SUMMARY OF NEW LOS ALAMOS NATIONAL LABORATORY GROUNDWATER DATA LOADED IN FEBRUARY 2013

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 seven 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 2-13 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.

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

DESCRIPTION OF TABLE

The table is divided into separate categories that correspond to the seven 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, not all seven criteria may appear in the table.

The criteria are as follows:

CA. The Respondents shall notify the Department orally within one business day after review of the analytical data if such data show detection of a contaminant in a well screen interval or spring at a concentration that exceeds either the NMWQCC water quality standard or the federal MCL if that

contaminant has not previously exceeded such water quality standard or maximum contaminant level in such well screen interval or spring.

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—identifies whether samples are filtered or unfiltered

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

Anyl Suite—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

Concat Flag Code—secondary validation qualifier

Concat 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 2-13 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	Std Result	Result/Median	LVL Type/Risk Code	Screen Level	Exceedance Ratio	Std Mdl	Std Uom	Dilution Factor	Lab Qual Code	Concat Flag Code	Concat Reason Code	Anyl Meth Code	Lab Code	Comment
C2	6	6	05/24/11	0.0223	0.136	0.048	3	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S2	1220.4	02/12/13	REG	F	INIT	GENINORG	Ammonia as Nitrogen	0.136	2.8	LANL Reg BG LVL	0.05	2.7	0.017	mg/L	1		NQ	NQ	EPA:350.1	GELC	
C2	6	6	05/24/11	16.7	39.1	25.6	6	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S2	1220.4	02/12/13	REG	F	INIT	METALS	Boron	39.1	1.5	LANL Reg BG LVL	38.77	1	15	ug/L	1	J	J	J_LAB	SW-846:6010B	GELC	
C2	4	4	08/08/11	0.079	0.079	0.079	1	Lower Los Alamos Canyon (San Ildefonso Pueblo)	Intermediate Spring	Vine Tree Spring	0	12/12/12	REG	F	INIT	METALS	Mercury	0.079	1	LANL Int BG LVL	0.06	1.3	0.067	ug/L	1	J	J	J_LAB	EPA:245.2	GELC	
C5	6	7	05/20/11	35.3	2550	909	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S1	1125	02/11/13	REG	F	INIT	METALS	Iron	87.6	0.1	LANL Reg BG LVL	21	4.2	30	ug/L	1	J	J	J_LAB	SW-846:6010B	GELC	post development results
C5	6	7	05/20/11	16.6	1100	554	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S1	1125	02/11/13	REG	F	INIT	METALS	Manganese	16.6	0	LANL Reg BG LVL	2.94	5.6	2	ug/L	1		NQ	NQ	SW-846:6010B	GELC	post development results
C5	6	7	05/20/11	2.96	7.37	6.13	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S1	1125	02/11/13	REG	F	INIT	GENINORG	Perchlorate	6.22	1	LANL Reg BG LVL	0.46	13.5	0.5	ug/L	10		J	PE12e	SW-846:6850	GELC	
C5	6	7	05/20/11	0.77	10.1	1.14	7	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S1	1125	02/11/13	REG	UF	INIT	GENINORG	Total Organic Carbon	1.18	1	LANL Reg BG LVL	0.33	3.6	0.33	mg/L	1		NQ	NQ	SW-846:9060	GELC	
C5	6	6	05/24/11	148	5590	1750	5	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S2	1220.4	02/12/13	REG	F	INIT	METALS	Iron	1760	1	LANL Reg BG LVL	21	83.8	30	ug/L	1		NQ	NQ	SW-846:6010B	GELC	post development results
C5	6	6	05/24/11	22.2	908	370	6	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S2	1220.4	02/12/13	REG	F	INIT	METALS	Manganese	174	0.5	LANL Reg BG LVL	2.94	59.2	2	ug/L	1		NQ	NQ	SW-846:6010B	GELC	post development results
C5	6	6	05/24/11	1.6	10.9	6.275	6	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S2	1220.4	02/12/13	REG	F	INIT	METALS	Molybdenum	6.79	1.1	LANL Reg BG LVL	2	3.4	0.165	ug/L	1		NQ	NQ	SW-846:6020	GELC	
C5	6	6	05/24/11	0.573	14.7	3.07	6	Mortandad Canyon (includes Ten Site Canyon and Canada del Buey)	Regional	R-61 S2	1220.4	02/12/13	REG	UF	INIT	GENINORG	Total Organic Carbon	5.5	1.8	LANL Reg BG LVL	0.33	16.7	0.33	mg/L	1		NQ	NQ	SW-846:9060	GELC	
C5	4	4	08/08/11	33.7	52.6	38.1	4	Lower Los Alamos Canyon (San Ildefonso Pueblo)	Intermediate Spring	Vine Tree Spring	0	12/12/12	REG	F	INIT	METALS	Boron	37.9	1	LANL Int BG LVL	15.12	2.5	15	ug/L	1	J	J	J_LAB	SW-846:6010B	GELC	
C5	4	4	08/08/11	0.136	0.19	0.1505	4	Lower Los Alamos Canyon (San Ildefonso Pueblo)	Intermediate Spring	Vine Tree Spring	0	12/12/12	REG	F	INIT	GENINORG	Bromide	0.146	1	LANL Int BG LVL	0.03	4.9	0.067	mg/L	1	J	J	J_LAB	EPA:300.0	GELC	
C5	4	4	08/08/11	18.5	19.1	18.75	4	Lower Los Alamos Canyon (San Ildefonso Pueblo)	Intermediate Spring	Vine Tree Spring	0	12/12/12	REG	F	INIT	GENINORG	Chloride	18.9	1	LANL Int BG LVL	7.78	2.4	0.067	mg/L	1		NQ	NQ	EPA:300.0	GELC	
C5	4	4	08/08/11	4.86	5.58	5.315	4	Lower Los Alamos Canyon (San Ildefonso Pueblo)	Intermediate Spring	Vine Tree Spring	0	12/12/12	REG	F	INIT	GENINORG	Perchlorate	5.38	1	LANL Int BG LVL	0.05	107.6	0.5	ug/L	10		NQ	NQ	SW-846:6850	GELC	at this level since 2011
C5	4	4	08/08/11	0.259	0.438	0.3725	4	Lower Los Alamos Canyon (San Ildefonso Pueblo)	Intermediate Spring	Vine Tree Spring	0	12/12/12	REG	F	INIT	GENINORG	Total Phosphate as Phosphorus	0.259	0.7	LANL Int BG LVL	0.08	3.2	0.017	mg/L	1		NQ	NQ	EPA:365.4	GELC	