1.0 INTRODUCTION

Sandia National Laboratories is a multi-purpose engineering and science laboratory owned by the U.S. Department of Energy (DOE)/National Nuclear Security Administration and managed and operated by Sandia Corporation (Sandia), a wholly-owned subsidiary of Lockheed Martin Corporation. This Solid Waste Management Unit (SWMU) Assessment Report (SAR) for the Sandia National Laboratories, New Mexico (SNL/NM), Coyote Test Field, Building 9960 Surface Discharge, has been prepared in accordance with Section V of the Compliance Order on Consent (the Consent Order) between the New Mexico Environment Department (NMED), DOE, and Sandia (NMED April 2004). The DOE and Sandia formally notified the NMED of this newly identified or suspected SWMU or Area of Concern (AOC) by letter dated December 9, 2014.

This SAR is being submitted in accordance with the NMED Hazardous Waste Bureau (HWB) letter dated February 16, 2015 letter (Kieling February 2015). This SAR presents the available information for the Building 9960 Surface Discharge, including location, designation of type and function, a general description, the operational dates, waste characteristics, and a summary of existing analytical wastewater and soil data.

1.1 Chronology of Events

On Tuesday, November 25, 2014 at approximately 1615 hours Mountain Daylight Time, Building 9960 personnel observed wastewater in the concrete secondary containment structure surrounding two 5,000 gallon polyethylene holding tanks. Sandia Emergency Management personnel were notified and responded to the event. A broken valve on a 5,000 gallon tank containing wastewater (the adjacent 5,000 gallon tank was empty) was identified as the cause of the leak. No liquid was observed leaking from the secondary containment at this time.

The following day (Wednesday, November 26, 2014), Building 9960 personnel observed small amounts of wastewater seeping through the joints and planes of weakness in the concrete secondary containment. To prevent any possible additional leakage, the waste water in the secondary containment structure was pumped into the empty and still functional 5,000 gallon tank, thus removing all wastewater from the secondary containment. Based on the professional judgment of the Emergency Management personnel, the amount of wastewater that leaked from the secondary containment is conservatively estimated to be less than two gallons. The maximum depth of damp soils was not determined.

The DOE, on behalf of itself and Sandia, submitted the “Building 9960 Coyote Test Field Release/Discharge Notification 7/15 Day Spill Report” (herein after referred to as the Spill Report) to the NMED Ground Water Quality Bureau on December 9, 2014 (Rast December 2014). The NMED Ground Water Quality Bureau provided copies of the Spill Report to the NMED HWB.

In response to the Spill Report, the NMED in a certified letter to DOE determined that the Spill Report sufficed as notification of a newly identified or suspected SWMU or Area of Concern (AOC) (Kieling February 2015). Moreover, the NMED requested a SAR because “*the release of wastewater from the secondary containment surrounding the holding tank has contaminated surface soils and creates the potential for migration of hazardous constituents into subsurface*

soils. Therefore, the release is subject to the reporting requirements of the Consent Order Section V" (Kieling February 2015). The NMED established a due date of April 16, 2015. This due date is later than specified by the Consent Order, which is within 60 days of the written notification The NMED exercised its discretion in requiring the SAR to be submitted no later than April 16, 2015.

1.2 Request for a Determination

DOE and Sandia do not believe this wastewater surface discharge meets the definition of a SWMU for the following reasons:

1. The Consent Order definition of SWMU excludes a one-time spill. This is a one-time spill of wastewater from secondary containment and not from a unit where solid wastes have been routinely and systematically released.

2. This spill was conservatively estimated to be less than two gallons, resulting from seepage through concrete joints and zones of weakness within a concrete secondary containment structure. No free liquid was observed outside of the secondary containment.

3. The wastewater is not a hazardous waste because it does not meet the definition of a characteristic waste, a listed waste, or, more specifically a reactive waste as defined in Title 40 Code of Federal Regulations (CFR) Part 261.23.

The Consent Order definition of AOC does indicate a release of a hazardous constituent. However, DOE and Sandia are requesting a determination for No Further Action (NFA) based upon sampling data demonstrating that the constituents released into the environment do not pose an unacceptable level of risk under current and projected future land use.

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2.0 LOCATION AND SITE DESCRIPTION

The wastewater discharge occurred at the Building 9960 Explosives Machining Facility (EMF), located on federally-owned land controlled by the Kirtland Air Force Base and, permitted to the DOE. The EMF machines explosives for various purposes.

The EMF is west of Lovelace Road, north of the intersection with Coyote Springs Road. This area is approximately 2.1 kilometers (1.3 miles) east of Technical Area III and considered part of the Coyote Test Field (Figure 2-1). The surrounding area at the EMF site is maintained clear of vegetation and encompasses approximately 2.2 acres. There are several bunkers, storage transportainers, and outbuildings located around the site. The site layout is generally flat with a gentle slope to the west-southwest. The current and anticipated future land use at the site is industrial.

Precipitation is low in the region (approximately 8 inches per year) and surface runoff is minimal. The soil infiltration rate is estimated to be 0.1 centimeter per year (cm/yr), yielding seepage velocities that range from 0.03 cm/yr to 11.8 cm/yr (SNL/NM March 1995). The depth to groundwater is approximately 40 feet below ground surface, based upon October 2014 groundwater elevation data from groundwater monitoring well CTF-MW2 (SNL/NM April 2015), which is located approximately 300 feet west of Building 9960 (Figure 2-1).

The Building 9960 wastewater storage tanks are located approximately 40 feet southwest of Building 9960 (Figure 2-1). Wastewater seeped from the secondary containment on the south, west, and north sides of the containment structure. Wastewater was not observed seeping from the east side of the secondary containment structure. Photos 1, 2, and 3 in Appendix A show the condition and extent of the spill on November 26, 2014, the day after the spill was reported by Building 9960 personnel. As shown in the photographs, the spill consisted of small, localized, surface areas adjacent to the containment structure perimeter. Wastewater was observed seeping through construction joints and small fractures in the concrete resulting in small discrete areas of damp soil. Free liquid was not observed. None of the spill areas extended more that 1 to 1.5 feet from the containment structure.

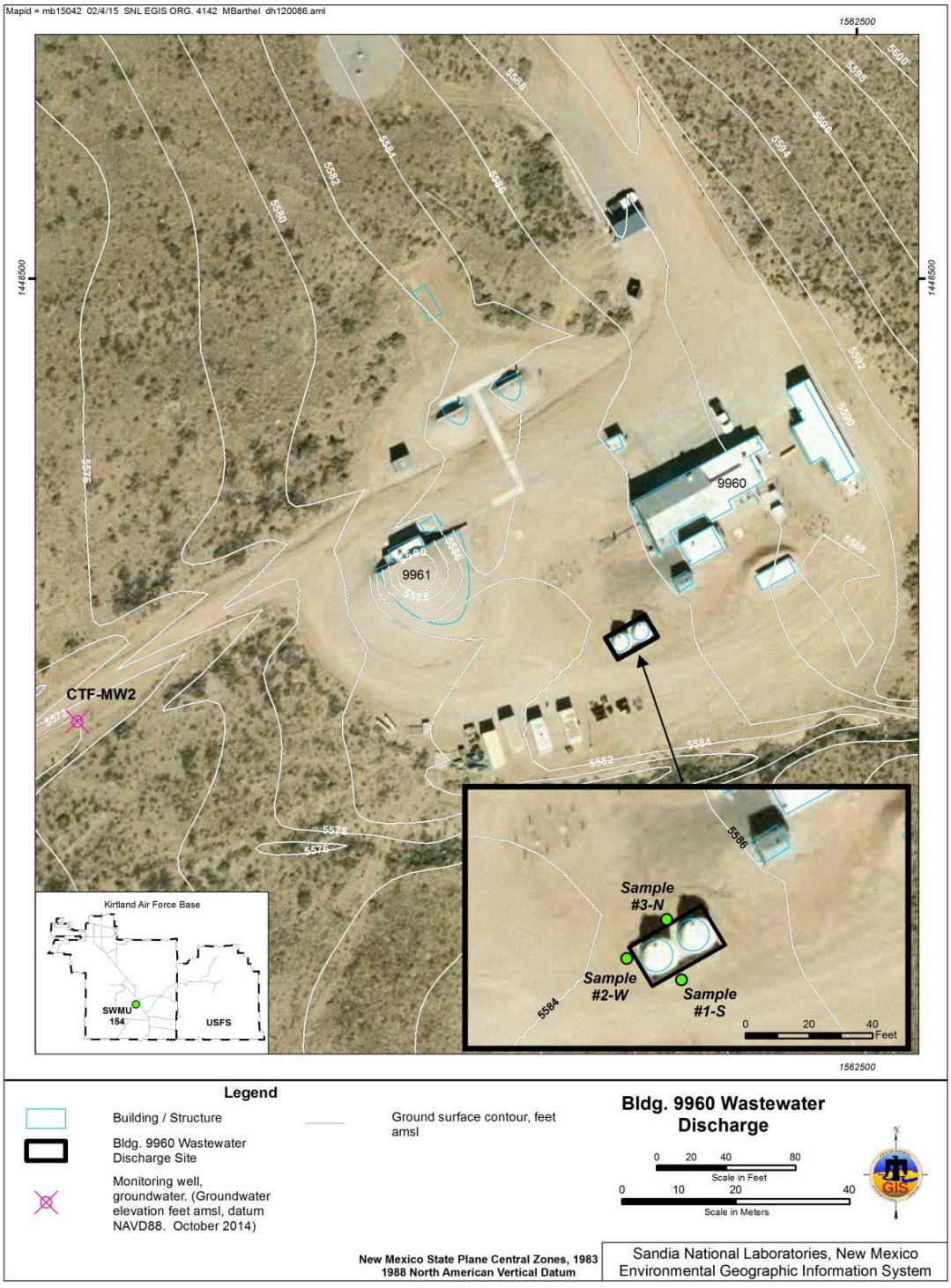

Figure 2-1
Building 9960 Site Location Map showing Soil Sample Locations

3.0 OPERATIONAL HISTORY

Personnel at Building 9960 machine explosives for various purposes needed by Sandia. Water, without any amendments, is used in the machining processes. The wastewater produced from the machining operations is subsequently processed through a multi-stage, filtering system designed to remove explosive cuttings and sludge. Since 1993, this filtered, liquid effluent from Building 9960 has been diverted to two 5,000 gallon aboveground polyethylene tanks located onsite surrounded by a concrete secondary containment.

When wastewater in the holding tanks reaches a predetermined volume, the wastewater is sampled for high explosives (HE), including pentaerythritol tetranitrate (PETN). The data are reviewed by Sandia Environment Safety and Health (ES&H) personnel to verify the permitted sanitary sewer discharge limits are met. When it has been determined the wastewater meets all applicable discharge limits, the water from the tanks is discharged to a nearby sewer line.

Sandia conducts this discharge operation under a wastewater discharge permit issued by the Albuquerque Bernalillo County Water Utility Authority (ABCWUA). Wastewater discharge events occur infrequently, typically occurring every one to two years.

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4.0 WASTEWATER SAMPLING AND ANALYSIS

After processing and filtration, the wastewater produced from the Building 9960 machining process contains low concentrations of HE compounds and measured in micrograms per liter (µg/L). Wastewater samples were collected from the tanks from 1993 to present for the purposes of demonstrating compliance with ABCWUA wastewater discharge limits. A summary of high explosive compounds detected during this compliance is presented in Table 4-1. Collected samples from these events were analyzed for HE plus PETN using U.S. Environmental Protection Agency (EPA) Method 8330A (EPA 1986). Eight HE compounds were detected in wastewater samples. Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) were the most frequently detected compounds and were present in the greatest concentrations. HMX concentrations in samples ranged from 7.24 µg/L to 731 µg/L with a mean of 255 µg/L. RDX concentrations ranged from 3.35 µg/L to 4,900 µg/L with a mean of 2,025 µg/L. Concentrations of the other six detected compounds ranged from 0.721 µg/L to 758 µg/L.

Based on process knowledge no other hazardous constituents are present in the wastewater. The wastewater does not meet the definition of a hazardous waste as defined in 40 CFR 261.23 because it does not meet the definition of a characteristic waste, a listed waste, or, more specifically a reactive waste as defined in Title 40 Code of Federal Regulations (CFR) Part 261.23.

Table 4-1
Summary of Detected High Explosive Compounds in Historical (1993 to present)
Building 9960 Wastewater Samples to Demonstrate Compliance to ABCWUA Limits

Analyte	Number of Detects	Number of Non-Detects	Minimum Detected Value (µg/L)	Maximum Detected Value (µg/L)	Mean Detected Value (µg/L)	Standard Deviation for Detected Values
4-Amino-2,6-dinitrotoluene	6	3	0.721 P	103 P	23.8	40
2-Amino-4,6-dinitrotoluene	5	4	4.67	758 P	166	331
2,4-Dinitrotoluene	1	8	5.55	5.55	5.55	N/A
HMX	8	1	7.24	731	255	263
RDX	7	2	3.35	4,900	2025	1986
1,3,5-Trinitrobenzene	4	5	3.32	198	90	80
2,4,6-Trinitrotoluene,	3	6	14.8	49.4 PX	32.6	17
n-Dinitrobenzene	1	8	11.7	11.7	11.7	N/A

ABCWUA = Albuquerque Bernalillo County Water Utility Authority.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
µg/L = Micrograms per liter.
N/A = Not applicable.
P = The response between the confirmation column and the primary column is >40%D.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
X = Presumptive evidence that the analyte is not present.

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5.0 SOIL SAMPLING AND ANALYSIS

5.1 Soil Sample Collection and Analytical Results

On December 10, 2014, Sandia ES&H personnel collected three discrete soil samples from the south, west, and north sides of the secondary containment structure at locations where damp soil was previously observed on November 26, 2014. The three samples are identified as #1-S, #2-W, and #3-N, respectively, and are shown in Figure 2-1. Biased-sample locations were selected to estimate worst case wastewater constituent concentrations in the soil. All sample locations were observed to be dry at the time of sample collection.

Approximately 250 milliliters of soil were collected per location from the top three inches of soil using a clean stainless steel scoop. To be conservative and due to the small size and limited time of the spill it is thought that the upper three inches of soil would represent the most contaminated soils. Sampling equipment was decontaminated with deionized water and clean paper towels between sampling locations.

5.2 Analytical Results

The surface soil samples were submitted to GEL. Samples were analyzed for HE plus PETN using EPA Method 8830A (EPA 1986). Appendix B contains the analytical reports, including certificates of analyses, analytical methods, method detection limits (MDLs), practical quantitation limits, analysis dates, data validation, and results of quality control analyses.

As shown in Table 5-1, HMX and RDX were the only analytes detected in soil samples above MDLs. The highest concentrations of HMX and RDX were observed in Building 9960 soil sample #1-S collected from the south side of the secondary containment. HMX was present at 160 micrograms per kilogram (µg/kg) and RDX was present at 1,760 µg/kg. RDX was the only constituent detected, at a concentration of 234 µg/kg, in the Building 9960 soil sample #2-W collected from the west side of the secondary containment. No analytes were detected in Building 9960 soil sample #3-N collected from the north side of the secondary containment. A soil sample was not collected from the east side of the secondary containment structure because wastewater was not observed outside of the containment structure at this location.

Table 5-1
Summary of Detected High Explosive Compounds in Soil Samples
Building 9960 Wastewater Discharge

Sample ID	Analyte	Result (µg/kg)	Analytical Method [a]
Soil Sample #1-S	HMX	160	8330A
	RDX	1,760	8330A
Soil Sample #2-W	RDX	234	8330A
Soil Sample #3-N	ND	ND	8330A

[a] U.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., U.S. Environmental Protection Agency, Washington, D.C.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
ID = Identification.
µg/kg = Micrograms per kilogram.
ND = Not detected.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.

5.3 Comparison of Results to Residential Soil Screening Levels

The maximum concentration for each detected chemical was compared with the appropriate residential soil screening level (SSL). The Consent Order requires the use of the most current SSLs; the most current values are presented in the "Risk Assessment Guidance for Site Investigation and Remediation" (NMED December 2014). The NMED SSLs are generally based on a 1E-5 target risk for carcinogens, or a hazard quotient of 1 for noncarcinogens (NMED December 2014). Table 5-2 provides this comparison; note that for SSL comparison purposes the analyte concentrations are presented in milligrams per kilogram (mg/kg) instead of µg/kg.

Table 5-2
Screening Risk Assessment Values for Detected High Explosive Compounds in Soil Samples
Building 9960 Wastewater Discharge

Analyte	Maximum Detected Concentration (mg/kg)	NMED SSL [a] (mg/kg)		Risk for Residential Scenario	
		Non-Carcinogen	Carcinogen	Hazard Index	Cancer Risk
HMX	0.160	3,850	N/A	0.00004	N/A
RDX	1.76	N/A	60.4	N/A	2.9E-7

[a] New Mexico Environment Department, December 2014., "Risk Assessment Guidance for Site Investigation and Remediation," New Mexico Environment Department, Santa Fe, New Mexico.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
mg/kg = Milligrams per kilogram.
N/A = Not applicable.
NMED = New Mexico Environment Department.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
SSL = Soil screening level.

In this comparison, the maximum detected concentrations are significantly below the associated NMED residential SSLs. Calculations for non-radiological constituents of concern show that for the residential land-use scenario the hazard index of 0.00004 is significantly lower than the accepted numerical guidance from the NMED. The estimated excess cancer risk is 3E-7. Thus, excess cancer risk is also significantly below the acceptable risk value provided by the NMED for a residential land-use scenario. Screening risk calculations indicate insignificant risk to human health for the residential land-use scenario.

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6.0 SUMMARY AND CONCLUSIONS

On November 25, 2015, less than two gallons of wastewater containing low HE concentrations generated from the Building 9960 wastewater holding tanks was released to the ground surface in the immediate vicinity of the secondary containment structure. Maximum detected HE concentrations in collected soil samples are well below the applicable NMED residential SSLs.

DOE and Sandia are requesting a determination that this site is acceptable for NFA based upon sampling data demonstrating the constituents released into the environment do not pose an unacceptable level of risk under current and projected future land uses.

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7.0 REFERENCES

EPA, see U.S. Environmental Protection Agency.

Kieling, J.E. (New Mexico Environment Department), February 2015. Letter to G.L. Beausoleil (Department of Energy/Los Alamos Field Office) and P.B. Davies (Sandia Corporation, Nuclear Energy & Fuel Cycle Programs) "Building 9960 at Coyote Test Field/Discharge Notification 7/15 Day Spill Report, Sandia National Laboratory, EPA ID# NM5890110518, HWB-SNL-Misc," February 16, 2015.

New Mexico Environment Department (NMED), April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act § 74-4-10: Sandia National Laboratories Consent Order," New Mexico Environment Department, April 29, 2004.

New Mexico Environment Department (NMED), December 2014. "Risk Assessment Guidance for Site Investigation and Remediation," New Mexico Environment Department, Santa Fe, New Mexico.

NMED, see New Mexico Environment Department.

SNL/NM, see Sandia National Laboratories, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1995. "Site-Wide Hydrogeologic Characterization Project, Calendar Year 1994, Annual Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), April 2015. "Consolidated Quarterly Report October – December 2014, Sandia National Laboratories, New Mexico," Sandia National Laboratories, Albuquerque, New Mexico.

Rast, D.M. (U.S. Department of Energy(NNSA)/Sandia Field Office), December 2014. Letter to J. Shoeppner (New Mexico Environment Department, Ground Water Quality Bureau), "Building 9960 Coyote Test Field Release/Discharge Notification 7/15 Day Spill Report," December 9, 2014.

U.S. Environmental Protection Agency (EPA), 1986 (and updates). "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., U.S. Environmental Protection Agency, Washington, D.C.

APPENDIX A
Building 9960 Surface Discharge Site Photographs

Photo 1
View to the west showing the east and south sides of the Building 9960 concrete secondary containment structure and holding tanks. Localized wastewater spill areas are visible near the southwest corner of the structure.

Photo 2
View of the west side of the Building 9960 concrete containment structure and holding tank. Localized wastewater spill areas are visible in the foreground.

Photo 3
View of the north side of the concrete containment structure and holding tank.

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APPENDIX B
Building 9960 Soil Sample Analytical Results

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1-888-678-5447
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Memorandum

Date: March 5, 2015

To: File

From: Mary Donivan

Subject: HPLC Organic Data Review and Validation – SNL
Site: Bldg 9960 Tank Sampling
AR/COC: 615952
SDG: 362832
Laboratory: GEL
Project/Task: 10249.12.04
Analysis: High Explosives (HE)

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 4.

Summary

Three soil samples were prepared and analyzed with accepted procedures using method EPA 8330A (HE by HPLC). All compounds were successfully analyzed. No problems were identified with the data package that resulted in the qualification of data.

Data are acceptable and reported QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

Instrument Tune

An instrument tune was not required.

Calibration

All initial and continuing calibration met QC acceptance criteria,

Blanks

No target analytes were detected in the blanks.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Internal Standards

Internal standards were not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met all QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Target compound Identification/Confirmation

All confirmation criteria were met.

Detection Limits/Dilutions

All detection limits were properly reported. According to laboratory procedure, all sample and QC extracts were diluted 2X with Calcium Chloride solution.

Other QC

No other specific issues that affect data quality were identified.

Reviewed by: Monica Dymerski **Level I** **Date:** 03/06/15

Sample Findings Summary

AR/COC: 615952

Analytical Method	Sample ID	Analyte Name (CAS#)	Qualifier, RC

All other analyses met QC acceptance criteria; no further data should be qualified.

Data Validation Summary Worksheet

AR/COC #: 615952 | Site/Project: Bldg. 9960 Tank Sampling | Validation Date: 03/05/2015

SDG #: 362832 | Laboratory: GEL Laboratories, LLC | Validator: Mary Donivan

Matrix: Soil | # of Samples: 3 | CVR present: Yes | Analysis Type: X Organic Metals

AR/COC(s) present: Yes | Sample Container Integrity: OK | Rad Gen Chem

Requested Analyses Not Reported

Sample Number	Laboratory ID	organic	genchem	metals	rad	Comments
None						

Hold Time/Preservation Outliers

Sample Number	Laboratory ID	Analysis	Pres.	Coll. Date	Prep. Date	Anal. Date	Anal. within 2X HT	Anal. beyond 2X HT
None								

Comments: Samples collected 12/10/2014

Revised 7/2007

Validated By: Mary A. Donivan

Organic Worksheet (GC/HPLC)

AR/COC #: 615952 SDG #: 362832 Matrix: Soil

Laboratory Sample IDs: 362832001 through -003

Method/Batch #s: **8330 Prep/8330A:** 1442777/1442778 Cleanup: NA

Analyte (outliers)	Calibration (1 = front/primary column, 2 = back/confirm. column)								Method Blank	5X (10X) Blank	LCS %R	MS %R	MSD %R	MS/ MSD RPD		
	Intercept		RSD/R^2		ICV/CCV %D		CCal RT									
	1	2	1	2	1	2	1	2								
None																

Surrogate Outliers

Sample ID	Surrogate	%R		Sample ID	Surrogate	%R		Sample ID	Surrogate	%R	
		1	2			1	2			1	2
None											

Confirmation Outliers

Sample ID	Analyte	RPD	Sample ID	Analyte	RPD	Sample ID	Analyte	RPD
None								

Comments: HTs OK. MS/MSD on sample -001 HPLC F 11/24/14 and HPLC D 09/30/14 (confirmation) Sample analyzed 12/13/14, confirmation 12/14/14

SMO 2012-ARCOC (4-2012)

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

AOP 95-16

Internal Lab

Batch No. N/A

SMO Use

Page 1 of 1

AR/COC 615952

Project Name:	Bldg.9960 Soil Sampling	Date Samples Shipped:	12/10/14	SMO Authorization:	☐ Waste Characterization
Project/Task Manager:	Robert Patton 844.4375	Carrier/Waybill No.	227357	SMO Contact Phone:	☐ RMMA
Project/Task Number:	10249/12.04	Lab Contact:	Edie Kent	Wendy Palencia/505.844.3132	☐ Released by COC No.
Service Order:	CF425-15	Lab Destination:	GEL	Send Report to SMO:	☑ 4° Celsius
		Contract No.:	1303873	Rita Kavanaugh/505.284.2553	Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 362832
Tech Area:					
Building:	Room:	Operational Site:			

Sample No.	Fraction	Sample Location Detail	Depth (ft)	Date/Time Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
097001	-001	Bldg.9960 Soil Sample #1 - S	S	12/10/14 /0845	Soil	G	250ml	None	G	SA Soil	High Explosives (8330)	001
097002	-001	Bldg.9960 Soil Sample #2 - W	S	/0850	Soil	G	250ml	None	G	Soil	High Explosives (8330)	002
097003	-001	Bldg.9960 Soil Sample #3 - N	S	/0855	Soil	G	250ml	None	G	Soil	High Explosives (8330)	003
										SA 12/11/14		

Last Chain:	☑ Yes	Sample Tracking SMO Use	Special Instructions/QC Requirements:
Validation Req'd:	☑ Yes	Date Entered:	EDD ☑ Yes ☐ No
Background:	☐ Yes	Entered by:	Turnaround Time ☐ 7 Day* ☐ 15 Day* ☐ 30 Day
Confirmatory:	☐ Yes	QC inits.:	Negotiated TAT ☑ 3 DAY
			Sample Disposal ☐ Return to Client ☑ Disposal by Lab
			Return Samples By:
			Comments: 3 DAY TAT Email Hard Copy to Joe Mauser @ jmmause@sandia.gov Email Hard Copy to Robert Patton @ rtpatto@sandia.gov

Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init.	Company/Organization/Phone/Cell
	Ben Martinez	Ben Martinez	BM	SNL/4143/845-7448
	Zach Tenorio	Zach Tenorio	ZT	SNL/4143/259-5765

1.Relinquished by	Ben Martinez	Org.	4143	Date	12/10/14	Time	0920	3.Relinquished by	Org.	Date	Time
1. Received by	[signature] GMC	Org.	4142	Date	12/10/14	Time	0920	3. Received by	Org.	Date	Time
2.Relinquished by	[signature] GMC	Org.	4142	Date	12/10/14	Time	0950	4.Relinquished by	Org.	Date	Time
2. Received by	[signature]	Org.	GEL	Date	12/11/14	Time	0730	4. Received by	Org.	Date	Time

*Prior confirmation with SMO required for 7 and 15 day TAT

Contract Verification Review (CVR)

Project Leader MAUSER Project Name BLDG 9960 TANK SAMPLING Project/Task No. 10249_12.04

ARCOC No. 615952 Analytical Lab GEL SDG No. 362832

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain
1.1	All items on ARCOC complete - data entry clerk initialed and dated	X		
1.2	Container type(s) correct for analyses requested	X		
1.3	Sample volume adequate for # and types of analyses requested	X		
1.4	Preservative correct for analyses requested	X		
1.5	Custody records continuous and complete	X		
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X		
1.7	Date samples received	X		
1.8	Condition upon receipt information provided	X		

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain
2.1	Data reviewed, signature	X		
2.2	Method reference number(s) complete and correct	X		
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X		
2.4	Matrix spike/matrix spike duplicate data provided	X		
2.5	Detection limits provided; PQL and MDL(or IDL), MDA and L_c	X		
2.6	QC batch numbers provided	X		
2.7	Dilution factors provided and all dilution levels reported	X		
2.8	Data reported in appropriate units and using correct significant figures	X		
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A		
2.10	Narrative provided	X		
2.11	TAT met	X		
2.12	Holding times met	X		
2.13	Contractual qualifiers provided	X		
2.14	All requested result and TIC (if requested) data provided	X		

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control sample accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	X		
c) Matrix spike recovery data reported and met	X		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	N/A		
b) Matrix spike duplicate RPD data reported and met for all organic samples	X		
3.5 Blank data a) Method or reagent blank data reported and met for all samples	X		
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	N/A		
3.6 Contractual qualifiers provided: “J”- estimated quantity; “B”- analyte found in method blank above the MDL for organic and inorganic; “U”- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); “H”- analysis done beyond the holding time; “h” - analysis done beyond the extraction/preparation holding time; “N” - result associated with spike analysis outside control limits	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151	X		

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260 and 8270) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Instrument run logs provided	N/A		
4.2 GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) Instrument run logs provided	X		
4.3 HRGC/HRMS (1668) a) 12-hour tune check provided	N/A		
b) Initial calibration provided	N/A		
c) Continuing calibration provided	N/A		
d) Internal standard performance data provided	N/A		
e) Labeled compound recovery data provided	N/A		

f) RRTs for samples and standards provided	N/A		
g) Ion abundance ratios for samples and standards provided	N/A		
h) Instrument run logs provided	N/A		
4.4 LC/MS/MS (6850) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) CRI provided	N/A		
d) Internal standard performance data provided	N/A		
e) Chlorine isotope ratios provided (perchlorate only)	N/A		
f) ICS provided (perchlorate only)	N/A		
4.5 Inorganics (metals) a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) ICP interference check sample data provided	N/A		
d) ICP serial dilution provided	N/A		
e) Instrument run logs provided	N/A		
4.6 Radiochemistry and General Chemistry a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Data Anomaly Report

Item	Yes	No	Comments
5.1 DAR completed for monitoring and surveillance sample data	N/A		
5.2 Problems or outliers noted	N/A		
5.3 Verification or reanalysis requested from lab	N/A		

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? θ Yes X No

Based on the review, this data package is complete. X Yes θ No

If no, provide nonconformance report or correction request number _____ and date correction request was submitted: _____

Reviewed by: W. Palencia Date: 1.6.2015

Were resolutions adequate and data package complete? θ Yes θ No

Closed by: _____ Date: _____

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 16, 2014

Company :	Sandia National Laboratories
Address :	MS-0756, Org. 06765, Bldg. 823/Rm. 4276 1515 Eubank SE Albuquerque, New Mexico 87123
Contact:	Ms. Pamela M. Puissant
Project:	Level C Data Package

Client Sample ID:	097001-001	Project:	SNLS00113
Sample ID:	362832001	Client ID:	SNLS004
Matrix:	SOIL		
Collect Date:	10-DEC-14 08:45		
Receive Date:	11-DEC-14	Client Desc.:	Bldg.9960 Soil Sample #1-S
Collector:	Client	Vol. Recv.:	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
HPLC Explosives											
8330 EXPLO. Std list + PETN Solid "As Received"											
1,3,5-Trinitrobenzene	U	ND	49.3	148	ug/kg	2	CWW	12/13/14	1417	1442778	1
2,4,6-Trinitrotoluene	U	ND	49.3	148	ug/kg	2					
2,4-Dinitrotoluene	U	ND	49.3	148	ug/kg	2					
2,6-Dinitrotoluene	U	ND	49.3	148	ug/kg	2					
2-Amino-4,6-dinitrotoluene	U	ND	49.3	148	ug/kg	2					
4-Amino-2,6-dinitrotoluene	U	ND	49.3	148	ug/kg	2					
HMX		160	49.3	148	ug/kg	2					
Nitrobenzene	U	ND	49.3	148	ug/kg	2					
PETN	U	ND	81.3	493	ug/kg	2					
RDX		1760	49.3	148	ug/kg	2					
Tetryl	U	ND	49.3	148	ug/kg	2					
m-Dinitrobenzene	U	ND	49.3	148	ug/kg	2					
m-Nitrotoluene	U	ND	49.3	148	ug/kg	2					
o-Nitrotoluene	U	ND	49.3	148	ug/kg	2					
p-Nitrotoluene	U	ND	49.3	148	ug/kg	2					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8330 PREP	8330 EXPLOSIVES BY HPLC Prep in soil	QXK1	12/12/14	1600	1442777

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8330A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
3,4-Dinitrotoluene	8330 EXPLO. Std list + PETN Solid "As Received"	2440 ug/kg	2460	99.2	(60%-149%)

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 16, 2014

Company :	Sandia National Laboratories
Address :	MS-0756, Org. 06765, Bldg. 823/Rm. 4276 1515 Eubank SE Albuquerque, New Mexico 87123
Contact:	Ms. Pamela M. Puissant
Project:	Level C Data Package

Client Sample ID:	097002-001	Project:	SNLS00113
Sample ID:	362832002	Client ID:	SNLS004
Matrix:	SOIL		
Collect Date:	10-DEC-14 08:50		
Receive Date:	11-DEC-14	Client Desc.:	Bldg.9960 Soil Sample #2-W
Collector:	Client	Vol. Recv.:	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
HPLC Explosives											
8330 EXPLO. Std list + PETN Solid "As Received"											
1,3,5-Trinitrobenzene	U	ND	49.8	149	ug/kg	2	CWW	12/13/14	1558	1442778	1
2,4,6-Trinitrotoluene	U	ND	49.8	149	ug/kg	2					
2,4-Dinitrotoluene	U	ND	49.8	149	ug/kg	2					
2,6-Dinitrotoluene	U	ND	49.8	149	ug/kg	2					
2-Amino-4,6-dinitrotoluene	U	ND	49.8	149	ug/kg	2					
4-Amino-2,6-dinitrotoluene	U	ND	49.8	149	ug/kg	2					
HMX	U	ND	49.8	149	ug/kg	2					
Nitrobenzene	U	ND	49.8	149	ug/kg	2					
PETN	U	ND	82.1	498	ug/kg	2					
RDX		234	49.8	149	ug/kg	2					
Tetryl	U	ND	49.8	149	ug/kg	2					
m-Dinitrobenzene	U	ND	49.8	149	ug/kg	2					
m-Nitrotoluene	U	ND	49.8	149	ug/kg	2					
o-Nitrotoluene	U	ND	49.8	149	ug/kg	2					
p-Nitrotoluene	U	ND	49.8	149	ug/kg	2					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8330 PREP	8330 EXPLOSIVES BY HPLC Prep in soil	QXK1	12/12/14	1600	1442777

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8330A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
3,4-Dinitrotoluene	8330 EXPLO. Std list + PETN Solid "As Received"	2220 ug/kg	2490	89.1	(60%-149%)

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 16, 2014

Company :	Sandia National Laboratories
Address :	MS-0756, Org. 06765, Bldg. 823/Rm. 4276 1515 Eubank SE Albuquerque, New Mexico 87123
Contact:	Ms. Pamela M. Puissant
Project:	Level C Data Package

Client Sample ID:	097003-001	Project:	SNLS00113
Sample ID:	362832003	Client ID:	SNLS004
Matrix:	SOIL		
Collect Date:	10-DEC-14 08:55		
Receive Date:	11-DEC-14	Client Desc.:	Bldg.9960 Soil Sample #3-N
Collector:	Client	Vol. Recv.:	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
HPLC Explosives											
8330 EXPLO. Std list + PETN Solid "As Received"											
1,3,5-Trinitrobenzene	U	ND	49.8	149	ug/kg	2	CWW	12/13/14	1632	1442778	1
2,4,6-Trinitrotoluene	U	ND	49.8	149	ug/kg	2					
2,4-Dinitrotoluene	U	ND	49.8	149	ug/kg	2					
2,6-Dinitrotoluene	U	ND	49.8	149	ug/kg	2					
2-Amino-4,6-dinitrotoluene	U	ND	49.8	149	ug/kg	2					
4-Amino-2,6-dinitrotoluene	U	ND	49.8	149	ug/kg	2					
HMX	U	ND	49.8	149	ug/kg	2					
Nitrobenzene	U	ND	49.8	149	ug/kg	2					
PETN	U	ND	82.1	498	ug/kg	2					
RDX	U	ND	49.8	149	ug/kg	2					
Tetryl	U	ND	49.8	149	ug/kg	2					
m-Dinitrobenzene	U	ND	49.8	149	ug/kg	2					
m-Nitrotoluene	U	ND	49.8	149	ug/kg	2					
o-Nitrotoluene	U	ND	49.8	149	ug/kg	2					
p-Nitrotoluene	U	ND	49.8	149	ug/kg	2					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 8330 PREP	8330 EXPLOSIVES BY HPLC Prep in soil	QXK1	12/12/14	1600	1442777

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 8330A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
3,4-Dinitrotoluene	8330 EXPLO. Std list + PETN Solid "As Received"	2420 ug/kg	2490	97.3	(60%-149%)

Notes:

QC Summary

Report Date: December 16, 2014

Sandia National Laboratories
MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico
Contact: **Ms. Pamela M. Puissant**

Workorder: **362832**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-Explosives											
Batch 1442778											
QC1203226880 LCS											
1,3,5-Trinitrobenzene	4980			5040	ug/kg		101	(68%-125%)	CWW	12/13/14	13:43
2,4,6-Trinitrotoluene	4980			5060	ug/kg		102	(64%-115%)			
2,4-Dinitrotoluene	4980			5240	ug/kg		105	(68%-116%)			
2,6-Dinitrotoluene	4980			5230	ug/kg		105	(68%-128%)			
2-Amino-4,6-dinitrotoluene	4980			4940	ug/kg		99.3	(68%-125%)			
4-Amino-2,6-dinitrotoluene	4980			4340	ug/kg		87.2	(67%-117%)			
HMX	4980			5530	ug/kg		111	(66%-132%)			
Nitrobenzene	4980			4960	ug/kg		99.7	(72%-121%)			
PETN	4980			5550	ug/kg		112	(68%-139%)			
RDX	4980			4800	ug/kg		96.4	(67%-123%)			
Tetryl	4980			4920	ug/kg		98.9	(66%-121%)			
m-Dinitrobenzene	4980			4520	ug/kg		90.8	(66%-118%)			
m-Nitrotoluene	4980			4980	ug/kg		100	(67%-116%)			
o-Nitrotoluene	4980			4920	ug/kg		98.9	(64%-120%)			
p-Nitrotoluene	4980			5040	ug/kg		101	(67%-125%)			
**3,4-Dinitrotoluene	2490			2480	ug/kg		99.8	(60%-149%)			
QC1203226879 MB											
1,3,5-Trinitrobenzene			U	ND	ug/kg					12/13/14	13:09
2,4,6-Trinitrotoluene			U	ND	ug/kg						
2,4-Dinitrotoluene			U	ND	ug/kg						

QC Summary

Workorder: 362832

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-Explosives												
Batch 1442778												
2,6-Dinitrotoluene				U	ND	ug/kg						
2-Amino-4,6-dinitrotoluene				U	ND	ug/kg				CWW	12/13/14	13:09
4-Amino-2,6-dinitrotoluene				U	ND	ug/kg						
HMX				U	ND	ug/kg						
Nitrobenzene				U	ND	ug/kg						
PETN				U	ND	ug/kg						
RDX				U	ND	ug/kg						
Tetryl				U	ND	ug/kg						
m-Dinitrobenzene				U	ND	ug/kg						
m-Nitrotoluene				U	ND	ug/kg						
o-Nitrotoluene				U	ND	ug/kg						
p-Nitrotoluene				U	ND	ug/kg						
**3,4-Dinitrotoluene	2480				2590	ug/kg		105	(60%-149%)			
QC1203226881 362832001 MS												
1,3,5-Trinitrobenzene	5000	U	ND		5160	ug/kg		103	(55%-113%)		12/13/14	14:50
2,4,6-Trinitrotoluene	5000	U	ND		5260	ug/kg		105	(52%-106%)			
2,4-Dinitrotoluene	5000	U	ND		5400	ug/kg		108	(55%-109%)			
2,6-Dinitrotoluene	5000	U	ND		5180	ug/kg		104	(59%-112%)			
2-Amino-4,6-dinitrotoluene	5000	U	ND		5120	ug/kg		102	(57%-110%)			
4-Amino-2,6-dinitrotoluene	5000	U	ND		4680	ug/kg		93.6	(57%-140%)			
HMX	5000		160		5690	ug/kg		111	(54%-129%)			
Nitrobenzene	5000	U	ND		5140	ug/kg		103	(50%-109%)			
PETN	5000	U	ND		5630	ug/kg		113	(53%-121%)			

QC Summary

Workorder: **362832**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-Explosives												
Batch 1442778												
RDX	5000		1760		6240	ug/kg		89.7	(56%-125%)	CWW	12/13/14	14:50
Tetryl	5000	U	ND		5020	ug/kg		100	(45%-140%)			
m-Dinitrobenzene	5000	U	ND		4600	ug/kg		92	(53%-107%)			
m-Nitrotoluene	5000	U	ND		5080	ug/kg		102	(55%-106%)			
o-Nitrotoluene	5000	U	ND		4950	ug/kg		99.1	(54%-110%)			
p-Nitrotoluene	5000	U	ND		4690	ug/kg		93.8	(57%-109%)			
**3,4-Dinitrotoluene	2500		2440		2500	ug/kg		100	(60%-149%)			
QC1203226882 362832001 MSD												
1,3,5-Trinitrobenzene	5000	U	ND		5040	ug/kg	2.31	101	(0%-30%)		12/13/14	15:24
2,4,6-Trinitrotoluene	5000	U	ND		5110	ug/kg	2.76	102	(0%-30%)			
2,4-Dinitrotoluene	5000	U	ND		5190	ug/kg	3.96	104	(0%-30%)			
2,6-Dinitrotoluene	5000	U	ND		5040	ug/kg	2.76	101	(0%-30%)			
2-Amino-4,6-dinitrotoluene	5000	U	ND		5020	ug/kg	1.99	100	(0%-30%)			
4-Amino-2,6-dinitrotoluene	5000	U	ND		4450	ug/kg	5.12	88.9	(0%-30%)			
HMX	5000		160		5760	ug/kg	1.25	112	(0%-30%)			
Nitrobenzene	5000	U	ND		5030	ug/kg	2.17	101	(0%-30%)			
PETN	5000	U	ND		5190	ug/kg	7.98	104	(0%-30%)			
RDX	5000		1760		6150	ug/kg	1.53	87.8	(0%-30%)			
Tetryl	5000	U	ND		5000	ug/kg	0.269	100	(0%-30%)			
m-Dinitrobenzene	5000	U	ND		4510	ug/kg	1.91	90.2	(0%-30%)			
m-Nitrotoluene	5000	U	ND		4980	ug/kg	2.10	99.5	(0%-30%)			
o-Nitrotoluene	5000	U	ND		4980	ug/kg	0.535	99.6	(0%-30%)			

QC Summary

Workorder: 362832

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
HPLC-Explosives												
Batch 1442778												
p-Nitrotoluene	5000	U	ND		4640	ug/kg	1.17	92.7	(0%-30%)	CWW	12/13/14	15:24
**3,4-Dinitrotoluene	2500		2440		2570	ug/kg		103	(60%-149%)			

Notes:

*	Recovery or %RPD not within acceptance limits and/or spike amount not compatible with the sample or the duplicate RPD's are not applicable where the concentration falls below the effective PQL.
**	Indicates analyte is a surrogate compound.
B	The analyte was found in the blank above the effective MDL.
H	Analytical holding time was exceeded
J	Estimated value, the analyte concentration fell above the effective MDL and below the effective PQL
N	Results associated with a spike analysis that was outside control limits.
P	The response between the confirmation column and the primary column is >40%D
U	The analyte was analyzed for but not detected below this concentration. For Organic and Inorganic analytes the result is less than the effective MDL. For radiochemical analytes the result is less than the MDA
X	Presumptive evidence that the analyte is not present. Please see narrative for further infromation.
Z	The percent difference is greater than 70%.
d	The 2:1 depletion requirement was not met for this sample
h	Prep holding time exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.