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April 9, 2019

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Subject: Data Submittal for Groundwater Monitoring at Sandia National Laboratories/New Mexico Chemical Waste Landfill Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2019 Q-2

Ms. Branson:

This letter transmits the subject report as final. The report shows groundwater data results from Sandia National Laboratories Chemical Waste Landfill collected by the New Mexico Environment Department DOE Oversight Bureau during the second quarter of FFY 2019.

The enclosed monitoring results were provided to the U.S Department of Energy in draft form on March 6, 2019 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,

A handwritten signature in blue ink that reads "Chris Armijo".

Chris Armijo
Environmental Scientist
Sandia Oversight Section

Enclosure: (1) Groundwater Monitoring at Sandia National Laboratories/New Mexico Chemical Waste Landfill Conducted by the New Mexico Environment Department DOE Oversight Bureau for FFY 2019 Q-2
(2) Table-1 Summary of Chromium and Nickel Results
(3) Table-2 Detected Volatile Organic Compounds Results
(4) Table-3 Method Detection Limits for Volatile Organic Compounds

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DOE Oversight Bureau, New Mexico Environment Department

**Groundwater Monitoring at
Sandia National Laboratories/New Mexico
Chemical Waste Landfill**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2019 Q-2**

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Final Report

4/9/2019

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 Chemical Waste Landfill during the second quarter of Federal Fiscal Year 2019.

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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 January 2019. The Bureau collected groundwater samples from Sandia National Laboratories/New Mexico (SNL/NM) Chemical Waste Landfill (CWL) groundwater monitoring wells CWL-BW5, CWL-MW9, CWL-MW10 and CWL-MW11. Split samples were collected using standard (SNL/NM) sampling procedures and equipment in accordance with the CWL Post-Closure Care Permit (PCCP) Groundwater Sampling and Analysis Plan (SAP). Samples were analyzed for total (unfiltered) metals (chromium and nickel only) and volatile organic compounds (VOCs). The Bureau submitted samples for analysis to an independent analytical laboratory under contract with the NMED.

No sample concentrations exceeded established U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) or concentration limits for the hazardous constituents of concern listed in the CWL PCCP.

Data Assessment

All groundwater samples were collected and analyzed in accordance with U.S. EPA protocols. Data results are compared to applicable MCLs established by the U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002. Sample results are also compared to Chemical Waste Landfill Groundwater Concentration Limits for Hazardous Constituents of Concern (COC) in the PCCP, Table 1-2 of the Post-Closure Care Plan for the CWL, Permit Attachment 1 (NMED October 2009).

Under the current PCCP, SNL/NM is required to collect samples from CWL monitoring wells CWL-BW5, CWL-MW9, CWL-MW10 and CWL-MW11 on a semi-annual frequency. Samples are analyzed for trichloroethene (TCE) and metals (chromium and nickel) during both sampling events. For one of the two semi-annual events, additional analyses are required and include 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, chloroform, tetrachloroethene, and trichlorofluoromethane (referred to as the enhanced list). For this semi-annual event, SNL samples were analyzed for TCE, the enhanced list, chromium, and nickel.

Results

Analytical results for individual total metals chromium and nickel are presented in Table-1. Sample detections above the method detection limit (MDL) for chromium were below the EPA MCL and PCCP concentration limit. Nickel was not detected in any sample collected from CWL. The CWL PCCP groundwater concentration limits for chromium and nickel are 0.050 mg/L and 0.028 mg/L, respectively.

Volatile organic compounds (VOCs) detected at concentrations above their MDLs are presented in Table-2. Trichloroethene (TCE) was detected above the MDL at monitoring well CWL-MW10 at a concentration of 0.82 µg/L. The result was “J” flagged, indicating that the result was an estimated value. The TCE concentration was below the EPA MCL and CWL PCCP limit of 5 µg/L. Table-3 summarizes laboratory MDLs for the remaining VOCs analyzed from the samples collected at the CWL.

Conclusion

Groundwater samples were collected from four (4) monitoring wells during this semi-annual sampling event at the CWL. Reported concentrations of chromium, nickel and TCE in samples collected by the Bureau were below established EPA MCLs and SNL/NM COC concentration limits listed in the PCCP. Groundwater results collected by DOE-OB are comparable to historical results.

The DOE-OB will continue to monitor groundwater quality at the CWL and make the data reports available to the public.

References

New Mexico Environment Department (NMED), October 2009. "Resource Conservation and Recovery Act, Post-Closure Care Permit, EPA ID No. NM5890110518, to the U.S. Department of Energy/Sandia Corporation, for the Sandia National Laboratories Chemical Waste Landfill," New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico, October 15, 2009.

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

Sandia National Laboratories/New Mexico (SNL/NM), March 2017. "Chemical Waste Landfill Annual Post-Closure Care Report Calendar Year 2016," 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 Results: Chromium and Nickel (EPA Method SW846-6020)

Sandia National Laboratories/New Mexico: Chemical Waste Landfill

New Mexico Environment Department DOE Oversight Bureau

January 2019

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	CWL PCCP Limits (mg/L)	Laboratory Detection Limit (mg/L)	Method Detection Limit (mg/L)	Laboratory Qualifier	Analytical Method
CWL-BW5 14-Jan-19	Chromium	0.001	0.10	0.050	0.01	0.00046	J	SW846: 6020
	Nickel	0.00092	NE	0.028	0.02	0.00092	U	SW846: 6020
CWL-MW9 15-Jan-19	Chromium	0.0012	0.10	0.050	0.01	0.00046	J	SW846: 6020
	Nickel	0.00092	NE	0.028	0.02	0.00092	U	SW846: 6020
CWL-MW9 15-Jan-19 (Duplicate)	Chromium	0.0012	0.10	0.050	0.01	0.00046	J	SW846: 6020
	Nickel	0.00092	NE	0.028	0.02	0.00092	U	SW846: 6020
CWL-MW10 21-Jan-19	Chromium	0.00046	0.10	0.050	0.01	0.00046	U	SW846: 6020
	Nickel	0.00092	NE	0.028	0.02	0.00092	U	SW846: 6020
CWL-MW11 16-Jan-19	Chromium	0.0018	0.10	0.050	0.01	0.00046	J	SW846: 6020
	Nickel	0.00092	NE	0.028	0.02	0.00092	U	SW846: 6020

NE = Not Established

U = the analyte was analyzed for but not detected

Table-2

Groundwater Quality Results: Detected Volatile Organic Compounds (EPA Method SW846-8260B)

Sandia National Laboratories/New Mexico: Chemical Waste Landfill

New Mexico Environment Department DOE Oversight Bureau

January 2019

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	CWL PCCP Limit (µg/L)	Laboratory Detection Limit (µg/L)	Method Detection Limit (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW10 21-Jan-19	Trichloroethene	0.82	5	5	1	0.5	J	SW846: 8260B

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

Table-3

Groundwater Quality Results: Method Detection Limits for VOCs (EPA Method SW846-8260B)

Sandia National Laboratories/New Mexico: Chemical Waste Landfill

New Mexico Environment Department DOE Oversight Bureau

January 2019

Analyte	Method Detection Limit (µg/L)
Acetone	3
Benzene	0.3
Bromobenzene	0.3
Bromochloromethane	0.3
Bromodichloromethane	0.3
Bromoform	0.3
Bromomethane	0.33
Butanone[2-]	3
Butylbenzene[n-]	0.3
Butylbenzene[sec-]	0.3
Butylbenzene[tert-]	0.3
Carbon Disulfide	0.3
Carbon Tetrachloride	0.15
Chlorobenzene	0.3
Chlorodibromomethane	0.3
Chloroethane	0.3
Chloroform	0.3
Chlorohexane[1-]	0.3
Chloromethane	0.3
Chlorotoluene[2-]	0.3
Chlorotoluene[4-]	0.3
Dibromo-3-Chloropropane[1,2-]	0.6
Dibromoethane[1,2-]	0.3
Dibromomethane	0.3
Dichlorobenzene[1,2-]	0.3
Dichlorobenzene[1,3-]	0.3
Dichlorobenzene[1,4-]	0.3
Dichlorodifluoromethane	0.3
Dichloroethane[1,1-]	0.3
Dichloroethane[1,2-]	0.15
Dichloroethene[1,1-]	0.3
Dichloroethene[cis-1,2-]	0.3
Dichloroethene[trans-1,2-]	0.3
Dichloropropane[1,2-]	0.3
Dichloropropane[1,3-]	0.15

Analyte	Method Detection Limit (µg/L)
Dichloropropane[2,2-]	0.3
Dichloropropene[1,1-]	0.3
Dichloropropene[cis-1,3-]	0.3
Dichloropropene[trans-1,3-]	0.3
Ethylbenzene	0.3
Hexachlorobutadiene	0.3
Hexanone[2-]	3
Iodomethane	0.3
Isopropylbenzene	0.3
Isopropyltoluene[4-]	0.3
Methyl tert-Butyl Ether	0.3
Methyl-2-pentanone[4-]	3
Methylene Chloride	0.34
Naphthalene	0.3
Propylbenzene[1-]	0.3
Styrene	0.3
Tetrachloroethane[1,1,1,2-]	0.3
Tetrachloroethane[1,1,2,2-]	0.3
Tetrachloroethene	0.3
Toluene	0.3
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.3
Trichlorobenzene[1,2,3-]	0.3
Trichlorobenzene[1,2,4-]	0.3
Trichloroethane[1,1,1-]	0.3
Trichloroethane[1,1,2-]	0.3
Trichloroethene	0.5
Trichlorofluoromethane	0.3
Trichloropropane[1,2,3-]	0.3
Trimethylbenzene[1,2,4-]	0.3
Trimethylbenzene[1,3,5-]	0.3
Vinyl acetate	0.73
Vinyl Chloride	0.15
Xylene[1,2-]	0.3
Xylene[1,3-]+Xylene[1,4-]	0.3