



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

Mr. John E. Kieling  
 Bureau Chief  
 Hazardous Waste Bureau  
 New Mexico Environment Department  
 2905 Rodeo Park Drive East, Building 1  
 Santa Fe, NM 87505-6303



FEB 25 2019

Dear Mr. Kieling:

Subject: Monthly Notification of Groundwater Data Reviewed in February 2019

This letter is the U.S. Department of Energy (DOE) Office of Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT – Los Alamos, LLC (N3B) written submission in accordance with Section XXVI.D of the 2016 Compliance Order on Consent (Consent Order). Members of EM-LA and N3B met on February 14, 2019, to review groundwater data received in January 2019 in accordance with Section XXVI.C of the 2016 Consent Order. 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), 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.” For comparison with EPA tap water standards, the standard’s carcinogenic risk value was adjusted to  $1 \times 10^{-5}$ , as specified in the Consent Order. This report was prepared using the November 2018 EPA regional screening levels for tap water.

**1-Day Notification**

There were no instances of a contaminant detected at a concentration that exceeded the NMWQCC groundwater standard or federal MCL at locations where contaminants have not been previously detected above the respective standard as defined in the Consent Order (based on samples collected since June 14, 2007).

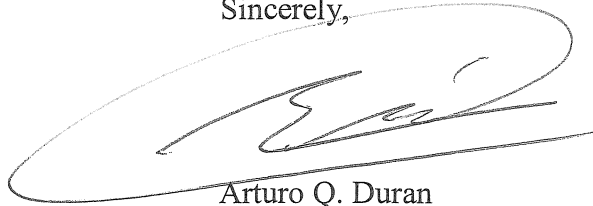
One-day notification was not required because there were no cases of a contaminant detected in a well screen interval or spring at a concentration that exceeded a water quality standard for the first time.

**15-Day Notification**

The required information for the contaminants and other chemical parameters that meet the five reporting criteria requiring written notification within 15 days is given in the accompanying report and tables.

If you have questions, please contact Steve Veenis at (505) 309-1362 (steve.veenis@em-la.doe.gov) or Hai Shen at (505) 665-5046 (hai.shen@em.doe.gov).

Sincerely,



Arturo Q. Duran  
Compliance and Permitting Manager  
Environmental Management  
Los Alamos Field Office

Enclosures:

1. Summary of Groundwater Data Reviewed in February 2019 That Meet Notification Requirements (EM2019-0065)

cc (letter and enclosure[s] emailed):

L. King, EPA Region 6, Dallas, TX  
R. Martinez, San Ildefonso Pueblo, NM  
D. Chavarria, Santa Clara Pueblo, NM  
W. Witten, Los Alamos County Utility Department, Los Alamos, NM  
M. Hunter, NMED  
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PRS Website

EM-LA-40AD-00398

## **SUMMARY OF GROUNDWATER DATA REVIEWED IN FEBRUARY 2019 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 Los Alamos National Laboratory's (the Laboratory's) annual "Interim Facility-Wide Groundwater Monitoring Plan" for the 2019 monitoring year and contains results for contaminants and other chemical constituents that meet the five screening criteria described in Section XXVI 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 indicated in the tables.

The report includes two tables. Table 1, NMED 01-19 Groundwater Report, presents results since June 14, 2007, that met the five reporting criteria as specified in the 2016 Consent Order. Table 2, NMED 01-19 Groundwater Report Addendum, presents results that are exceeding the 95<sup>th</sup> percentile of those results in the data set defined in the "Groundwater Background Investigation Report, Revision 5." Only contaminants and other chemical constituents lacking 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 to identify the potential risk resulting from contaminants and other chemical constituents 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
- 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 "Groundwater Background Investigation Report, Revision 5." For comparison with EPA tap water standards, the standard's carcinogenic risk value was adjusted to  $1 \times 10^{-5}$ , as specified in the 2016 Consent Order. This report was prepared using the November 2018 EPA regional screening levels for tap water.

Background values applied in Table 1 notification criteria C2 and C4 are the background values for hydrogeological zones as set forth in the NMED-approved "Groundwater Background Investigation Report, Revision 5."

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 "Groundwater Background Investigation Report, Revision 5."

## DESCRIPTION OF TABLES

### 15-Day Notification Requirement

Table 1 is divided into separate categories that correspond to the five screening criteria in Section XXVI of the 2016 Consent Order. Some data met more than one of the notification criteria and appear in the table multiple times.

The criteria codes (the “C” stands for criterion) 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 for Site Investigations and Remediation” (March 2017 or updates, as appropriate), 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 criteria 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 “Groundwater Background Investigation Report, Revision 5.”

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 “Groundwater Background Investigation Report, Revision 5.”

Columns two through eight in both tables provide summary statistics for metals or inorganic compounds by field preparation code (e.g., filtered 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:

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—sample date

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

Fld Prep Code—identifies whether samples are filtered or unfiltered

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

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

Analyte Desc—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 Qual Code—analytical laboratory qualifiers indicating analytical quality of the sample

Validation Flag—secondary validation qualifier

Validation Reason Code—concatenated secondary validation codes explaining assignment of qualifiers

Anyl Meth Code—analytical method number

Lab Code—analytical laboratory name

Comment—comment on the analytical result

Table 1: NMED 01-19 Groundwater Report

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	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 Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C1	9	12	3/20/2017	0.087	0.087	0.087	1	Water Canyon	Regional	R-68	1340	12/19/2018	REG	UF	INIT	HEXP	Nitrotoluene[2-]	88-72-2	0.087	1	NMED A1 TAP SCRN LVL	3.14	0	0.085	µg/L	2	J	J	J_LAB	SW-846:8330B	GELC	
C2	45	46	2/17/2009	11.9	17.5	12.5	46	Mortandad Canyon	Regional Top	R-44 S1	895	12/19/2018	REG	F	INIT	GENINORG	Calcium	Ca	17.5	1.4	LANL Reg BG LVL	17.03	1	0.05	mg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	43	50	3/5/2009	6.1	47.4	17.3	49	Mortandad Canyon	Regional Deep	R-45 S2	974.9	12/19/2018	REG	F	INIT	METALS	Chromium	Cr	27.8	1.6	LANL Reg BG LVL	7.48	3.7	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	55	64	5/17/2005	2.27	7.43	5.25	64	Sandia Canyon	Regional Top	R-11	855	12/17/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	5.61	1.1	LANL Reg BG LVL	0.769	7.3	0.17	mg/L	10		NQ	NQ	EPA:353.2	GELC	
C4	55	64	5/17/2005	5.95	15.4	10.025	64	Sandia Canyon	Regional Top	R-11	855	12/17/2018	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	10.3	1	LANL Reg BG LVL	4.59	2.2	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	44	45	8/30/2007	68	389	346	45	Sandia Canyon	Regional Top	R-35a	1013.1	12/18/2018	REG	F	INIT	METALS	Barium	Ba	322	0.9	LANL Reg BG LVL	38.1	8.5	1	µg/L	1		NQ	NQ	SW-846:6010C	GELC	
C4	43	44	8/30/2007	5.97	7.31	6.42	44	Sandia Canyon	Regional Top	R-35a	1013.1	12/18/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	6.6	1	LANL Reg BG LVL	2.7	2.4	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	46	47	2/17/2009	1.99	11.5	2.34	47	Mortandad Canyon	Regional Top	R-44 S1	895	12/19/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	11.5	4.9	LANL Reg BG LVL	2.7	4.3	0.134	mg/L	2		NQ	NQ	EPA:300.0	GELC	
C4	46	47	2/17/2009	0.123	2.08	1.125	46	Mortandad Canyon	Regional Top	R-44 S1	895	12/19/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.08	1.8	LANL Reg BG LVL	0.769	2.7	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	44	50	2/28/2009	8.4	50.7	35.6	50	Mortandad Canyon	Regional Top	R-45 S1	880	12/19/2018	REG	F	INIT	METALS	Chromium	Cr	36.8	1	LANL Reg BG LVL	7.48	4.9	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	44	46	2/28/2009	0.256	3.47	2.88	46	Mortandad Canyon	Regional Top	R-45 S1	880	12/19/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	3.11	1.1	LANL Reg BG LVL	0.769	4	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	46	52	3/6/2010	4.68	14.7	8.56	52	Mortandad Canyon	Regional Top	R-50 S1	1077	12/18/2018	REG	F	INIT	GENINORG	Chloride	Cl(-1)	14.7	1.7	LANL Reg BG LVL	2.7	5.4	0.134	mg/L	2		NQ	NQ	EPA:300.0	GELC	
C4	46	54	3/6/2010	49.8	150	103	54	Mortandad Canyon	Regional Top	R-50 S1	1077	12/18/2018	REG	F	INIT	METALS	Chromium	Cr	83.5	0.8	LANL Reg BG LVL	7.48	11.2	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	46	53	3/6/2010	0.398	2.72	1.84	53	Mortandad Canyon	Regional Top	R-50 S1	1077	12/18/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.52	1.4	LANL Reg BG LVL	0.769	3.3	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	46	52	3/6/2010	7.22	17.1	12.4	52	Mortandad Canyon	Regional Top	R-50 S1	1077	12/18/2018	REG	F	INIT	GENINORG	Sulfate	SO4(-2)	17.1	1.4	LANL Reg BG LVL	4.59	3.7	0.133	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C4	30	35	5/20/2011	2.03	23.3	19.15	34	Mortandad Canyon	Regional Top	R-61 S1	1125	12/17/2018	REG	F	INIT	METALS	Chromium	Cr	21.1	1.1	LANL Reg BG LVL	7.48	2.8	3	µg/L	1		NQ	NQ	SW-846:6020	GELC	
C4	30	35	5/20/2011	0.427	2.64	1.93	35	Mortandad Canyon	Regional Top	R-61 S1	1125	12/17/2018	REG	F	INIT	GENINORG	Nitrate-Nitrite as Nitrogen	NO3+NO2-N	2.64	1.4	LANL Reg BG LVL	0.769	3.4	0.085	mg/L	5		NQ	NQ	EPA:353.2	GELC	
C4	29	34	5/20/2011	2.96	16.2	8.925	34	Mortandad Canyon	Regional Top	R-61 S1	1125	12/17/2018	REG	F	INIT	GENINORG	Perchlorate	ClO4	15.1	1.7	LANL Reg BG LVL	0.414	36.5	0.5	µg/L	10		NQ	NQ	SW-846:6850	GELC	



**Table 2: NMED 01-19 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	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 Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
XC2scr	46	48	3/11/2010	0.0676	0.0676	0.0676	1	Mortandad Canyon	Regional Deep	R-50 S2	1185	12/17/2018	REG	F	INIT	GENINORG	Bromide	Br(-1)	0.0676	1	Reg-Scr_95	0.067	1	0.067	mg/L	1	J	J	J_LAB	EPA:300.0	GELC	
XC2scr	34	37	3/31/2004	0.0743	0.0743	0.0743	1	Mortandad Canyon	Regional Top	R-21	888.8	12/14/2018	REG	F	INIT	GENINORG	Bromide	Br(-1)	0.0743	1	Reg-Scr_95	0.067	1.1	0.067	mg/L	1	J	J	J_LAB	EPA:300.0	GELC	
XC4scr	30	35	5/20/2011	0.0531	11.8	0.858	32	Mortandad Canyon	Regional Top	R-61 S1	1125	12/17/2018	REG	F	INIT	GENINORG	Total Phosphate as Phosphorus	PO4-P	0.5	0.6	Reg-Scr_95	0.0822	6.1	0.02	mg/L	1		J+	I4a	EPA:365.4	GELC	