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Date: MAR 23 2016
Refer To: ADESH-16-039
LAUR: 16-21829
Locates Action No.: n/a

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

Subject: Monthly Notification of Groundwater Data Reviewed in March 2016

Dear Mr. Kieling:

This letter is Los Alamos National Laboratory's (LANL's) written submission that meets notification requirements presented in Section IV.A.3.g, Notification, of the Compliance Order on Consent (Consent Order). Members of LANL's Associate Directorate for Environmental Management met on March 15, 2016, to review new groundwater data received in February 2016. This report was prepared by comparing the data against groundwater cleanup levels, as defined in Section VIII.A.1 of the Consent Order. For comparison with U.S. Environmental Protection Agency (EPA) tap water standards, the carcinogenic risk was adjusted to 1×10^{-5}, as specified in the Consent Order. This report was prepared using the November 2015 EPA regional screening levels.

This report also includes analytical data from samples collected in San Ildefonso Pueblo, which are subject to reporting at this time. These data have been reviewed by San Ildefonso Pueblo. This review is required under the Memorandum of Agreement dated May 28, 2014, between the U.S. Department of Energy, National Nuclear Security Administration, Los Alamos Field Office, and San Ildefonso Pueblo.

1-Day Notification

There were no instances of a contaminant detected at a concentration that exceeded the New Mexico Water Quality Control Commission standard or federal maximum contaminant level at locations where contaminants have not been previously detected above the respective standard (based on samples collected since June 14, 2007).

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 six reporting criteria requiring written notification within 15 days is given in the accompanying report and table.

If you have questions, please contact Steve Paris at (505) 606-0915 (smparis@lanl.gov) or Hai Shen at (505) 665-5046 (hai.shen@em.doe.gov).

Sincerely,

Bruce Robinson, Program Director
Environmental Remediation Program
Los Alamos National Laboratory

Sincerely,

David S. Rhodes, Director
Environmental Management
Los Alamos Field Office

BR/DR/SP:sm

Enclosure: Two hard copies with electronic files – Summary of Groundwater Data Reviewed in March 2016 That Meet Notification Requirements (EP2016-0038)

Cy: (w/enc.)
Steve Paris, ADEM ER Program, MS M992
Public Reading Room (EPRR)
ADESH Records

Cy: (Letter and CD and/or DVD)
Laurie King, EPA Region 6, Dallas, TX
Michelle Hunter, NMED-GWQB
Steve Yanicak, NMED-DOE-OB, MS M894
Raymond Martinez, San Ildefonso Pueblo, NM
Dino Chavarria, Santa Clara Pueblo, NM
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Cy: (w/o enc./date-stamped letter emailed)
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David Rhodes, DOE-EM-LA
Mei Ding, EES-14
Tim Goering, ADEM ER Program
Stanislaw Marczak, ADEM ER Program
Robert Cygnarowicz, ADEM ER Program
Bruce Robinson, ADEM ER Program
Randy Erickson, ADEM
Jocelyn Buckley, ADESH-EPC-CP
Mike Saladen, ADESH-EPC-CP
John McCann, ADESH-EPC-DO
Michael Brandt, ADESH
Amy De Palma, PADOPS
Craig Leasure, PADOPS

SUMMARY OF GROUNDWATER DATA REVIEWED IN MARCH 2016
THAT MEET NOTIFICATION REQUIREMENTS

INTRODUCTION

This report provides preliminary information to the New Mexico Environment Department (NMED) concerning recent groundwater monitoring data obtained by the Los Alamos National Laboratory (the Laboratory) under its interim monitoring plan and contains results for chemical constituents that meet the six screening criteria laid out in the Compliance Order on Consent (Consent Order). The report covers groundwater samples taken from wells or springs (listed in the accompanying table) that provide surveillance of the groundwater zones indicated in the table.

The report includes one table, *Table 1: NMED 02-16 Groundwater Report*. This table contains some values that are reported when they are detected for the first time since June 14, 2007, or are greater than other data collected since that time (as specified in the Consent Order). These reported data may be similar to data gathered before June 14, 2007.

This table includes the following:

- Additional comments on results that appear to be exceptional or based on consideration of monitoring data acquired before the current result (using statistics described below)
- Supplemental information summarizing monitoring results obtained before the current result
- 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.

In accordance with the Consent Order, the screening levels used include the U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), the New Mexico groundwater standards, and the EPA regional screening levels for tap water (for compounds having no other regulatory standard). The EPA regional screening levels for tap water are either for cancer (10^{-6} excess risk) or noncancer risk values. The data were screened using 10 times the EPA's 10^{-6} excess cancer risk values, to achieve 10^{-5} excess cancer risk as indicated in Section VIII.A.1 of the Consent Order. This report was prepared using the November 2015 EPA regional screening levels.

Background levels applied in Criteria 2 and 5 are the NMED-approved 95% upper tolerance limits for background for each groundwater zone as set forth in the "Groundwater Background Investigation Report, Revision 3," prepared under Section IV.A.3.d of the Consent Order.

DESCRIPTION OF TABLE

15-Day Notification Requirement

The table is divided into separate categories that correspond to the six screening criteria in the Consent Order. Some data meet more than one of the criteria and appear in the table multiple times. The table also presents only the instances where the results exceed criteria; therefore, all six criteria may not appear in the table.

The criteria 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 exceeds either one-half the New Mexico water quality standard or one-half the federal maximum contaminant level, or if there is no such standard for the contaminant, one-half the EPA Region 6 human health medium-specific screening level for tap water (now the EPA Regional Screening Levels 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 perchlorate in a spring or screened interval of a well at a concentration of 2 µg/L or greater if perchlorate at such concentration has not previously been detected in the spring or screened interval.

C5. 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.

C6. Detection of a contaminant in a spring or screened interval of a well at a concentration that exceeds either one-half the New Mexico water quality standard or one-half the federal MCL, and that has increased for the third consecutive sampling of that spring or screened interval.

The next seven columns of the table give information on monitoring results obtained prior to the current result. The columns provide summary statistics for the samples collected since January 1, 2000, for the same analyte and field preparation (for example, filtered samples). The information includes the date of the first sampling event included in the statistics, the numbers 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:

Hdr 1—canyon where monitoring location is found

Zone—groundwater zone sampled by monitoring location (such as 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 to 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 02-16 Groundwater Report

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	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 Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C1	1	1	01/19/16	28.5	28.5	28.5	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	UF	INIT	VOC	Acetone	67-64-1	28.5	1	EPA TAP SCRN LVL	14000	0	3	ug/L	1	H	J-	V9	SW-846:8260B	GELC	Newly constructed well
C1	2	3	10/23/15	0.0134	0.0134	0.0134	1	Mortandad Canyon (includes Ten Site Canyon and Cañada del Buey)	Regional	SIMR-2	885	11/24/15	FD	UF	INIT	PESTPCB	Hexachlorobenzene	118-74-1	0.0134	1	EPA MCL	1	0	0.00665	ug/L	1	J	J	J_LAB	SW-846:8081B	GELC	*
C1	23	30	11/30/05	0.161	0.161	0.161	1	Sandia Canyon	Regional	R-10a	690	11/23/15	REG	UF	INIT	SVOC	Benzo(g,h,i)perylene	191-24-2	0.161	1				0.156	ug/L	1	J	J	J_LAB	SW-846:8270D	GELC	J flagged result, split sample with low detection method was non-detect.
C1	23	30	11/30/05	0.172	0.172	0.172	1	Sandia Canyon	Regional	R-10a	690	11/23/15	REG	UF	INIT	SVOC	Dibenz(a,h)anthracene	53-70-3	0.172	1	EPA TAP SCRN LVL	0.034	5.1	0.156	ug/L	1	J	J	J_LAB	SW-846:8270D	GELC	J flagged result, split sample with low detection method was non-detect.
C2	1	1	01/19/16	278	278	278	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	F	INIT	METALS	Aluminum	Al	278	1	LANL Reg BG LVL	68	4.1	68	ug/L	1		J	I10a	SW-846:6010C	GELC	Newly constructed well
C2	1	1	01/19/16	1.41	1.41	1.41	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	F	INIT	METALS	Antimony	Sb	1.41	1	LANL Reg BG LVL	1	1.4	1	ug/L	1	J	J	J_LAB	SW-846:6020	GELC	Newly constructed well
C2	1	1	01/19/16	112	112	112	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	F	INIT	METALS	Iron	Fe	112	1	LANL Reg BG LVL	21	5.3	30	ug/L	1		NQ	NQ	SW-846:6010C	GELC	Newly constructed well
C2	1	1	01/19/16	6.72	6.72	6.72	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	F	INIT	METALS	Manganese	Mn	6.72	1	LANL Reg BG LVL	2.94	2.3	2	ug/L	1	J	J	J_LAB	SW-846:6010C	GELC	Newly constructed well
C2	1	1	01/19/16	3.61	3.61	3.61	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	F	INIT	METALS	Molybdenum	Mo	3.61	1	LANL Reg BG LVL	2	1.8	0.165	ug/L	1		NQ	NQ	SW-846:6020	GELC	Newly constructed well
C2	1	1	01/19/16	0.815	0.815	0.815	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	UF	INIT	GENINORG	Total Organic Carbon	TOC	0.815	1	LANL Reg BG LVL	0.33	2.5	0.33	mg/L	1	J	J-	I9	SW-846:9060	GELC	Newly constructed well
C2	1	1	01/19/16	4.02	4.02	4.02	1	Water Canyon (includes Cañon de Valle, Potrillo, and Fence Canyons)	Regional	R-58	1257	01/19/16	REG	F	INIT	METALS	Zinc	Zn	4.02	1	LANL Reg BG LVL	3.89	1	3.3	ug/L	1	J	J	J_LAB	SW-846:6010C	GELC	Newly constructed well
C2	2	3	10/23/15	106	380	139	3	Mortandad Canyon (includes Ten Site Canyon and Cañada del Buey)	Regional	SIMR-2	885	11/24/15	FD	F	INIT	GENINORG	Total Dissolved Solids	TDS	380	2.7	LANL Reg BG LVL	191.7	2	3.4	mg/L	1		NQ	NQ	EPA:160.1	GELC	Newly constructed well

Criteria Code	Visits	Samples	First Event	Min Detect	Max Detect	Median Detect	Num Detect	Hdr 1	Zone	Location	Screen Depth	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 Qual Code	Validation Flag	Validation Reason Code	Anyl Meth Code	Lab Code	Comment
C3	23	30	11/30/05	0.172	0.172	0.172	1	Sandia Canyon	Regional	R-10a	690	11/23/15	REG	UF	INIT	SVOC	Dibenz(a,h)anthracene	53-70-3	0.172	1	EPA TAP SCRN LVL	0.034	5.1	0.156	ug/L	1	J	J	J_LAB	SW-846:8270D	GELC	J flagged result, split sample with low detection method was non-detect.

* The reported result (0.0134 ug/L) was determined by the low-MDL analytical method (MDL = 0.0065 ug/L) and was the only detection out of four analyses conducted for this sampling event.
Two of the three nondetects were from the standard analytical method for pesticides (MDL = 1.5 ug/L). The third nondetect was obtained using the low-MDL analysis method of a laboratory split of the same sample that showed the detection.
The only prior sample from this well was analyzed for this compound by both the standard and the low-MDL methods; both results were nondetect. Further, this compound has never been detected in any regional aquifer well in the LANL monitoring program. It is likely that the single detection is an erroneous value. The low-MDL analytical methods developed for the groundwater monitoring program are anticipated to be susceptible to false positives. Further planned quarterly sampling at the well should provide additional insight to assess the validity of this recent detection.