



**DEPARTMENT OF ENERGY**  
Environmental Management Los Alamos Field Office (EM-LA)  
Los Alamos, New Mexico 87544



EMLA-23-BF138-2-1

February 24, 2023

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

Subject: Monthly Notification of Groundwater Data Reviewed in February 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 (2016 Consent Order). Members of EM-LA and N3B met February 9, 2023, to review groundwater data loaded or released in the Environmental Information Management system (EIM) 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 2016 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  $1 \times 10^{-5}$ , as specified in the 2016 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.

A laboratory reanalysis was performed for alkalinity (i.e., alkalinity- $\text{CO}_3 + \text{HCO}_3$ ) sampled at R-15 November 21, 2022, and reported under the C2 review category in the previous notification (i.e., for data reviewed in January 2023). The initial analysis at 83.8 mg/L, did not conform with historical data trends. The reanalysis result (54.8 mg/L) conformed to historical data trends and has been set as the Best Value datum in EIM. This result no longer prompts a C2-related notification.

**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 2016 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,

**For M Lee  
Bishop**

Digitally signed by For M  
Lee Bishop  
Date: 2023.02.24  
12:50:16 -07'00'

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 February 2023 that Meet Notification Requirements (EM2023-0131)

cc (letter with CD/DVD enclosure[s]):

Steven Lynne, Los Alamos County, Los Alamos, NM (2 copies)

cc (letter and enclosure[s] emailed):

Laurie King, EPA Region 6, Dallas, TX

Raymond Martinez, San Ildefonso Pueblo, NM

Dino Chavarria, Santa Clara Pueblo, NM

David Gomez, Los Alamos County, Los Alamos, NM

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## SUMMARY OF GROUNDWATER DATA REVIEWED IN FEBRUARY 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” (IFGMP) for the 2023 monitoring year (N3B 2022, 702346) and 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 (2016 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, as indicated in the tables.

The report includes two tables. Table 1, NMED 1-23 Groundwater Report, presents categorical results since June 14, 2007, that met the five reporting criteria as specified in the 2016 Consent Order. Table 2, NMED 1-23 Groundwater Report Addendum, presents results that exceed the 95<sup>th</sup> percentile of those 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 also 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 2016 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 tap water standard’s carcinogenic risk values were adjusted to  $1 \times 10^{-5}$ , as specified in the 2016 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).

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**

The CA value is used in the Criteria Code column of Table 1. The CA value indicates 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 such a water quality standard at that location. N3B, under the U.S. Department of Energy Environmental Management Los Alamos Field Office, notifies NMED orally within 1 business day after review of such analytical data and also includes the data in the 15-day notification table.

### **15-Day Notification Requirement**

Table 1 is divided into separate categories that correspond to the five screening criteria in Section XXVI.D of the 2016 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, SC

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 SCRNLVL—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

RC—probable reducing condition. A near-well condition likely affects some sample water quality parameter values from those of upgradient ambient water.

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-trinitroxylyene

UAL—upper acceptance limit

UF—unfiltered

UOM—unit of measurement

VOC—volatile organic compound

### **Analytical Laboratory Codes and Qualifiers**

\*\* (lab qualifier)—A quality control analyte recovery is outside of specified acceptance criteria.

B (lab qualifier)—Target analyte was detected in the associated blank.

H (lab qualifier)—Analytical holding time was exceeded.

HE1a (validation reason code)—The quantitating internal standard area count is less than the rejection limit of the expected value.

HE4f (validation reason code)—There is evidence of cross-contamination.

HE7c (validation reason code)—The initial or continuing calibration verification recovery is outside the appropriate limits.

HE12a (validation reason code)—The laboratory control sample (LCS) percent recovery was less than the lower acceptance limit and greater than or equal to the rejection limit.

HR4g (validation reason code)—The detected sample result is greater than or equal to 5 times and less than 100 times the detected concentration of the same analyte in the associated blank.

HR12a (validation reason code)—The LCS or ongoing precision and recovery sample percent recovery was less than the lower acceptance limit and greater than or equal to the rejection limit.

HR12e (validation reason code)—The matrix spike (MS) percent recovery was less than the lower control limit.

I4a (validation reason code)—The detected sample result is greater than or equal to 5 times and less than 100 times the concentration of the same analyte in the method blank.

I4g (validation reason code)—The detected sample result is greater than or equal to 5 times and less than 100 times the concentration of the same analyte in the associated blank.

I6a (validation reason code)—The associated MS percent recovery is less than the lower acceptance limit.

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

I7h (validation reason code)—The initial or continuing calibration blank result is greater than method detection limit, and the detected sample result is greater than or equal to 5 times and less than 100 times the blank result.

I9 (validation reason code)—The extraction or analytical holding time was exceeded but was less than or equal to 2 times the appropriate holding time.

I9c (validation reason code)—The non-aqueous mercury, chromium(VI), or general chemistry sample temperature was greater than 10°C upon receipt at the laboratory.

I10a (validation reason code)—The sample and the duplicate sample results are greater than or equal to 5 times the reporting limit, and the duplicate sample relative percent difference is greater than 20% for water samples and greater than 35% for soil samples, or outside of the laboratory's limits.

I10ea (validation reason code)—The sample or laboratory duplicate result is <5 times the reporting limit and the absolute difference between sample and duplicate result exceeds the limits.

I10er (validation reason code)—The sample and laboratory duplicate results are  $\geq 5$  times the reporting limit and the relative percent difference exceeds the limits.

I10fa (validation reason code)—The sample or field duplicate result is <5 times the reporting limit, and the absolute difference between sample and duplicate result exceeds the limits.

I10k (validation reason code)—Level 3 data validation identified duplicate sample issues affecting data usability.

I19 (validation reason code)—The data validator identified quality deficiencies in the reported data that require further qualification. The best value flag of the original result is also changed to N.

J (lab qualifier)—Value is estimated.

J (validation qualifier)—The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J- (validation qualifier)—The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample but likely to have a low bias.

J+ (validation qualifier)—The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample but likely to have a high bias.

J\_LAB (validation reason code)—The analytical laboratory qualified the detected result as estimated (J) because the result was less than the PQL (practical quantitation limit) but greater than the MDL.

N (lab qualifier)—Spiked sample recovery is not within control limits.

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 with any other standard qualifier. The analyte is detected in the sample.

PE9—The holding time was greater than the applicable holding-time requirement and was  $\leq 2$  times the applicable holding-time requirement.

PE9c (validation reason code)—The sample temperature was greater than 6°C, or the sample preservation criteria was not met, upon receipt at the laboratory.

PE12e (validation reason code)—The MS or MSD percent recovery was less than the lower acceptance limit.

SV7b (validation reason code)—The initial or continuing calibration verification relative response factor is less than the laboratory's lower limit.

SV7c (validation reason code)—The initial and/or continuing calibration verification recoveries are outside the appropriate limits.

SV8 (validation reason code)—The affected analyte is considered not detected because mass spectrum did not meet specifications.

SV9 (validation reason code)—The holding time was greater than 1 time and less than 2 times the applicable holding-time requirement.

SV12a—The laboratory control sample percent recovery is less than the lower acceptance limit and greater than or equal to the rejection limit.

SV12e—The MS percent recovery is less than the lower acceptance limit.

V7b (validation reason code)—The initial or continuing calibration verification relative response factor was less than the laboratory's lower limit.

V7k (validation reason code)—Level 3 data validation identified calibration issues affecting data usability.

## REFERENCES

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 1-23 Groundwater Report

Criterion Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fld QC Type Code	Fld Prep Code	Lab Sample Type Code	Analytical Suite Code	Analyte Description	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	Analytical Method Code	Lab Code	Comment
C1	1	1	12/14/2022	0.63	0.63	0.63	1	Sandia Canyon	Regional	R-71 S1*	1285.0	12/14/2022	REG	UF	INIT	SVOC	Bis(2-ethylhexyl)phthalate	117-81-7	0.630	1	EPA MCL	6	0.1	0.300	µg/L	1.00	J	J	J_LAB	SW-846:8270E	GELC	
C1	1	1	12/14/2022	0.89	0.89	0.89	1	Sandia Canyon	Regional	R-71 S1*	1285.0	12/14/2022	REG	UF	INIT	SVOC	Di-n-octylphthalate	117-84-0	0.890	1	EPA TAP SCRNLVL	200	0	0.300	µg/L	1.00	J	J	J_LAB	SW-846:8270E	GELC	
C1	31	35	11/25/2014	0.167	0.167	0.167	1	Water Canyon	Regional	R-47	1322.0	11/30/2022	REG	UF	INIT	HEXP	HMX	2691-41-0	0.167	1	NMED A1 TAP SCRNLVL	1000	0	0.0821	µg/L	2.00	J	J	J_LAB	SW-846:8330B	GELC	
C2	2	3	1/30/2022	16.1	17.2	16.2	3	Sandia Canyon	Regional	R-71 S1*	1285.0	12/14/2022	REG	F	INIT	Metals	Calcium	Ca	17.2	1.1	LANL Reg BGLVL	17.03	1	0.0500	mg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	28	30	8/4/2020	11.1	19.3	15	30	Mortandad Canyon	Regional	R-70 S2*	1048.0	12/5/2022	REG	F	INIT	Geninorg	Chloride	Cl(-1)	11.7	0.8	LANL Reg BGLVL	2.7	4.3	0.134	mg/L	2.00		NQ	NQ	EPA:300.0	GELC	
C4	28	30	8/4/2020	131	272	192	30	Mortandad Canyon	Regional	R-70 S2*	1048.0	12/5/2022	REG	F	INIT	Metals	Chromium	Cr	152	0.8	LANL Reg BGLVL	7.48	20.3	3.00	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	28	30	8/4/2020	2.59	4.06	3.58	30	Mortandad Canyon	Regional	R-70 S2*	1048.0	12/5/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.34	0.9	LANL Reg BGLVL	0.769	4.3	0.0850	mg/L	5.00		NQ	NQ	EPA:353.2	GELC	
C4	29	32	8/4/2020	2.13	2.92	2.445	32	Mortandad Canyon	Regional	R-70 S1*	963.0	12/5/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.29	0.9	LANL Reg BGLVL	0.769	3	0.0850	mg/L	5.00		NQ	NQ	EPA:353.2	GELC	
C4	28	30	8/4/2020	17.5	32.6	23.9	30	Mortandad Canyon	Regional	R-70 S2*	1048.0	12/5/2022	REG	F	INIT	Geninorg	Sulfate	SO4(-2)	18.7	0.8	LANL Reg BGLVL	4.59	4.1	0.133	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	102	123	5/17/2005	2.27	9.25	5.6	123	Sandia Canyon	Regional	R-11	855.0	12/1/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	9.25	1.7	LANL Reg BGLVL	0.769	12	0.170	mg/L	10.0		NQ	NQ	EPA:353.2	GELC	
C4	102	123	5/17/2005	5.95	20.2	9.69	123	Sandia Canyon	Regional	R-11	855.0	12/1/2022	REG	F	INIT	Geninorg	Sulfate	SO4(-2)	10.3	1.1	LANL Reg BGLVL	4.59	2.2	0.133	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	90	105	8/30/2007	68	408	348	105	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	FD	F	INIT	Metals	Barium	Ba	342	1	LANL Reg BGLVL	38.1	9	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	90	105	8/30/2007	68	408	348	105	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	REG	F	INIT	Metals	Barium	Ba	334	1	LANL Reg BGLVL	38.1	8.8	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	89	105	8/30/2007	5.97	7.31	6.58	105	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	FD	F	INIT	Geninorg	Chloride	Cl(-1)	6.73	1	LANL Reg BGLVL	2.7	2.5	0.0670	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	89	105	8/30/2007	5.97	7.31	6.58	105	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	REG	F	INIT	Geninorg	Chloride	Cl(-1)	6.75	1	LANL Reg BGLVL	2.7	2.5	0.0670	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	90	105	8/30/2007	1.2	28.4	8.35	104	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	FD	F	INIT	Metals	Nickel	Ni	16.8	2	LANL Reg BGLVL	2.9	5.8	0.600	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	90	105	8/30/2007	1.2	28.4	8.35	104	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	REG	F	INIT	Metals	Nickel	Ni	16.4	2	LANL Reg BGLVL	2.9	5.7	0.600	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	90	97	2/28/2009	3	21.5	5.71	97	Mortandad Canyon	Regional	R-45 S1	880.0	12/13/2022	REG	F	INIT	Geninorg	Chloride	Cl(-1)	20.7	3.6	LANL Reg BGLVL	2.7	7.7	0.335	mg/L	5.00		NQ	NQ	EPA:300.0	GELC	
C4	90	97	2/28/2009	0.535	13.8	1.345	82	Mortandad Canyon	Regional	R-45 S1	880.0	12/13/2022	REG	F	INIT	Metals	Nickel	Ni	7.97	5.9	LANL Reg BGLVL	2.9	2.7	0.600	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	90	97	2/28/2009	0.256	4.1	2.86	97	Mortandad Canyon	Regional	R-45 S1	880.0	12/13/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	4.10	1.4	LANL Reg BGLVL	0.769	5.3	0.0850	mg/L	5.00		NQ	NQ	EPA:353.2	GELC	
C4	90	97	2/28/2009	4.1	21.4	8.77	97	Mortandad Canyon	Regional	R-45 S1	880.0	12/13/2022	REG	F	INIT	Geninorg	Sulfate	SO4(-2)	19.7	2.2	LANL Reg BGLVL	4.59	4.3	0.665	mg/L	5.00		NQ	NQ	EPA:300.0	GELC	
C4	89	95	3/5/2009	2.74	8.15	4.98	95	Mortandad Canyon	Regional	R-45 S2	974.9	12/13/2022	FD	F	INIT	Geninorg	Chloride	Cl(-1)	7.25	1.5	LANL Reg BGLVL	2.7	2.7	0.0670	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	89	95	3/5/2009	2.74	8.15	4.98	95	Mortandad Canyon	Regional	R-45 S2	974.9	12/13/2022	REG	F	INIT	Geninorg	Chloride	Cl(-1)	7.42	1.5	LANL Reg BGLVL	2.7	2.7	0.0670	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	89	100	3/5/2009	6.1	69.1	30.8	99	Mortandad Canyon	Regional	R-45 S2	974.9	12/13/2022	FD	F	INIT	Metals	Chromium	Cr	63.2	2.1	LANL Reg BGLVL	7.48	8.4	3.00	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	89	100	3/5/2009	6.1	69.1	30.8	99	Mortandad Canyon	Regional	R-45 S2	974.9	12/13/2022	REG	F	INIT	Metals	Chromium	Cr	61.1	2	LANL Reg BGLVL	7.48	8.2	3.00	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	89	95	3/5/2009	3.37	12.4	6.08	95	Mortandad Canyon	Regional	R-45 S2	974.9	12/13/2022	FD	F	INIT	Geninorg	Sulfate	SO4(-2)	9.15	1.5	LANL Reg BGLVL	4.59	2	0.133	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	89	95	3/5/2009	3.37	12.4	6.08	95	Mortandad Canyon	Regional	R-45 S2	974.9	12/13/2022	REG	F	INIT	Geninorg	Sulfate	SO4(-2)	9.33	1.5	LANL Reg BGLVL	4.59	2	0.133	mg/L	1.00		NQ	NQ	EPA:300.0	GELC	
C4	76	87	5/20/2011	2.03	51	27.8	86	Mortandad Canyon	Regional	R-61 S1	1125.0	12/6/2022	REG	F	INIT	Metals	Chromium	Cr	47.0	1.7	LANL Reg BGLVL	7.48	6.3	3.00	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	76	87	5/20/2011	0.427	3.3	2.32	87	Mortandad Canyon	Regional	R-61 S1	1125.0	12/6/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.58	1.1	LANL Reg BGLVL	0.769	3.4	0.0850	mg/L	5.00		NQ	NQ	EPA:353.2	GELC	

Table 1: NMED 1-23 Groundwater Report

Criterion Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fld QC Type Code	Fld Prep Code	Lab Sample Type Code	Analytical Suite Code	Analyte Description	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	Analytical Method Code	Lab Code	Comment
C4	75	86	5/20/2011	2.96	17	12.15	86	Mortandad Canyon	Regional	R-61 S1	1125.0	12/6/2022	REG	F	INIT	LCMS/MS	Perchlorate	CIO4	11.6	1	LANL Reg BG LVL	0.414	28	0.100	µg/L	2.00		NQ	NQ	SW-846:6850	GELC	
C4	91	100	3/6/2010	4.68	22.4	13.45	100	Mortandad Canyon	Regional	R-50 S1	1077.0	12/13/2022	REG	F	INIT	Geninorg	Chloride	Cl(-1)	21.4	1.6	LANL Reg BG LVL	2.7	7.9	0.335	mg/L	5.00		NQ	NQ	EPA:300.0	GELC	
C4	92	101	3/6/2010	1.51	25.6	6.53	101	Mortandad Canyon	Regional	R-50 S1	1077.0	12/13/2022	REG	F	INIT	Metals	Nickel	Ni	13.2	2	LANL Reg BG LVL	2.9	4.6	0.600	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
C4	92	102	3/6/2010	0.398	3.21	2.285	102	Mortandad Canyon	Regional	R-50 S1	1077.0	12/13/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.15	1.4	LANL Reg BG LVL	0.769	4.1	0.0850	mg/L	5.00		J+	I4a	EPA:353.2	GELC	
C4	91	100	3/6/2010	7.22	21.5	16.05	100	Mortandad Canyon	Regional	R-50 S1	1077.0	12/13/2022	REG	F	INIT	Geninorg	Sulfate	SO4(-2)	20.3	1.3	LANL Reg BG LVL	4.59	4.4	0.665	mg/L	5.00		NQ	NQ	EPA:300.0	GELC	
C4	20	27	10/23/2001	81.1	239	99.2	27	White Rock Canyon and Rio Grande	Regional	Sacred Spring	0	10/11/2022	REG	F	INIT	Metals	Barium	Ba	105	1.1	LANL Reg BG LVL	38.1	2.8	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	23	32	10/19/2000	30	68.8	36	32	White Rock Canyon and Rio Grande	Regional	Sacred Spring	0	10/11/2022	REG	F	INIT	Metals	Calcium	Ca	36.1	1	LANL Reg BG LVL	17.03	2.1	0.0500	mg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	20	27	10/23/2001	392	665	441	27	White Rock Canyon and Rio Grande	Regional	Sacred Spring	0	10/11/2022	REG	F	INIT	Metals	Strontium	Sr	426	1	LANL Reg BG LVL	157	2.7	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
C4	31	36	3/26/2007	0.514	1.11	0.749	36	Pajarito Canyon	Intermediate	Bulldog Spring	0	8/11/2022	REG	F	RI	LCMS/MS	Perchlorate	CIO4	0.556	0.7	LANL Int BG LVL	0.27	2.1	0.0500	µg/L	1.00		NQ	NQ	SW-846:6850	GELC	
C5	102	123	5/17/2005	2.27	9.25	5.6	123	Sandia Canyon	Regional	R-11	855.0	12/1/2022	REG	F	INIT	Geninorg	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	9.25	1.7	EPA MCL	10	0.9	0.170	mg/L	10.0		NQ	NQ	EPA:353.2	GELC	
C5	76	87	5/20/2011	2.03	51	27.8	86	Mortandad Canyon	Regional	R-61 S1	1125.0	12/6/2022	REG	F	INIT	Metals	Chromium	Cr	47.0	1.7	NM GW STD	50	0.9	3.00	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	

\* 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 1-23 Groundwater Report Addendum

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Canyon	Zone	Location	Screen Depth	Start Date	Fid QC Type Code	Fid Prep Code	Lab Sample Type Code	Analytical Suite Code	Analyte Description	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	Analytical Method Code	Lab Code	Comment
XC2scr	2	3	1/23/2022	32.1	32.1	32.1	1	Sandia Canyon	Regional	R-71 S2*	1349.7	12/15/2022	REG	F	INIT	Metals	Copper	Cu	32.1	1	Reg-Scr_95	3	10.7	3.00	µg/L	1.00		J+	I4a	SW-846:6010D	GELC	
XC2scr	2	3	1/23/2022	68.7	130	69.4	3	Sandia Canyon	Regional	R-71 S2*	1349.7	12/15/2022	REG	F	INIT	Metals	Strontium	Sr	130	1.9	Reg-Scr_95	74.4	1.7	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
XC2scr	2	3	1/23/2022	0.116	0.116	0.116	1	Sandia Canyon	Regional	R-71 S2*	1349.7	12/15/2022	REG	F	INIT	Geninorg	Total Phosphate as Phosphorus	PO4-P	0.116	1	Reg-Scr_95	0.0822	1.4	0.0200	mg/L	1.00		NQ	NQ	EPA:365.4	GELC	
XC2scr	2	3	1/23/2022	4.54	30.2	17.37	2	Sandia Canyon	Regional	R-71 S2*	1349.7	12/15/2022	REG	F	INIT	Metals	Zinc	Zn	30.2	1.7	Reg-Scr_95	14.4	2.1	3.30	µg/L	1.00		J+	I4a	SW-846:6010D	GELC	
XC2scr	2	3	1/30/2022	0.861	1.16	0.903	3	Sandia Canyon	Regional	R-71 S1*	1285.0	12/14/2022	REG	F	INIT	Metals	Uranium	U	1.16	1.3	Reg-Scr_95	1.06	1.1	0.0670	µg/L	1.00		NQ	NQ	SW-846:6020B	GELC	
XC2scr	2	3	1/30/2022	18.1	18.1	18.1	1	Sandia Canyon	Regional	R-71 S1*	1285.0	12/14/2022	REG	F	INIT	Metals	Zinc	Zn	18.1	1	Reg-Scr_95	14.4	1.3	3.30	µg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC2scr	29	32	8/4/2020	3.07	3.07	3.07	1	Mortandad Canyon	Regional	R-70 S1*	963.0	12/5/2022	REG	F	INIT	Metals	Copper	Cu	3.07	1	Reg-Scr_95	3	1	3.00	µg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr	90	105	8/30/2007	20.6	54.5	40.5	99	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	FD	F	INIT	Metals	Boron	B	40.3	1	Reg-Scr_95	18.7	2.2	15.0	µg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr	90	105	8/30/2007	20.6	54.5	40.5	99	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	REG	F	INIT	Metals	Boron	B	38.1	0.9	Reg-Scr_95	18.7	2	15.0	µg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr	90	105	8/30/2007	137	199	169	105	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	FD	F	INIT	Metals	Strontium	Sr	164	1	Reg-Scr_95	74.4	2.2	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
XC4scr	90	105	8/30/2007	137	199	169	105	Sandia Canyon	Regional	R-35a	1013.1	12/12/2022	REG	F	INIT	Metals	Strontium	Sr	160	0.9	Reg-Scr_95	74.4	2.2	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
XC4scr	90	97	2/28/2009	0.0667	0.637	0.1205	56	Mortandad Canyon	Regional	R-45 S1	880.0	12/13/2022	REG	F	INIT	Geninorg	Bromide	Br(-1)	0.161	1.3	Reg-Scr_95	0.067	2.4	0.0670	mg/L	1.00	J	J	J_LAB	EPA:300.0	GELC	
XC4scr	91	100	3/6/2010	0.0691	0.545	0.129	78	Mortandad Canyon	Regional	R-50 S1	1077.0	12/13/2022	REG	F	INIT	Geninorg	Bromide	Br(-1)	0.156	1.2	Reg-Scr_95	0.067	2.3	0.0670	mg/L	1.00	J	J	J_LAB	EPA:300.0	GELC	
XC4scr	20	27	10/23/2001	36.3	946	158	25	White Rock Canyon and Rio Grande	Regional	Sacred Spring	0	10/11/2022	REG	F	INIT	Metals	Iron	Fe	256	1.6	Reg-Scr_95	53.8	4.8	30.0	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
XC4scr	20	27	10/23/2001	32.8	994	211	25	White Rock Canyon and Rio Grande	Regional	Sacred Spring	0	10/11/2022	REG	F	INIT	Metals	Manganese	Mn	125	0.6	Reg-Scr_95	12.1	10.3	2.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	
XC4scr	20	22	9/24/2001	20.2	51.6	39.05	22	White Rock Canyon and Rio Grande	Regional	Spring 1	0	10/6/2022	REG	F	INIT	Metals	Boron	B	42.3	1.1	Reg-Scr_95	18.7	2.3	15.0	µg/L	1.00	J	J	J_LAB	SW-846:6010D	GELC	
XC4scr	19	21	9/13/2004	185	207	199	21	White Rock Canyon and Rio Grande	Regional	Spring 1	0	10/6/2022	REG	F	INIT	Metals	Strontium	Sr	191	1	Reg-Scr_95	74.4	2.6	1.00	µg/L	1.00		NQ	NQ	SW-846:6010D	GELC	

\* Data pertaining to a well drilled at a target angle from the vertical. Depth value represents linear feet along (down) the borehole.

