

## **DEPARTMENT OF ENERGY**

Environmental Management Los Alamos Field Office (EM-LA) Los Alamos, New Mexico 87544

EMLA-23-BF304-2-1

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



August 24, 2023

Subject:

Monthly Notification of Groundwater Data Reviewed in August 2023

Dear Mr. Shean:

This letter is the written submission of the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) in accordance with Section XXVI.D of the 2016 Compliance Order on Consent modified February 2017 (Consent Order). Members of EM-LA and N3B met on August 10, 2023, to review groundwater data loaded or released in the Environmental Information Management System (EIMS) during the previous calendar month. The enclosed report was prepared by comparing the data against groundwater notification criteria as defined in Section IX of the Consent Order. These criteria consider New Mexico Water Quality Control Commission (NMWQCC) groundwater standards, U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), New Mexico Environment Department (NMED) screening levels for tap water, EPA regional screening levels for tap water, and NMED-approved background values for hydrogeological zones as set forth in the "Groundwater Background Investigation Report, Revision 5." The EPA's tap water standard for carcinogenic risk values were adjusted to 1 × 10<sup>-5</sup>, as specified in the Consent Order.

The enclosed report was prepared using the November 2022 EPA regional screening levels for tap water; the NMWQCC groundwater standards published December 21, 2018; and the June 2022 Table A-1 of "Risk Assessment Guidance for Site Investigations and Remediation" for NMED tap water screening levels.

This report also includes analytical data from samples collected at a location within the Pueblo de San Ildefonso, which are subject to reporting at this time. These data have been reviewed by the Pueblo, as required under the 2014 Memorandum of Agreement (as amended in 2015) between the DOE National Nuclear Security Administration Los Alamos Field Office, EM-LA, and the Pueblo de San Ildefonso.

# 1-Day Notification

One-day oral notification was not required during the calendar month, because no contaminants were detected in a well screen interval or spring at a concentration that exceeded either the NMWQCC groundwater standard or federal MCL, at locations where such contaminants have not previously been detected above the respective standards as defined in the Consent Order (based on samples collected since June 14, 2007).

## **15-Day Notification**

The information required for constituents that meet the five reporting criteria requiring written notification within 15 days is provided in the enclosed report and tables.

If you have questions, please contact Amanda White at (505) 309-1366 (amanda.white@em-la.doe.gov) or Hai Shen at (505) 709-7600 (hai.shen@em.doe.gov).

Sincerely,

ARTURO Digitally signed by ARTURO DURAN
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Date: 2023.08.24
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Arturo Q. Duran
Compliance and Permitting Manager
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

#### Enclosure(s):

1. Summary of Groundwater Data Reviewed in August 2023 that Meet Notification Requirements (EM2023-0586)

cc (letter with CD/DVD enclosure[s]): Steven Lynne, Los Alamos County, Los Alamos, NM (2 copies)

cc (letter and enclosure[s] emailed):
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# SUMMARY OF GROUNDWATER DATA REVIEWED IN AUGUST 2023 THAT MEET NOTIFICATION REQUIREMENTS

#### INTRODUCTION

This report provides information to the New Mexico Environment Department (NMED) concerning recent groundwater monitoring data obtained by Newport News Nuclear BWXT-Los Alamos, LLC (N3B) under the annual "Interim Facility-Wide Groundwater Monitoring Plan, Revision 1" (IFGMP) for the 2023 monitoring year (N3B 2022, 702346). The report contains results for contaminants and other chemical constituents that meet the five screening criteria described in Section XXVI.D of the 2016 Compliance Order on Consent, modified February 2017 (Consent Order). The report covers groundwater samples collected from wells or springs (listed in the accompanying tables) that provide surveillance of the hydrogeological zones at Los Alamos National Laboratory (LANL or the Laboratory), as indicated in the tables.

The report includes two tables. Table 1, NMED 7-23 Groundwater Report, presents categorical results since June 14, 2007, that meet the five reporting criteria as specified in the Consent Order. Table 2, NMED 7-23 Groundwater Report Addendum, presents results that exceed the 95<sup>th</sup> percentile of the results in the data set defined in the "Groundwater Background Investigation Report, Revision 5" (GBIR) (LANL 2016, 601920). Only the contaminants and other chemical constituents that lack a calculated groundwater background value (i.e., the frequency of detections was too low to calculate a background value at the 95% upper tolerance level) are listed in this table. Table 2 is a voluntary submission by N3B to NMED that identifies the potential risk resulting from contaminants and other chemical constituents that are without defined background values.

These tables include the following:

- comments on results that appear to be exceptional based on consideration of monitoring data acquired from previous analyses (using statistics described below);
- supplemental information summarizing monitoring results obtained from previous analyses; and
- sampling date, name of the well or spring, location of the well or spring, depth of the screened interval, groundwater zone sampled, analytical result, detection limit, values for regulatory standards or screening levels, and analytical and secondary validation qualifiers.

Additional information describing the locations and analytical data is included. All data have been through secondary validation.

This report was prepared by comparing the data against groundwater notification criteria as defined in Section IX of the Consent Order. These criteria consider New Mexico Water Quality Control Commission (NMWQCC) groundwater standards, U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), NMED screening levels for tap water, EPA regional screening levels for tap water, and NMED-approved background values for hydrogeological zones as set forth in the GBIR. The EPA's tap water standard carcinogenic risk values were adjusted to 1 x 10<sup>-5</sup>, as specified in the Consent Order. This report was prepared using the November 2022 EPA regional screening levels for tap water; the NMWQCC groundwater standards published December 21, 2018; and the NMED tap water screening levels specified in the June 2022 Table A-1 of "Risk Assessment Guidance for Site Investigations and Remediation" (Risk Assessment Guidance) (NMED 2022, 702141, Table A-1).

Background values applied in Table 1 notification criterion C4 are the background values for hydrogeological zones as set forth in the GBIR.

Screening values applied in Table 2 criteria XC2scr and XC4scr are the 95<sup>th</sup> percentile of the data set used to establish background as defined in the GBIR.

#### **DESCRIPTION OF TABLES**

## **1-Day Notification Requirement**

One-day notification is required upon the detection of a contaminant in a well screen interval or spring at a concentration that exceeds either the NMWQCC water quality standard or the EPA MCL if that contaminant has not previously exceeded either of these standards at that location. N3B, under the direction of the U.S. Department of Energy Environmental Management Los Alamos Field Office (DOE EM-LA), notifies NMED of any such data orally within 1 business day following the review of monthly analytical data. Data in the 1-day notification is also included in the 15-day notification table. Such exceedance data are identified under the Criterion Code A (CA) in notifications.

## **15-Day Notification Requirement**

Table 1 is divided into separate categories that correspond to the five screening criteria in Section XXVI.D of the Consent Order. In several cases, data met more than one of the notification criteria and, therefore, appear in the table multiple times.

The criterion (C) codes and their definitions are as follows:

- C1. Detection of a contaminant that is an organic compound in a spring or screened interval of a well if that contaminant has not previously been detected in the spring or screened interval
- C2. Detection of a contaminant that is a metal or other inorganic compound at a concentration above the background level in a spring or screened interval of a well if that contaminant has not previously exceeded the background level in the spring or screened interval
- C3. Detection of a contaminant in a spring or screened interval of a well at a concentration that (1) exceeds the lower of either one-half the NMWQCC water quality standard or one-half the federal MCL, or, if there is no such standard for the contaminant, (2) exceeds one-half the tap water screening levels in Table A-1 of NMED's Risk Assessment Guidance, or, if there is no NMED tap water screening level available for a contaminant, (3) exceeds one-half the EPA regional human health medium-specific screening level for tap water if that contaminant has not previously exceeded one-half such standard or screening level in the spring or screened interval
- C4. Detection of a contaminant that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that exceeds 2 times the background level for the third consecutive sampling of the spring or screened interval
- C5. Detection of a contaminant in a spring or screened interval of a well at a concentration that exceeds either one-half the NMWQCC water quality standard or one-half the federal MCL and which has increased for the third consecutive sampling of that spring or screened interval

Table 2 is divided into two categories that correspond to two screening criteria. They mirror C2 and C4 in Table 1, respectively.

The two criteria are as follows:

XC2scr Detection of a contaminant that is a metal or other inorganic compound at a concentration above the 95<sup>th</sup> percentile in a spring or screened interval of a well, if that contaminant has not previously exceeded the 95<sup>th</sup> percentile of the data set used to establish background in the spring or screened interval as defined in the GBIR

XC4scr Detection of a contaminant that is a metal or other inorganic compound in a spring or screened interval of a well at a concentration that, for the third consecutive sampling, exceeds 2 times the 95<sup>th</sup> percentile of the data set used to establish background as defined in the GBIR

Columns 2 through 8 in both tables provide summary statistics for metals or organic/inorganic compounds by field preparation code (e.g., filtered [F] aluminum) for samples collected since January 1, 2000, including the currently reported data. The statistics include the date of the first sampling event; the number of sampling events and samples analyzed; the number of detections; and the minimum, maximum, and median concentration for detections. This information indicates whether the new result is consistent with the range of earlier data.

The subsequent columns contain location and sampling information as follows:

Canyon—canyon where monitoring location is found

Zone—hydrogeological zone from which the groundwater sample was collected (e.g., alluvial spring)

Location—monitoring location name

Screen Depth—depth of top of well screen in feet (0 for springs, -1 if unknown)

Start Date—date the sample was collected

Fld QC Type Code—identifies regular samples (REG) or field duplicates (FD)

Fld Prep Code—identifies whether samples are filtered (F) or unfiltered (UF)

Lab Sample Type Code—indicates whether result is a primary sample (INIT) or reanalysis (RE)

Analytical Suite Code—analytical suite (such as volatile organic compounds) for analyzed compound

Analyte Description—name of analyte

Analyte—chemical symbol for analyte or CAS (Chemical Abstracts Service) number for organic compounds

Std Result—analytical result in standard measurement units

Result/Median—ratio of the Std Result to the median of all detections since 2000

LVL Type/Risk Code—type of regulatory standard, screening level, or background value (indicating groundwater zone) used for comparison

Screen Level—value of the LVL Type/Risk Code

Exceedance Ratio—ratio of Std Result to LVL Type/Risk Code. In earlier versions of this report, the ratio was divided by the basis for comparison in the criterion, but that is no longer the case. For example, for a criterion (such as C3) that compares the value with one-half the standard, a value equal to a standard previously had an exceedance ratio of 2. The current report shows this ratio as 1.

Std MDL—method detection limit in standard measurement units

Std UOM—standard units of measurement

Dilution Factor—amount by which the sample was diluted to measure the concentration

Lab Qualifier—analytical laboratory qualifier indicating analytical quality of the sample data

Validation Qualifier—the qualifier that indicates the effects of all processes associated with the sample (e.g., sample collection, additional quality control samples such as field duplicates) on the quality of the sample data

Validation Reason Code—an explanation of the reason for validation of the qualifiers

Analytical Method Code—analytical method number

Lab Code—analytical laboratory name

Comment—N3B comment regarding the analytical result

## **Acronyms and Abbreviations**

The tables may include the following acronyms, abbreviations, and analytical laboratory codes and qualifiers:

CFA—Cape Fear Analytical, LLC

DOECAP—Department of Energy Consolidated Audit Program

DNX—hexahydro-1,3-dinitro-5-nitro-1,3,5-triazine

EPA MCL—U.S. Environmental Protection Agency maximum contaminant level

F-filtered

FD—field duplicate

GELC—GEL Laboratories, LLC, Division of the GEL Group, Charleston, South Carolina

GENINORG—General inorganic

HEXP—high explosive

HMX—octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine

HRGC/HRMS—high-resolution gas chromatography/high-resolution mass spectrometry

ICP-AES—inductively coupled plasma atomic emission spectroscopy

ICP-MS—inductively coupled plasma mass spectrometry

IFGMP—Interim Facility-Wide Groundwater Monitoring Plan

INIT—primary sample

LANL Int BG LV—Los Alamos National Laboratory intermediate background level

LANL Reg BG LV—Los Alamos National Laboratory regional background level

LCMS/MS—liquid chromatography mass spectrometry/mass spectrometry

LCS—laboratory control sample

MDL—method detection limit

MNX—hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine

MS-matrix spike

MSD—matrix spike duplicate

n/a-not applicable

NM GW STD—New Mexico Water Quality Control Commission groundwater standard

NMED A1 TAP SCRN LVL—New Mexico Environment Department Table A-1 screening level for tap water

NTU—nephelometric turbidity unit

PETN—pentaerythritol tetranitrate

PFAS—per- and polyfluoroalkyl substances

PQL—practical quantitation limit

RDX—Royal Demolition Explosive (hexahydro-1,3,5-trinitro-1,3,5-triazine)

RE—reanalysis

REG—regular sample

RL—reporting limit

RPD—relative percent difference

SIM—selected ion monitoring

SVOC—semivolatile organic compound

SwRI—Southwest Research Institute

RI-Reissue

TDS—total dissolved solids

TNX—2,4,6-trinitroxylene

UAL—upper acceptance limit

UF—unfiltered

UOM—unit of measurement

VOC—volatile organic compound

## **Analytical Laboratory Codes and Qualifiers**

I6b (validation reason code)—The associated matrix spike percent recovery is greater than the upper acceptance limit.

- J (lab qualifier)—The associated numerical value is an estimated quantity.
- J (validation qualifier)—The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual.
- J+ (validation qualifier)—The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual with a potential positive bias.
- J- (validation qualifier)—The analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual with a potential negative bias.
- J\_LAB (validation reason code)—The analytical laboratory qualified the detected result as estimated (J) because the result was less the practical quantitation limit but greater than the method detection limit.

NQ (validation qualifier)—No validation qualifier flag is associated with this result, and the analyte is classified as detected.

NQ (validation reason code)—The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualifier. The analyte is detected in the sample.

#### REFERENCES

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

- LANL (Los Alamos National Laboratory), October 27, 2016. "Groundwater Background Investigation Report, Revision 5," Los Alamos National Laboratory document LA-UR-16-27907, Los Alamos, New Mexico. (LANL 2016, 601920)
- N3B (Newport News Nuclear BWXT-Los Alamos, LLC), September 2022. "Interim Facility-Wide Groundwater Monitoring Plan for the 2023 Monitoring Year, October 2022–September 2023, Revision 1," Newport News Nuclear BWXT-Los Alamos, LLC, document EM2022-0656, Los Alamos, New Mexico. (N3B 2022, 702346)
- NMED (New Mexico Environment Department), June 2022. "Risk Assessment Guidance for Site Investigations and Remediation, Volume 1, Soil Screening Guidance for Human Health Risk Assessments," Hazardous Waste Bureau and Ground Water Quality Bureau, Santa Fe, New Mexico. (NMED 2022, 702141)

Table 1: NMED 7-23 Groundwater Report

Table	I. INIVII	NMED 7-23 Groundwater Report																											
Criteria Code	Visits Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth (ft)	Start Date	Fld QC Type Code	Fid Prep Code Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C1 1	1	6/8/2023	3.04	3.04	3.04	1	Upper Los Alamos Canyon	Alluvial	LAO-1.6g	10.47	6/8/2023	REG	UF INIT	LCMS/MS	Perfluorohexane sulfonic acid	355-46-4	3.04	1	NMED A1 401 TAP SCRN LVL	0	0.563	ng/L	1.00	a	NQ I	NQ	EPA:537M	GELC	
C1 1	1	6/8/2023	3.89	3.89	3.89	1	Upper Los Alamos Canyon	Alluvial	LAO-1.6g	10.47	6/8/2023	REG	UF INIT	LCMS/MS	Perfluorooctane sulfonic acid	1763-23-1	3.89	1	NMED A1 60 TAP SCRN LVL	0.1	0.682	ng/L	1.00	_	NQ I	NQ	EPA:537M	GELC	
C1 16	18	9/24/2001	1.8	2.52	3.27	3	White Rock Canyon and Rio Grande	Regional Spring	Spring 2	0	4/18/2023	REG	UF INIT	VOC	Acetone	67-64-1	2.52	1	NMED A1 14100 TAP SCRN LVL	0	1.74	μg/L	1.00	J	J	J_LAB :	SW-846:8260D	GELC	
C2 20	29	2/28/2006	52.2	61.2	68.7	29	Pueblo Canyon	Regional Top	R-4	792.9	6/12/2023	REG	F INIT	Geninorg	Hardness	Hardness	68.7	1.1	LANL Reg BG LVL 67.1	1	0.453	mg/L	1.00	_	NQ 1	NQ :	SM:A2340B	GELC	
C2 93	98	2/17/2009	52.1	62.65	77	98	Mortandad Canyon	Regional Top	R-44 S1 <sup>b</sup>	895.0	6/6/2023	REG	F INIT	Geninorg	Alkalinity- CO3+HCO3	ALK-CO3+HCO3	77.0	1.2	LANL Reg BG LVL	1.1	0.725	mg/L	1.00	_	NQ I	NQ	EPA:310.1	GELC	
		6/23/2000	21	43.5		19	Canyon	Alluvial	LAO-1.6g			REG			Chloride	CI(-1)		3.8	STD				50.0	_			EPA:300.0	GELC	
		8/4/2020	10.7	14.3			Mortandad Canyon						F INIT		Chloride	CI(-1)	13.7	1	BG LVL		0.134		2.00	_			EPA:300.0	GELC	
		8/4/2020	131		272		Mortandad Canyon					REG		Metals	Chromium	Cr	172	1	BG LVL			μg/L	1.00	_				GELC	
		8/4/2020	2.59		4.06		Mortandad Canyon						F INIT	_	Nitrate-Nitrite as Nitrogen		3.60	1	BG LVL		0.0850		5.00	_			EPA:353.2	GELC	
		8/4/2020	0.208				Mortandad Canyon					FD		Geninorg	Nitrate-Nitrite as Nitrogen		2.29		LANL Reg 0.769 BG LVL		0.0850		5.00	_			EPA:353.2	GELC	
		8/4/2020	0.208				Mortandad Canyon					REG		Geninorg	Nitrate-Nitrite as Nitrogen		0.208		BG LVL		0.0850		5.00	J			EPA:353.2	GELC	
C4 34	36	8/4/2020	17.5					Regional Deep			6/16/2023	REG			Sulfate	SO4(-2)		0.9	LANL Reg 4.59 BG LVL			mg/L	2.00	_			EPA:300.0	GELC	
C4 5	7	1/30/2022	5.24 3.87	5.48 4.73				Regional Top Regional Deep				REG			Nitrate-Nitrite as Nitrogen Nitrate-Nitrite as		5.43 5.05	1.1	LANL Reg 0.769 BG LVL LANL Reg 0.769		0.425 0.425		25.0 25.0				EPA:353.2 EPA:353.2	GELC GELC	
							Sandia Canyon Sandia Canyon								Nitrogen	SO4(-2)			BG LVL LANL Reg   4.59		0.425				NQ I			GELC	
		11/15/2005		7.58				Regional Top		825.0				Geninorg		CI(-1)	7.93		BG LVL		0.0670							GELC	
		5/17/2005					Canyon	Regional Top		855.0		FD			Nitrate-Nitrite as		8.28		BG LVL		0.425							GELC	
		5/17/2005					Sandia Canyon	Regional Top		855.0			F INIT		Nitrogen  Nitrate-Nitrite as		8.33		BG LVL		0.425						EPA:353.2	GELC	
		5/17/2005					,	Regional Top		855.0		FD		Geninorg	Nitrogen	SO4(-2)	11.0		BG LVL		0.423						EPA:300.0	GELC	
		5/17/2005		9.79				Regional Top		855.0		REG		Geninorg		SO4(-2)	11.0		BG LVL		0.133		1.00				EPA:300.0 EPA:300.0	GELC	
		8/30/2007						Regional Deep				REG			Barium	Ва			BG LVL			μg/L	1.00				SW-846:6010D		
		8/30/2007						Regional Deep					F INIT		Chloride	CI(-1)	6.67		BG LVL		0.0670		1.00					GELC	
04 95	112	5/50/2007	5.51	0.505	7.51	112	Sandia Sanyon	Toglorial Deep	11-00a	1010.1	0/11/2020	, \LG		Schillorg	Gillorius	Οι(-1 <i>)</i>	0.07		BG LVL	2.5	0.0070	my/L	1.00		J.		Li A.000.0	OLLO	

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Table 1: NMED 7-23 Groundwater Report

	•	WIED 7-23				opo.	•	_	_			1			-		1	1	1		,	1						1	1	1		
Criteria Code	Visits	Samples First Event		Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth (ft)	Start Date	Fld QC Type Code	Fld Prep Code	Lab Sample Type Code	Anyl Suite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
	21 24			50 1	57 ′	164	24	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT G	eninorg	Alkalinity- CO3+HCO3	ALK-CO3+HCO3	155	1	LANL Int BG LVL	62	2.5	0.725	mg/L	1.00		NQ	NQ	EPA:310.1	GELC	
C4	20 22	8/10/200	6 94	4.5 9	8.4	114	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT M	letals	Barium	Ва	97.5	1	LANL Int BG LVL	13.5	7.2	1.00	μg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	20 22	8/10/200	6 54	4.8 5	7.9	62.7	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT M	etals	Calcium	Ca	55.6	1	LANL Int BG LVL	10.7	5.2	0.0500	mg/L	1.00	_	NQ	NQ	SW-846:6010D	GELC	
C4	21 24	8/10/200	6 34	4.4 4	3.1	47.3	24	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT G	eninorg	Chloride	CI(-1)	45.6	1.1	LANL Int BG LVL	3.11	15	0.670	mg/L	10.0	_	NQ	NQ	EPA:300.0	GELC	
C4	20 22	8/10/200	6 17	79 2	10.5 2	227	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT G	eninorg	Hardness	Hardness	202	1	LANL Int BG LVL	37.8	5.3	0.453	mg/L	1.00	_	NQ	NQ	SM:A2340B	GELC	
C4	20 22	8/10/200	6 15	5.1 1	5.95	17.2	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT M	letals	Magnesium	Mg	15.3	1	LANL Int BG LVL	3.14	4.9	0.11	mg/L	1.00	_	NQ	NQ	SW-846:6010D	GELC	
C4	21 24	8/10/200	6 2.	.15 4	.235	7.65	24	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT G	eninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.58	0.8	LANL Int BG LVL	0.459	7.8	0.170	mg/L	10.0		NQ	NQ	EPA:353.2	GELC	
C4	19 22	2 4/9/2007	1.	49 2	.11 3	3.45	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT LO	CMS/MS	Perchlorate	CIO4	1.58	0.7	LANL Int BG LVL	0.27	5.9	0.0500	μg/L	1.00	_	NQ	NQ	SW-846:6850	GELC	
C4	20 22	8/10/200	6 5.	.23 5	.865	6.17	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT M	etals	Potassium	K	5.36	0.9	LANL Int BG LVL	2.35	2.3	0.0500	mg/L	1.00	_	NQ	NQ	SW-846:6010D	GELC	
C4	20 22	8/10/200	6 25	55 2	77 3	317	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT M	letals	Strontium	Sr	267	1	LANL Int BG LVL	59.6	4.5	1.00	μg/L	1.00	_	NQ	NQ	SW-846:6010D	GELC	
C4	21 24	8/10/200	6 20	0.1 2	8.3	30.7	24	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT G	eninorg	Sulfate	SO4(-2)	29.0	1	LANL Int BG LVL	7.1	4.1	1.33	mg/L	10.0	_	NQ	NQ	EPA:300.0	GELC	
C4	20 22	8/10/200	6 6.	.94 8	.675	10.2	22	Pueblo Canyon	Intermediate Perched	R-3i	215.2	6/12/2023	REG	F I	INIT M	etals	Uranium	U	6.94	0.8	LANL Int BG LVL	0.992	7	0.0670	μg/L	1.00	_	NQ	NQ	SW-846:6020B	GELC	
C4	20 20	8/8/2006			69.5	296	20	Pueblo Canyon	Intermediate Perched	POI-4	159.0	6/7/2023	REG	F I	INIT G	eninorg	Alkalinity- CO3+HCO3	ALK-CO3+HCO3	149	0.9	LANL Int BG LVL	62	2.4	0.725	mg/L	1.00	_	NQ	NQ	EPA:310.1	GELC	
		8/8/2006			09	117	19	Pueblo Canyon	Intermediate Perched	POI-4	159.0	6/7/2023	REG	F I	INIT M	etals	Barium	Ва	97.0	0.9	LANL Int BG LVL		7.2	1.00	μg/L	1.00	_	NQ	NQ	SW-846:6010D		
		8/8/2006			7.2		19	Pueblo Canyon	Intermediate Perched	POI-4	159.0	6/7/2023	REG	F I	INIT M	etals	Calcium	Ca		0.8	LANL Int BG LVL	10.7	3.4	0.0500			_	NQ	NQ	SW-846:6010D		
		8/8/2006		2.5 4	7.55	50.4	20	Pueblo Canyon	Intermediate Perched	POI-4		6/7/2023	REG	F I	INIT G	eninorg	Chloride	CI(-1)	47.4	1	BG LVL	3.11	15	0.670	Ū	10.0	_	NQ	NQ	EPA:300.0	GELC	
		8/8/2006					19	Pueblo Canyon	Intermediate Perched	POI-4		6/7/2023	REG			eninorg	Hardness	Hardness	131	0.8	LANL Int BG LVL		3.5	0.453	Ū	1.00	_	NQ	NQ	SM:A2340B	GELC	
		8/8/2006			2.1			Pueblo Canyon	Intermediate Perched	POI-4	159.0	6/7/2023	REG		INIT M		Magnesium	Mg		0.8	BG LVL			0.11	mg/L	1.00	_		NQ	SW-846:6010D		
		5/7/2005			.095			Pueblo Canyon	Intermediate Perched	POI-4		6/7/2023	REG		INIT G		Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.86	0.7	BG LVL			0.170	mg/L	10.0	_	NQ	NQ	EPA:353.2	GELC	
		8/8/2006			.68		19	Pueblo Canyon	Intermediate Perched	POI-4		6/7/2023			INIT M		Potassium	K		0.9	BG LVL		3.2	0.0500		1.00	_		NQ	SW-846:6010D		
		8/8/2006			4.9		19	Pueblo Canyon	Intermediate Perched	POI-4		6/7/2023			INIT M		Sodium	Na		0.9	BG LVL				mg/L		_		NQ	SW-846:6010D		
		8/8/2006			43 2		19	Pueblo Canyon	Perched	POI-4		6/7/2023	REG				Strontium	Sr		8.0	BG LVL		3.3			1.00			NQ	SW-846:6010D		
C4	20 20	8/8/2006	22	2.5 3	0.3	33	20	Pueblo Canyon	Intermediate Perched	POI-4	159.0	6/7/2023	REG	F I	INIT G	eninorg	Sulfate	SO4(-2)	28.1	0.9	LANL Int BG LVL	7.1	4	1.33	mg/L	10.0		NQ	NQ	EPA:300.0	GELC	

Table 1: NMED 7-23 Groundwater Report

Table 1. Nine D 7-23 Groundwater Report																											_	
Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth (ft)	Start Date	Fld QC Type Code Fld Prep Code	Lab Sample Type Code	əpc	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Dilution Factor	l ah Oilalifier	Lab Quaimer Validation Qualifier	Validation Reason Code	Anyl Meth Code Lab Code	Comment
	19	27 4/	/17/2007	2	4.57 6.68	27	Pueblo Canyon	Regional Top	R-4	792.9	6/12/2023	REG F	INIT	LCMS/MS	Perchlorate	CIO4	2.95	0.6	LANL Reg BG LVL	0.414	7.1	0.0500 µg/	1.00		NQ	NQ	SW-846:6850 GELC	
			/28/2009	3	5.87 21.5	103	Mortandad Canyon	Regional Top	R-45 S1	880.0	6/5/2023	REG F	INIT	Geninorg	Chloride	CI(-1)	20.8	3.5	LANL Reg BG LVL	2.7	7.7	0.335 mg	L 5.00		NQ	NQ	EPA:300.0 GELC	
C4	96	103 2/	/28/2009	0.535	1.545 13.8	88	Mortandad Canyon	Regional Top	R-45 S1	880.0	6/5/2023	REG F	INIT	Metals	Nickel	Ni	8.94	5.8	LANL Reg BG LVL		3.1	0.600 µg/	1.00		NQ	NQ	SW-846:6020B GELC	
C4	96	103 2/	/28/2009		2.88 4.1		Mortandad Canyon				6/5/2023	REG F	INIT	Geninorg	Nitrogen			1.1	LANL Reg BG LVL			0.0850 mg			NQ	NQ	EPA:353.2 GELC	
							Mortandad Canyon			880.0	6/5/2023			Geninorg		SO4(-2)	20.2		LANL Reg BG LVL			0.665 mg				NQ	EPA:300.0 GELC	
		103 3/					Mortandad Canyon				6/5/2023	REG F		Geninorg		CI(-1)	7.03		LANL Reg BG LVL			0.0670 mg			NQ		EPA:300.0 GELC	
		108 3/					Mortandad Canyon				6/5/2023	REG F		Metals	Chromium	Cr		1.7	LANL Reg BG LVL			3.00 µg/			NQ		SW-846:6020B GELC	
C4					28.9 66.1		Mortandad Canyon				6/14/2023	REG F		Metals	Chromium	Cr		2.1	LANL Reg BG LVL			3.00 µg/			NQ	NQ NQ	SW-846:6020B GELC	
C4					<ul><li>2.34 3.3</li><li>12.1 17</li></ul>		Mortandad Canyon				6/14/2023 6/14/2023	REG F	INIT	Geninorg	Nitrogen	CIO4	2.54 12.5	1.1	LANL Reg BG LVL LANL Reg			0.0850 mg 5.00 μg/			NQ		EPA:353.2 GELC 3 SW-846:6850 GELC	
		106 3/					Mortandad Canyon  Mortandad Canyon		R-61 S1 R-50 S1		6/15/2023			Geninorg		CI(-1)	22.2	1.4	BG LVL			5.00 μg/ 0.335 mg			J+	J_LA	EPA:300.0 GELC	
		100 3/		1.51			Mortandad Canyon				6/15/2023			Metals	Nickel	Ni	26.5	1.4	BG LVL			0.600 µg/				NQ	SW-846:6020B GELC	
C4		107 3/					Mortandad Canyon		R-50 S1		6/15/2023	REG F		Geninorg		NO3+NO2-N	3.18	1 /	BG LVL			0.170 mg			NQ		EPA:353.2 GELC	
C4		106 3/					Mortandad Canyon		R-50 S1		6/15/2023	REG F		Geninorg	Nitrogen	SO4(-2)	20.8	1.4	BG LVL			0.665 mg			J+	l6b	EPA:300.0 GELC	
					15.6 21.6		Mortandad Canyon		R-44 S1		6/6/2023	REG F				CI(-1)	21.0	1.3	BG LVL LANL Reg			0.335 mg			NQ		EPA:300.0 GELC	
					32.4 109		Mortandad Canyon		R-44 S1		06/6/2023	REG F		Metals	Nickel	Ni		0.9	BG LVL LANL Reg			0.600 μg/				NQ	SW-846:6020B GELC	
					14.6 21.4		Mortandad Canyon		R-44 S1		06/6/2023			Geninorg		SO4(-2)	19.9	1.4	BG LVL LANL Reg			0.665 mg				NQ	EPA:300.0 GELC	
C4	21	23 9/	/25/2000	36.4	42.8 64	23	White Rock Canyon	Regional	Spring 2	0	4/18/2023			Metals	Sodium	Na	44.5	1	BG LVL LANL Reg				L 1.00		NQ	NQ	SW-846:6010D GELC	
C4	17	19 9/	/13/2004	0.126	2 5.23	19	and Rio Grande White Rock Canyon	Spring Regional	Spring 2	0	4/18/2023	REG F	INIT	Metals	Uranium	U	5.23	2.6	BG LVL LANL Reg	1.19	4.4	0.0670 μg/	. 1.00		NQ	NQ	SW-846:6020B GELC	
C4	18	20 9/	/24/2001	3.1	16.9 40.2	20	and Rio Grande White Rock Canyon	Spring Regional	Spring 2	0	4/18/2023	REG F	INIT	Metals	Vanadium	V	34.6	2	BG LVL LANL Reg	11.4	3	1.00 µg/	1.00		NQ	NQ	SW-846:6010D GELC	
							and Rio Grande	Spring	<u> </u>									<u> </u>	BG LVL	<u> </u>	<u> </u>							

<sup>&</sup>lt;sup>a</sup> — = Lab qualifier not applicable.

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<sup>&</sup>lt;sup>b</sup> S1 = Screen 1.

<sup>&</sup>lt;sup>c</sup> S2 = Screen 2.

<sup>&</sup>lt;sup>d</sup> Data pertaining to a well drilled at a target angle from the vertical. Depth value represents linear feet along (down) the borehole.

Table 2: NMED 7-23 Groundwater Report Addendum

	Sie 2. Milled 7-23 Groundwater Report Addendum																													
Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Screen Depth	Start Date	Fid QC Type Code	Fld Prep Code	uite Code	Analyte Desc	Analyte	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std MDL	Std UOM	Dilution Factor	Lab Qualifier	Validation Qualifier	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
XC4scr	22 2	27 1	11/15/2005	41.8	64	51.15	26	Lower Los Alamos Canyon	Regional Top R-24	825.0	6/8/2023	REG	F INIT	Metals	Boron	В	49.5	1	Reg-Scr_95	18.7	2.6	15.0	μg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr	96	112 8	8/30/2007	137	199	169	112	Sandia Canyon	Regional R-35a Deep	1013.1	6/17/2023	REG	F INIT	Metals	Strontium	Sr	166	1	Reg-Scr_95	74.4	2.2	1.00	μg/L	1.00	a	NQ	NQ	SW-846:6010D	GELC	
XC4scr	20 2	22 8	8/10/2006	84.6	172	109.5	22	Pueblo Canyon	Intermediate R-3i Perched	215.2	6/12/2023	REG	F INIT	Metals	Boron	В	172		Int-Scr_95	16.2	10.6	15.0	μg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
		22 8			9.7	7.8	22	Pueblo Canyon	Intermediate R-3i Perched	215.2	6/12/2023	I LO	F INIT	Metals	Nickel	Ni	6.32		_	2.93	2.2	0.600	μg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
XC4scr	21 2				437	327.5		Pueblo Canyon	Intermediate R-3i Perched	215.2	6/12/2023		F INIT	Geninorg	Total Dissolved Solids	TDS	300		Int-Scr_95			2.38	mg/L	1.00				EPA:160.1	GELC	
XC4scr					252	230		Pueblo Canyon	Intermediate POI-4 Perched	159.0	6/7/2023	REG	F INIT	Metals	Boron	В	210		Int-Scr_95		13	15.0	μg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
XC4scr					13.1	9.66		Pueblo Canyon	Intermediate POI-4 Perched	159.0	6/7/2023	I LO	F INIT	Metals	Nickel	Ni	13.1		Int-Scr_95	2.93	4.5	0.600	μg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
XC4scr					403	369.5	20	Pueblo Canyon	Intermediate POI-4 Perched	159.0	6/7/2023	REG	F INIT	Geninorg	Solids		324		Int-Scr_95	135		2.38	mg/L	1.00		NQ	NQ	EPA:160.1	GELC	
XC4scr					1.69			Pueblo Canyon	Intermediate POI-4 Perched	159.0	6/7/2023	0	F INIT	, ,	as Phosphorus	PO4-P	1.38		Int-Scr_95		7.8			1.00		NQ	NQ	EPA:365.4	GELC	
XC4scr					3.69	2.89		Pueblo Canyon	Intermediate POI-4 Perched	159.0	6/7/2023	REG	F INIT	Metals	Uranium	U	1.55		Int-Scr_95			0.0670		1.00		NQ		SW-846:6020B	GELC	
XC4scr				3.7	11.7	7.27		Pueblo Canyon	Regional Top R-2	906.4	6/12/2023	FD	F INIT	Metals	Copper	Cu	11.1		Reg-Scr_95		3.7	3.00	μg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr					11.7	7.27		Pueblo Canyon	Regional Top R-2	906.4	6/12/2023	I LO	F INIT	Metals	Copper	Cu	10.9		Reg-Scr_95		3.6	3.00	μg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr					0.637	0.1285		Mortandad Canyon	Regional Top R-45 S		6/5/2023	0	F INIT	Geninorg		Br(-1)	0.152		Reg-Scr_95		2.3	0.0670		1.00	J	J+	l6b	EPA:300.0	GELC	
XC4scr			5/20/2011		11.8	0.371	88	Mortandad Canyon	Regional Top R-61 S			REG	F INIT	Geninorg	as Phosphorus		0.236		Reg-Scr_95					1.00	<u>                                     </u>	NQ		EPA:365.4	GELC	
XC4scr XC4scr			3/6/2010 2/17/2009	0.0691 0.0757		0.136 0.148	84 53	Mortandad Canyon Mortandad	Regional Top R-50 S  Regional Top R-44 S		6/15/2023 6/6/2023	0	F INIT	Geninorg Geninorg		Br(-1)	0.155	1.1	Reg-Scr_95 Reg-Scr_95		2.3	0.0670		1.00	J	J+ J+	l6b	EPA:300.0 EPA:300.0	GELC GELC	
XC4scr					27.8	9.275		Canyon White Rock	Regional Spring		4/18/2023		F INIT	Metals	Arsenic	As	9.55	1	Reg-Scr_95			2.00	µg/L	1.00				SW-846:6020B	GELC	
70450	10 2	20  8	<i>∪,</i> ∠ <del>4</del> , ∠00 1	7.13	21.0	9.213		Canyon and Rio Grande	Spring	2 0	10/2023	INLU	I	ivictals	MISCHIC	149	9.00		ived-on_90	2.1	5.5	2.00	µy/L	1.00		INC	ING	077-040.00200	GLLU	
					72.5	46.05	20	White Rock Canyon and Rio Grande			4/18/2023	T.E.O	F INIT		Boron	В	48.1	1	Reg-Scr_95			15.0	μg/L	1.00	J	J	_	SW-846:6010D	GELC	
XC4scr	17	19 9	9/13/2004	167	230	184	19	White Rock Canyon and Rio Grande	Regional Spring Spring	2 0	4/18/2023	REG	F INIT	Metals	Strontium	Sr	176	1	Reg-Scr_95	74.4	2.4	1.00	μg/L	1.00	_	NQ	NQ	SW-846:6010D	GELC	

<sup>&</sup>lt;sup>a</sup> — = Lab qualifier not applicable.

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<sup>&</sup>lt;sup>b</sup> S1 = Screen 1.