

DOE Oversight Bureau, New Mexico Environment Department

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

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2015 Q-4**

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Final Report

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The purpose of this communication is to transmit groundwater data collected by the New Mexico Environment Department DOE Oversight Bureau from the Chemical Waste Landfill Groundwater monitoring wells during the fourth quarter of FFY 2015.

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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 July 2015. The Bureau collected groundwater samples from Chemical Waste Landfill (CWL) groundwater monitoring wells CWL-BW5, CWL-MW9, CWL-MW10, and CWL-MW11. Split samples were collected using standard Sandia National Laboratories/New Mexico (SNL/NM) sampling procedures and equipment. Bureau samples were submitted to an independent analytical laboratory where they were analyzed for target analyte list (TAL) total metals and volatile organic compounds (VOCs). No samples exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs) during this sampling event.

Data Assessment

All groundwater samples were collected and analyzed in accordance with 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.

Results

Analytical results for total TAL metals are presented in Table 1. No metals exceeded established MCLs.

Analytical results for VOCs detected above their method detection limit (MDL) are listed in Table 2. No compounds were detected above the EPA MCL. Chloromethane was detected in monitoring wells CWL-MW9 and CWM-MW11, at concentrations of 0.39 µg/L and 0.62 µg/L, respectively. Trichloroethylene (TCE) was detected above the method detection limit at monitoring well CWL-MW10 at a concentration of 0.46 µg/L. The EPA MCL for TCE is 5 µg/L.

Table 3 lists the laboratory MDLs for the remaining VOCs.

References

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 NMED DOE OB FFY 2015 Q-4 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-BW5 6-Jul-15	Aluminum	0.03	NE	0.2	0.03	U	SW-846:6010B_3005A
	Antimony	0.0054	0.006	0.02	0.0054	U	SW-846:6010B_3005A
	Arsenic	0.0054	0.01	0.01	0.0054	U	SW-846:6010B_3005A
	Barium	0.059	2	0.1	0.00096	J	SW-846:6010B_3005A
	Beryllium	0.00049	0.004	0.005	0.00049	U	SW-846:6010B_3005A
	Cadmium	0.00075	0.005	0.005	0.00075	U	SW-846:6010B_3005A
	Calcium	130	NE	1	0.018		SW-846:6010B_3005A
	Chromium	0.0013	0.1	0.01	0.0013	U	SW-846:6010B_3005A
	Cobalt	0.0012	NE	0.01	0.0012	U	SW-846:6010B_3005A
	Copper	0.0018	NE	0.01	0.0018	U	SW-846:6010B_3005A
	Iron	0.016	NE	0.1	0.016	U	SW-846:6010B_3005A
	Lead	0.0022	NE	0.003	0.0022	U	SW-846:6010B_3005A
	Magnesium	29	NE	1	0.022		SW-846:6010B_3005A
	Manganese	0.00091	NE	0.01	0.00091	U	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0029	NE	0.02	0.0029	U	SW-846:6010B_3005A
	Potassium	8.1	NE	1	0.19		SW-846:6010B_3005A
	Selenium	0.0042	0.05	0.005	0.0042	U	SW-846:6010B_3005A
	Silver	0.0016	NE	0.01	0.0016	U	SW-846:6010B_3005A
	Sodium	91	NE	1	0.049		SW-846:6010B_3005A
Thallium	0.0067	0.002	0.01	0.0067	J	SW-846:6010B_3005A	
Vanadium	0.0021	NE	0.01	0.0012	J	SW-846:6010B_3005A	
Zinc	0.0033	NE	0.02	0.0027	J	SW-846:6010B_3005A	

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).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE OB FFY 2015 Q-4 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW9 7-Jul-15	Aluminum	0.03	NE	0.2	0.03	U	SW-846:6010B_3005A
	Antimony	0.0054	0.006	0.02	0.0054	U	SW-846:6010B_3005A
	Arsenic	0.0054	0.01	0.01	0.0054	U	SW-846:6010B_3005A
	Barium	0.098	2	0.1	0.00096	J	SW-846:6010B_3005A
	Beryllium	0.00049	0.004	0.005	0.00049	U	SW-846:6010B_3005A
	Cadmium	0.00075	0.005	0.005	0.00075	U	SW-846:6010B_3005A
	Calcium	110	NE	1	0.018		SW-846:6010B_3005A
	Chromium	0.0013	0.1	0.01	0.0013	U	SW-846:6010B_3005A
	Cobalt	0.0012	NE	0.01	0.0012	U	SW-846:6010B_3005A
	Copper	0.0018	NE	0.01	0.0018	U	SW-846:6010B_3005A
	Iron	0.016	NE	0.1	0.016	U	SW-846:6010B_3005A
	Lead	0.0022	NE	0.003	0.0022	U	SW-846:6010B_3005A
	Magnesium	29	NE	1	0.022		SW-846:6010B_3005A
	Manganese	0.019	NE	0.01	0.00091		SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0029	NE	0.02	0.0029	U	SW-846:6010B_3005A
	Potassium	9.7	NE	1	0.19		SW-846:6010B_3005A
	Selenium	0.0042	0.05	0.005	0.0042	U	SW-846:6010B_3005A
	Silver	0.0016	NE	0.01	0.0016	U	SW-846:6010B_3005A
	Sodium	76	NE	1	0.049		SW-846:6010B_3005A
Thallium	0.0067	0.002	0.01	0.0067	U	SW-846:6010B_3005A	
Vanadium	0.0012	NE	0.01	0.0012	U	SW-846:6010B_3005A	
Zinc	0.0039	NE	0.02	0.0027	J	SW-846:6010B_3005A	

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Table-1 NMED DOE OB FFY 2015 Q-4 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW10 13-Jul-15	Aluminum	0.03	NE	0.2	0.03	U	SW-846:6010B_3005A
	Antimony	0.0054	0.006	0.02	0.0054	U	SW-846:6010B_3005A
	Arsenic	0.0054	0.01	0.01	0.0054	U	SW-846:6010B_3005A
	Barium	0.4	2	0.1	0.00096		SW-846:6010B_3005A
	Beryllium	0.00049	0.004	0.005	0.00049	U	SW-846:6010B_3005A
	Cadmium	0.00075	0.005	0.005	0.00075	U	SW-846:6010B_3005A
	Calcium	110	NE	1	0.018		SW-846:6010B_3005A
	Chromium	0.0013	0.1	0.01	0.0013	U	SW-846:6010B_3005A
	Cobalt	0.0012	NE	0.01	0.0012	U	SW-846:6010B_3005A
	Copper	0.0018	NE	0.01	0.0018	U	SW-846:6010B_3005A
	Iron	0.72	NE	0.1	0.016		SW-846:6010B_3005A
	Lead	0.0022	NE	0.003	0.0022	U	SW-846:6010B_3005A
	Magnesium	29	NE	1	0.022		SW-846:6010B_3005A
	Manganese	1.2	NE	0.01	0.00091		SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0029	NE	0.02	0.0029	U	SW-846:6010B_3005A
	Potassium	9.1	NE	1	0.19		SW-846:6010B_3005A
	Selenium	0.0042	0.05	0.005	0.0042	U	SW-846:6010B_3005A
	Silver	0.0016	NE	0.01	0.0016	U	SW-846:6010B_3005A
	Sodium	75	NE	1	0.049		SW-846:6010B_3005A
Thallium	0.0067	0.002	0.01	0.0067	U	SW-846:6010B_3005A	
Vanadium	0.0012	NE	0.01	0.0012	U	SW-846:6010B_3005A	
Zinc	0.034	NE	0.02	0.0027		SW-846:6010B_3005A	

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Table-1 NMED DOE OB FFY 2015 Q-4 Chemical Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CWL-MW11 9-Jul-15	Aluminum	0.03	NE	0.2	0.03	U	SW-846:6010B_3005A
	Antimony	0.0054	0.006	0.02	0.0054	U	SW-846:6010B_3005A
	Arsenic	0.0054	0.01	0.01	0.0054	U	SW-846:6010B_3005A
	Barium	0.07	2	0.1	0.00096	J	SW-846:6010B_3005A
	Beryllium	0.00049	0.004	0.005	0.00049	U	SW-846:6010B_3005A
	Cadmium	0.00075	0.005	0.005	0.00075	U	SW-846:6010B_3005A
	Calcium	120	NE	1	0.018		SW-846:6010B_3005A
	Chromium	0.0019	0.1	0.01	0.0013	J	SW-846:6010B_3005A
	Cobalt	0.0012	NE	0.01	0.0012	U	SW-846:6010B_3005A
	Copper	0.0018	NE	0.01	0.0018	U	SW-846:6010B_3005A
	Iron	0.016	NE	0.1	0.016	U	SW-846:6010B_3005A
	Lead	0.0022	NE	0.003	0.0022	U	SW-846:6010B_3005A
	Magnesium	30	NE	1	0.022		SW-846:6010B_3005A
	Manganese	0.0015	NE	0.01	0.00091	J	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0029	NE	0.02	0.0029	U	SW-846:6010B_3005A
	Potassium	11	NE	1	0.19		SW-846:6010B_3005A
	Selenium	0.0042	0.05	0.005	0.0042	U	SW-846:6010B_3005A
	Silver	0.0016	NE	0.01	0.0016	U	SW-846:6010B_3005A
	Sodium	79	NE	1	0.049		SW-846:6010B_3005A
Thallium	0.0067	0.002	0.01	0.0067	U	SW-846:6010B_3005A	
Vanadium	0.0021	NE	0.01	0.0012	J	SW-846:6010B_3005A	
Zinc	0.0027	NE	0.02	0.0027	U	SW-846:6010B_3005A	

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U = the analyte was analyzed for but not detected

Table-2 NMED DOE OB FFY 2015 Q-4 Chemical Waste Landfill Groundwater Quality Results: Detected Volatile Organic Compounds

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	Laboratory Detection Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
CWL-MW9 7-Jul-15	Chloromethane	0.39	NE	1	0.3	J	SW-846:8260B_25
CWL-MW10 13-Jul-15	Trichloroethene	0.46	5	1	0.3	J	SW-846:8260B_25
CWL-MW11 9-Jul-15	Chloromethane	0.62	NE	1	0.3	J	SW-846:8260B_25

NE = Not Established

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).

Table-3 NMED DOE OB FFY 2015 Q-4 Chemical Waste Landfill Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds by Method SW-846:8260B_25

Analyte	MDL (µg/L)
Acetone	3
Benzene	0.3
Bromobenzene	0.3
Bromochloromethane	0.3
Bromodichloromethane	0.3
Bromoform	0.3
Bromomethane	0.3
Butanone[2-]	3
Butylbenzene[n-]	0.3
Butylbenzene[sec-]	0.3
Butylbenzene[tert-]	0.3
Carbon Disulfide	0.3
Carbon Tetrachloride	0.3
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-]	0.3
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-]	0.3
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-]	0.3
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

Analyte	MDL (µg/L)
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	0.44
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	0.2
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	0.3
Trichlorofluoromethane	0.3
Trichloropropane[1,2,3-]	0.3
Trimethylbenzene[1,2,4-]	0.3
Trimethylbenzene[1,3,5-]	0.3
Vinyl acetate	0.52
Vinyl Chloride	0.3
Xylene[1,2-]	0.3
Xylene[1,3-]+Xylene[1,4-]	0.3