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August 20, 2018

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Subject: Data Submittal for Groundwater Monitoring at Sandia National Laboratories/New Mexico Tijeras Arroyo Groundwater Area of Concern Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2018 Q-2

Mr. Black:

This letter transmits the subject report as final. The report shows groundwater data results from Sandia National Laboratories Tijeras Arroyo Groundwater Area of Concern collected by the New Mexico Environment Department DOE Oversight Bureau during the second quarter of FFY 2018.

The enclosed monitoring results were provided to the U.S Department of Energy in draft form on July 19, 2018 for 30-day review and comment. The final monitoring results are provided to DOE, the State of New Mexico and other federal agencies, the NMED website and interested members of the public. If you have any questions, or if you would like copies of the complete data set, please contact me by phone at (505) 383-2070, by email at chris.armijo1@state.nm.us, or by mail to the address in the above letterhead.

Sincerely,

Chris Armijo
Environmental Scientist
Sandia Oversight Section

Enclosure: (1) Groundwater Monitoring at Sandia National Laboratories/New Mexico Tijeras Arroyo Groundwater Area of Concern Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2018 Q-2
(2) Table-1 Nitrate-Nitrite as Nitrogen Results
(3) Table-2 Detected Volatile Organic Compounds Results
(4) Table-3 Method Detection Limit for Volatile Organic Compounds

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DOE Oversight Bureau, New Mexico Environment Department

**Groundwater Monitoring at
Sandia National Laboratories/New Mexico
Tijeras Arroyo Groundwater Area of Concern**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2018 Q-2**

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Final Report

8/20/2018

The purpose of this communication is to transmit groundwater quality data collected by the New Mexico Environment Department DOE Oversight Bureau from Sandia National Laboratories Tijeras Arroyo Groundwater Area of Concern during the second quarter of Federal Fiscal Year 2018.

Acknowledgment:

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Introduction

The New Mexico Environment Department (NMED) DOE Oversight Bureau (DOE-OB or Bureau) has compiled and assessed groundwater data collected during February and March 2018. The Bureau collected groundwater samples from Tijeras Arroyo Groundwater (TAG) Area of Concern (AOC) monitoring wells TA1-W-06, TA2-W-01, TA2-W-19, TA2-W-26 (plus duplicate), TA2-W-27, TA2-W-28, TJA-2, TJA-3, TJA-4, TJA-6 and TJA-7. Groundwater samples were collected using standard Sandia National Laboratories/New Mexico (SNL/NM) sampling procedures and equipment. Samples were analyzed for nitrate-nitrite as nitrogen and target compound list (TCL) volatile organic compounds (VOCs). The Bureau submitted samples for analysis to an independent analytical laboratory under contract with the NMED. Nitrate levels exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL), or drinking water standard of 10 mg/L in samples collected from TAG monitoring wells TA2-W-19, TA2-W-28, TJA-2, TJA-4 and TJA-7.

Data Assessment

All groundwater samples were collected and analyzed in accordance with U.S. Environmental Protection Agency (EPA) protocols. Data results are compared to applicable maximum contaminant levels MCLs established by the U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002.

Results

Analytical results for nitrate-nitrite as nitrogen are listed in Table-1. Nitrate-nitrite concentrations exceeded the EPA MCL of 10 mg/L from samples collected at monitoring wells TA2-W-19 (11 mg/L), TA2-W-28 (16 mg/L), TJA-2 (10 mg/L), TJA-4 (27 mg/L) and TJA-7 (21 mg/L).

Volatile organic compounds detected at concentrations above the method detection limits (MDLs) are presented in Table-2. The VOCs detected at low concentrations include: chloroform, dichloroethane [1,1-], dichloroethene [1,1-], dichloroethene [cis-1,2-], tetrachloroethene (PCE) and trichloroethene (TCE). No VOCs were detected above their associated drinking water standards. Table-3 summarizes the laboratory MDLs for the remaining VOCs analyzed from the samples collected at TAG monitoring wells.

Conclusion

The DOE-OB collected groundwater samples from a total of eleven (11) TAG AOC monitoring wells during FFY 2018 Q-2. No parameters were detected above EPA drinking water standards, except for nitrate-nitrite as nitrogen at monitoring wells TA2-W-19, TA2-W-28, TJA-2, TJA-4 and TJA-7. Nitrate has

been identified as a contaminant of concern and results compare well to historical nitrate concentrations.

The DOE-OB will continue to independently monitor for contaminants of concern at TAG AOC and make the data reports available to the public.

References

Data Submittal for Groundwater Monitoring at Sandia National Laboratories/New Mexico Tijeras Arroyo Groundwater Area of Concern Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2017 Q-2.

Data Submittal for Groundwater Monitoring at Sandia National Laboratories/New Mexico Tijeras Arroyo Groundwater Area of Concern Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2017 Q-4.

Sandia National Laboratories/New Mexico (SNL/NM). "Annual Groundwater Monitoring Report Calendar Year 2017." Sandia National Laboratories, Albuquerque, New Mexico.

U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002.

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Table-1

Groundwater Quality Monitoring Results: Nitrate-Nitrite as Nitrogen

New Mexico Environment Department DOE Oversight Bureau

Sandia National Laboratories/New Mexico: Tijeras Arroyo Groundwater Area of Concern

February and March 2018

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	Laboratory Detection Limit (mg/L)	MDL (mg/L)	EPA MCL (mg/L)	Laboratory Qualifier	Analytical Method
TA1-W-06 22-Feb-18	Nitrate-Nitrite as Nitrogen	3.2	0.1	0.0062	10	B	EPA: 353.2
TA2-W-01 23-Feb-18	Nitrate-Nitrite as Nitrogen	4.2	0.25	0.016	10	B	EPA: 353.2
TA2-W-19 1-Mar-18	Nitrate-Nitrite as Nitrogen	11	0.5	0.031	10		EPA: 353.2
TA2-W-26 28-Mar-18	Nitrate-Nitrite as Nitrogen	5.7	0.25	0.016	10		EPA: 353.2
TA2-W-26 28-Feb-18 (Duplicate)	Nitrate-Nitrite as Nitrogen	5.9	0.25	0.016	10		EPA: 353.2
TA2-W-27 26-Feb-18	Nitrate-Nitrite as Nitrogen	3.8	0.1	0.0062	10		EPA: 353.2
TA2-W-28 5-Mar-18	Nitrate-Nitrite as Nitrogen	16	0.5	0.031	10		EPA: 353.2
TJA-2 2-Mar-18	Nitrate-Nitrite as Nitrogen	10	0.5	0.031	10		EPA: 353.2
TJA-3 27-Feb-18	Nitrate-Nitrite as Nitrogen	2.6	0.1	0.0062	10		EPA: 353.2
TJA-4 7-Mar-18	Nitrate-Nitrite as Nitrogen	27	1	0.062	10		EPA: 353.2
TJA-6 21-Feb-18	Nitrate-Nitrite as Nitrogen	2.3	0.1	0.0062	10	B	EPA: 353.2
TJA-7 6-Mar-18	Nitrate-Nitrite as Nitrogen	21	1	0.062	10		EPA: 353.2

Bold = Data results exceed the established EPA MCL.

B = Compound was found in the blank and sample.

U = the analyte was analyzed for but not detected

Table-2

Groundwater Quality Monitoring Results: Detected Volatile Organic Compounds
 Sandia National Laboratories/New Mexico: Tijeras Arroyo Groundwater Area of Concern
 New Mexico Environment Department DOE Oversight Bureau
 February and March 2018

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	Laboratory Detection Limit (µg/L)	MDL (µg/L)	EPA MCL (µg/L)	Laboratory Qualifier	Analytical Method
TA1-W-06 22-Feb-18	Chloroform	0.31	1	0.12	NE	J	SW-846:8260B
	Dichloroethene[1,1-]	1.1	1	0.14	7		SW-846:8260B
	Tetrachloroethene	0.14	1	0.1	5	J	SW-846:8260B
	Trichloroethene	0.44	1	0.13	5	J	SW-846:8260B
TA2-W-01 23-Feb-18	Chloroform	0.13	1	0.12	NE	J	SW-846:8260B
	Tetrachloroethene	0.41	1	0.1	5	J	SW-846:8260B
	Trichloroethene	1.2	1	0.13	5		SW-846:8260B
TA2-W-19 1-Mar-18	Dichloroethane[1,1-]	0.3	1	0.1	NE	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.32	1	0.1	70	J	SW-846:8260B
	Tetrachloroethene	0.17	1	0.1	5	J	SW-846:8260B
	Trichloroethene	2	1	0.13	5		SW-846:8260B
TA2-W-26 28-Feb-18	Chloroform	0.28	1	0.12	NE	J	SW-846:8260B
	Dichloroethane[1,1-]	0.14	1	0.1	NE	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.31	1	0.1	70	J	SW-846:8260B
	Tetrachloroethene	0.95	1	0.1	5	J	SW-846:8260B
	Trichloroethene	0.89	1	0.13	5	J	SW-846:8260B
TA2-W-26 28-Feb-18 (Duplicate)	Chloroform	0.26	1	0.12	NE	J	SW-846:8260B
	Dichloroethane[1,1-]	0.13	1	0.1	NE	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.29	1	0.1	70	J	SW-846:8260B
	Tetrachloroethene	0.93	1	0.1	5	J	SW-846:8260B
	Trichloroethene	0.74	1	0.13	5	J	SW-846:8260B
TA2-W-27 26-Feb-18	Chloroform	0.24	1	0.12	NE	J	SW-846:8260B
	Dichloroethene[1,1-]	0.19	1	0.14	7	J	SW-846:8260B
	Tetrachloroethene	1.6	1	0.1	5		SW-846:8260B
	Trichloroethene	1	1	0.13	5		SW-846:8260B
TJA-2 2-Mar-18	Dichloroethane[1,1-]	0.43	1	0.1	NE	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.52	1	0.1	70	J	SW-846:8260B
	Tetrachloroethene	0.13	1	0.1	5	J	SW-846:8260B
	Trichloroethene	4	1	0.13	5		SW-846:8260B
TJA-7 6-Mar-18	Trichloroethene	2.4	1	0.13	5		SW-846:8260B

J = The reported value was obtained from the reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

Table-3

Groundwater Quality Monitoring Results: Method Detection Limits for Volatile Organic Compounds by Method SW846:8260B

Sandia National Laboratories/New Mexico: Tijeras Arroyo Groundwater Area of Concern

New Mexico Environment Department DOE Oversight Bureau

February and March 2018

Analyte	MDL (µg/L)
Acetone	2.1
Benzene	0.13
Bromodichloromethane	0.14
Bromoform	0.1
Bromomethane	0.29
Butanone[2-]	0.35
Carbon Disulfide	0.16
Carbon Tetrachloride	0.15
Chlorobenzene	0.12
Chlorodibromomethane	0.13
Chloroethane	0.34
Chloroform	0.12
Chloromethane	0.25
Dichloroethane[1,1-]	0.1
Dichloroethane[1,2-]	0.22
Dichloroethene[1,1-]	0.14
Dichloroethene[cis-1,2-]	0.1
Dichloroethene[trans-1,2-]	0.11
Dichloropropane[1,2-]	0.15
Dichloropropene[cis-1,3-]	0.22
Dichloropropene[trans-1,3-]	0.08
Ethylbenzene	0.1
Hexanone[2-]	0.17
Methyl-2-pentanone[4-]	0.18
Methylene Chloride	0.35
Styrene	0.15
Tetrachloroethane[1,1,2,2-]	0.09
Tetrachloroethene	0.1
Toluene	0.25
Trichloroethane[1,1,1-]	0.19
Trichloroethane[1,1,2-]	0.31
Trichloroethene	0.13
Vinyl acetate	0.21
Vinyl Chloride	0.22
Xylene (Total)	0.18