

DOE Oversight Bureau, New Mexico Environment Department

**Groundwater Monitoring at
Sandia National Laboratories/New Mexico
Long-Term Stewardship Consolidated Groundwater Monitoring Program**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2014 Q-2**

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Final Report

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The purpose of this communication is to transmit groundwater data collected by New Mexico Environment Department DOE Oversight Bureau from Long-Term Stewardship Groundwater Monitoring Program monitoring wells during the second quarter of FFY 2014.

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Introductory

The New Mexico Environment Department (NMED) DOE Oversight Bureau has compiled and assessed groundwater data collected during January and February 2014. The Bureau collected groundwater samples from Long-Term Stewardship (LTS) Consolidated Groundwater Monitoring Program (GMP) monitoring wells MRN-3D, SFR-2S plus duplicate, SWTA3-MW3, and SWTA3-MW4. Samples were also collected from Coyote Spring located in Arroyo del Coyote. Split samples were collected using standard Sandia sampling procedures and equipment. The samples were submitted for analysis to an independent analytical laboratory for target analyte list (TAL) metals plus uranium, anions, nitrate-nitrite, cyanide, high explosive (HE) compounds, volatile organic compounds (VOCs), gamma-emitting isotopes, gross alpha and beta, radium 226/228, and isotopic uranium. An elevated concentration of beryllium was observed in the sample collected from Coyote Springs. All other sample results were detected below established limits.

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 TAL metals are presented in Table 1. Samples were analyzed for dissolved metals plus uranium and total mercury. No metal concentrations were detected above established regulatory standards, except for beryllium. Beryllium was detected above the MCL of 0.004 mg/L from the sample collected at Coyote Springs at a concentration of 0.0068 mg/L.

Analytical results for anions (bromide, chloride, fluoride, and sulfate), cyanide, and nitrate-nitrite are presented in Table 2. Nitrates were detected in all the well samples above associated laboratory method detection limit (MDLs), and ranged from 0.54 to 2.3 mg/L. No samples exceeded their associated MCL.

Analytical results for HE compounds are listed in Table 3. Samples from monitoring wells MRN-3D, SFR-2S, SWTA3-MW3, and SWTA3-MW4 were submitted for analysis for HE compounds. No compounds were detected above the laboratory MDL.

No VOCs were detected above the MDL using analytical method SW846:8260B. The MDLs for VOCs are presented in Table-4.

Analytical results for radionuclides are listed in Table 5. Samples were analyzed for gross alpha and beta, gamma-emitting isotopes, radium 226/228, and isotopic uranium. Unadjusted gross alpha activity ranged from 2.9 ± 0.44 pCi/L at SWTA3-MW3 to 18 ± 1.7 pCi/L at SFR-2S. The EPA MCL for gross alpha activity of 15 pCi/L is based on a corrected gross alpha value, which excludes both total uranium and radon from initial gross alpha count. Subsequently, when the total uranium activity is subtracted from the gross alpha value, the gross activity results are below the MCL. All other gamma emitters and radium isotopes are below established MCLs.

Conclusion

Groundwater samples were collected from four (4) monitoring wells and one (1) spring during the annual sampling event at LTS Groundwater Protection Program. No VOCs or HE compounds were detected at concentrations above the MDLs. Nitrates were detected in all the well samples above associated MDLs, but below the EPA MCL of 10 mg/L. No metals, other than beryllium, were detected above established regulatory limits in any groundwater samples. Beryllium was detected above the MCL of 0.004 mg/L in the sample from Coyote Springs at a concentration of 0.0068 mg/L. Beryllium concentrations observed during this event compare well to historical values.

Table-1 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Dissolved TAL Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
COYOTE SPRING 31-Jan-14	Aluminum	0.23	NE	0.1	0.026		SW-846:6010B
	Antimony	0.0001	0.006	0.0003	0.0001	U	SW-846:6020B
	Arsenic	0.0042	0.01	0.002	0.0006		SW-846:6020B
	Barium	0.039	2	0.002	0.0012		SW-846:6010B
	Beryllium	0.0068	0.004	0.001	0.00028		SW-846:6010B
	Cadmium	0.00027	0.005	0.0003	0.00012	J	SW-846:6020B
	Calcium	300	NE	0.5	0.06	B	SW-846:6010B
	Chromium	0.0006	0.1	0.005	0.0006	U	SW-846:6010B
	Cobalt	0.009	NE	0.002	0.0006		SW-846:6010B
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6010B
	Iron	0.036	NE	0.06	0.015	J	SW-846:6010B
	Lead	0.00015	0.015	0.0005	0.00015	U	SW-846:6020B
	Magnesium	60	NE	0.5	0.06	B	SW-846:6010B
	Manganese	1.3	NE	0.002	0.0003		SW-846:6010B
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Mercury (Total)	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.024	NE	0.005	0.001	B	SW-846:6010B
	Potassium	45	NE	0.5	0.2		SW-846:6010B
	Selenium	0.0005	0.05	0.001	0.0005	U	SW-846:6020B
	Silver	0.00003	NE	0.0001	0.00003	U	SW-846:6020B
	Sodium	380	NE	5	0.9		SW-846:6010B
	Thallium	0.0014	0.002	0.0002	0.00006		SW-846:6020B
	Uranium-238	0.007	0.03	0.0001	0.00003		SW-846:6020B
Vanadium	0.0015	NE	0.005	0.0015	U	SW-846:6010B	
Zinc	0.047	NE	0.006	0.0032		SW-846:6010B	

B = Compound was found in the blank and sample.

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

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Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
MRN-3D 13-Feb-14	Aluminum	0.026	NE	0.1	0.026	U	SW-846:6010B
	Antimony	0.0001	0.006	0.0003	0.0001	U	SW-846:6020B
	Arsenic	0.001	0.01	0.002	0.0006	J	SW-846:6020B
	Barium	0.13	2	0.002	0.0012		SW-846:6010B
	Beryllium	0.00028	0.004	0.001	0.00028	U	SW-846:6010B
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	59	NE	0.5	0.06		SW-846:6010B
	Chromium	0.0012	0.1	0.005	0.0006	J	SW-846:6010B
	Cobalt	0.0006	NE	0.002	0.0006	U	SW-846:6010B
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6010B
	Iron	0.015	NE	0.06	0.015	U	SW-846:6010B
	Lead	0.00015	0.015	0.0005	0.00015	U	SW-846:6020B
	Magnesium	14	NE	0.5	0.06		SW-846:6010B
	Manganese	0.00083	NE	0.002	0.0003	JB	SW-846:6010B
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Mercury (Total)	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.005	0.001	U	SW-846:6010B
	Potassium	4.3	NE	0.5	0.2		SW-846:6010B
	Selenium	0.00098	0.05	0.001	0.0005	J	SW-846:6020B
	Silver	0.00003	NE	0.0001	0.00003	U	SW-846:6020B
	Sodium	25	NE	0.5	0.09		SW-846:6010B
	Thallium	0.00006	0.002	0.0002	0.00006	U	SW-846:6020B
Uranium-238	0.0037	0.03	0.0001	0.00003		SW-846:6020B	
Vanadium	0.0049	NE	0.005	0.0015	J	SW-846:6010B	
Zinc	0.058	NE	0.006	0.0032		SW-846:6010B	

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Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
SFR-2S 4-Feb-14	Aluminum	0.026	NE	0.1	0.026	U	SW-846:6010B
	Antimony	0.0001	0.006	0.0003	0.0001	U	SW-846:6020B
	Arsenic	0.00073	0.01	0.002	0.0006	J	SW-846:6020B
	Barium	0.057	2	0.002	0.0012		SW-846:6010B
	Beryllium	0.00028	0.004	0.001	0.00028	U	SW-846:6010B
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	130	NE	0.5	0.06	B	SW-846:6010B
	Chromium	0.0006	0.1	0.005	0.0006	U	SW-846:6010B
	Cobalt	0.0006	NE	0.002	0.0006	U	SW-846:6010B
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6010B
	Iron	0.015	NE	0.06	0.015	U	SW-846:6010B
	Lead	0.00015	0.015	0.0005	0.00015	U	SW-846:6020B
	Magnesium	35	NE	0.5	0.06	B	SW-846:6010B
	Manganese	0.0012	NE	0.002	0.0003	J	SW-846:6010B
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Mercury (Total)	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.011	NE	0.005	0.001	B	SW-846:6010B
	Potassium	8.5	NE	0.5	0.2		SW-846:6010B
	Selenium	0.0021	0.05	0.001	0.0005		SW-846:6020B
	Silver	0.00003	NE	0.0001	0.00003	U	SW-846:6020B
	Sodium	78	NE	0.5	0.09		SW-846:6010B
	Thallium	0.00006	0.002	0.0002	0.00006	U	SW-846:6020B
Uranium-238	0.016	0.03	0.0001	0.00003		SW-846:6020B	
Vanadium	0.0027	NE	0.005	0.0015	J	SW-846:6010B	
Zinc	0.0032	NE	0.006	0.0032	U	SW-846:6010B	

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Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
SFR-2S 4-Feb-14 DUP	Aluminum	0.026	NE	0.1	0.026	U	SW-846:6010B
	Antimony	0.0001	0.006	0.0003	0.0001	U	SW-846:6020B
	Arsenic	0.00068	0.01	0.002	0.0006	J	SW-846:6020B
	Barium	0.057	2	0.002	0.0012		SW-846:6010B
	Beryllium	0.00028	0.004	0.001	0.00028	U	SW-846:6010B
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	130	NE	0.5	0.06	B	SW-846:6010B
	Chromium	0.0006	0.1	0.005	0.0006	U	SW-846:6010B
	Cobalt	0.0006	NE	0.002	0.0006	U	SW-846:6010B
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6010B
	Iron	0.015	NE	0.06	0.015	U	SW-846:6010B
	Lead	0.00015	0.015	0.0005	0.00015	U	SW-846:6020B
	Magnesium	36	NE	0.5	0.06	B	SW-846:6010B
	Manganese	0.0012	NE	0.002	0.0003	J	SW-846:6010B
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Mercury (Total)	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.011	NE	0.005	0.001	B	SW-846:6010B
	Potassium	8.6	NE	0.5	0.2		SW-846:6010B
	Selenium	0.002	0.05	0.001	0.0005		SW-846:6020B
	Silver	0.00003	NE	0.0001	0.00003	U	SW-846:6020B
	Sodium	76	NE	0.5	0.09		SW-846:6010B
	Thallium	0.00006	0.002	0.0002	0.00006	U	SW-846:6020B
Uranium-238	0.016	0.03	0.0001	0.00003		SW-846:6020B	
Vanadium	0.0026	NE	0.005	0.0015	J	SW-846:6010B	
Zinc	0.0033	NE	0.006	0.0032	J	SW-846:6010B	

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Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
SWTA3-MW3 10-Feb-14	Aluminum	0.026	NE	0.1	0.026	U	SW-846:6010B
	Antimony	0.0001	0.006	0.0003	0.0001	U	SW-846:6020B
	Arsenic	0.001	0.01	0.002	0.0006	J	SW-846:6020B
	Barium	0.061	2	0.002	0.0012		SW-846:6010B
	Beryllium	0.00031	0.004	0.001	0.00028	J	SW-846:6010B
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	39	NE	0.5	0.06		SW-846:6010B
	Chromium	0.00066	0.1	0.005	0.0006	J	SW-846:6010B
	Cobalt	0.0006	NE	0.002	0.0006	U	SW-846:6010B
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6010B
	Iron	0.015	NE	0.06	0.015	U	SW-846:6010B
	Lead	0.00015	0.015	0.0005	0.00015	U	SW-846:6020B
	Magnesium	11	NE	0.5	0.06		SW-846:6010B
	Manganese	0.0003	NE	0.002	0.0003	U	SW-846:6010B
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Mercury (Total)	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.005	0.001	U	SW-846:6010B
	Potassium	4.9	NE	0.5	0.2		SW-846:6010B
	Selenium	0.0015	0.05	0.001	0.0005		SW-846:6020B
	Silver	0.00003	NE	0.0001	0.00003	U	SW-846:6020B
	Sodium	45	NE	0.5	0.09		SW-846:6010B
	Thallium	0.00006	0.002	0.0002	0.00006	U	SW-846:6020B
Uranium-238	0.0023	0.03	0.0001	0.00003		SW-846:6020B	
Vanadium	0.0076	NE	0.005	0.0015		SW-846:6010B	
Zinc	0.0032	NE	0.006	0.0032	U	SW-846:6010B	

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NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Dissolved TAL Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
SWTA3-MW4 11-Feb-14	Aluminum	0.026	NE	0.1	0.026	U	SW-846:6010B
	Antimony	0.0001	0.006	0.0003	0.0001	U	SW-846:6020B
	Arsenic	0.0012	0.01	0.002	0.0006	J	SW-846:6020B
	Barium	0.055	2	0.002	0.0012		SW-846:6010B
	Beryllium	0.00028	0.004	0.001	0.00028	U	SW-846:6010B
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	37	NE	0.5	0.06		SW-846:6010B
	Chromium	0.00097	0.1	0.005	0.0006	J	SW-846:6010B
	Cobalt	0.0006	NE	0.002	0.0006	U	SW-846:6010B
	Copper	0.001	1.3	0.002	0.001	U	SW-846:6010B
	Iron	0.015	NE	0.06	0.015	U	SW-846:6010B
	Lead	0.00015	0.015	0.0005	0.00015	U	SW-846:6020B
	Magnesium	10	NE	0.5	0.06		SW-846:6010B
	Manganese	0.0003	NE	0.002	0.0003	U	SW-846:6010B
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Mercury (Total)	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.001	NE	0.005	0.001	U	SW-846:6010B
	Potassium	4.6	NE	0.5	0.2		SW-846:6010B
	Selenium	0.0012	0.05	0.001	0.0005		SW-846:6020B
	Silver	0.00003	NE	0.0001	0.00003	U	SW-846:6020B
	Sodium	54	NE	0.5	0.09		SW-846:6010B
	Thallium	0.00006	0.002	0.0002	0.00006	U	SW-846:6020B
Uranium-238	0.0021	0.03	0.0001	0.00003		SW-846:6020B	
Vanadium	0.0082	NE	0.005	0.0015		SW-846:6010B	
Zinc	0.0032	NE	0.006	0.0032	U	SW-846:6010B	

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U = the analyte was analyzed for but not detected

Table-2 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Anions, Cyanide and Nitrate-Nitrite

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
COYOTE SPRING 31-Jan-14	Bromide	2	NE	1	0.3		EPA:300
	Chloride	11	NE	0.2	0.06		EPA:300
	Cyanide (Total)	0.003	200	0.01	0.003	U	SW-846:9014
	Fluoride	1.9	4	0.5	0.15		EPA:300
	Nitrate-Nitrite as Nitrogen	0.54	10	0.01	0.003		EPA:353.2
	Sulfate	130	NE	5	1.5		EPA:300
MRN-3D 13-Feb-14	Bromide	0.06	NE	0.2	0.06	U	EPA:300
	Chloride	17	NE	0.2	0.06		EPA:300
	Cyanide (Total)	0.003	200	0.01	0.003	U	SW-846:9014
	Fluoride	0.46	4	0.1	0.03		EPA:300
	Nitrate-Nitrite as Nitrogen	2.3	10	0.05	0.015		EPA:353.2
	Sulfate	80	NE	1	0.3		EPA:300
SFR-2S 4-Feb-14	Bromide	0.64	NE	0.2	0.06		EPA:300
	Chloride	140	NE	2	0.6		EPA:300
	Cyanide (Total)	0.003	200	0.01	0.003	U	SW-846:9014
	Fluoride	1.8	4	0.1	0.03		EPA:300
	Nitrate-Nitrite as Nitrogen	1	10	0.01	0.003		EPA:353.2
	Sulfate	78	NE	1	0.3		EPA:300
SFR-2S 4-Feb-14 DUP	Bromide	0.63	NE	0.2	0.06		EPA:300
	Chloride	140	NE	2	0.6		EPA:300
	Cyanide (Total)	0.003	200	0.01	0.003	U	SW-846:9014
	Fluoride	1.8	4	0.1	0.03		EPA:300
	Nitrate-Nitrite as Nitrogen	0.99	10	0.01	0.003		EPA:353.2
	Sulfate	77	NE	1	0.3		EPA:300
SWTA3-MW3 10-Feb-14	Bromide	0.06	NE	0.2	0.06	U	EPA:300
	Chloride	16	NE	0.2	0.06		EPA:300
	Cyanide (Total)	0.003	200	0.01	0.003	U	SW-846:9014
	Fluoride	1.3	4	0.1	0.03		EPA:300
	Nitrate-Nitrite as Nitrogen	0.6	10	0.01	0.003		EPA:353.2
	Sulfate	70	NE	1	0.3		EPA:300
SWTA3-MW4 11-Feb-14	Bromide	0.06	NE	0.2	0.06	U	EPA:300
	Chloride	20	NE	0.2	0.06		EPA:300
	Cyanide (Total)	0.003	200	0.01	0.003	U	SW-846:9014
	Fluoride	1.8	4	0.1	0.03		EPA:300
	Nitrate-Nitrite as Nitrogen	1	10	0.01	0.003		EPA:353.2
	Sulfate	55	NE	1	0.3		EPA:300

NE = Not Established

U = the analyte was analyzed for but not detected

Table-3 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: High Explosive Compounds

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
MRN-3D 13-Feb-14	1,3,5-trinitrobenzene	0.021	0.12	0.021	U	SW-846:8321A
	1,3-Dinitrobenzene	0.017	0.12	0.017	U	SW-846:8321A
	2,4,6-Trinitrotoluene	0.027	0.12	0.027	U	SW-846:8321A
	2,4-Dinitrotoluene	0.023	0.12	0.023	U	SW-846:8321A
	2,6-Dinitrotoluene	0.027	0.12	0.027	U	SW-846:8321A
	2-Amino-4,6-dinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	4-Amino-2,6-dinitrotoluene	0.023	0.12	0.023	U	SW-846:8321A
	HMX	0.023	0.12	0.023	U	SW-846:8321A
	m-Nitrotoluene	0.03	0.12	0.03	U	SW-846:8321A
	Nitrobenzene	0.04	0.12	0.04	U	SW-846:8321A
	Nitroglycerin	0.055	0.17	0.055	U	SW-846:8321A
	o-Nitrotoluene	0.027	0.12	0.027	U	SW-846:8321A
	PETN	0.022	0.12	0.022	U	SW-846:8321A
	p-Nitrotoluene	0.032	0.12	0.032	U	SW-846:8321A
	RDX	0.026	0.12	0.026	U	SW-846:8321A
Tetryl	0.026	0.12	0.026	U	SW-846:8321A	
SFR-2S 4-Feb-14	1,3,5-trinitrobenzene	0.02	0.12	0.02	U	SW-846:8321A
	1,3-Dinitrobenzene	0.017	0.12	0.017	U	SW-846:8321A
	2,4,6-Trinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2,4-Dinitrotoluene	0.023	0.12	0.023	U	SW-846:8321A
	2,6-Dinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2-Amino-4,6-dinitrotoluene	0.025	0.12	0.025	U	SW-846:8321A
	4-Amino-2,6-dinitrotoluene	0.023	0.12	0.023	U	SW-846:8321A
	HMX	0.023	0.12	0.023	U	SW-846:8321A
	m-Nitrotoluene	0.03	0.12	0.03	U	SW-846:8321A
	Nitrobenzene	0.04	0.12	0.04	U	SW-846:8321A
	Nitroglycerin	0.054	0.17	0.054	U	SW-846:8321A
	o-Nitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	PETN	0.022	0.12	0.022	U	SW-846:8321A
	p-Nitrotoluene	0.031	0.12	0.031	U	SW-846:8321A
	RDX	0.025	0.12	0.025	U	SW-846:8321A
Tetryl	0.025	0.12	0.025	U	SW-846:8321A	

U = Analyte not detected at or above the reporting limit or MDL

Table-3 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: High Explosive Compounds

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
SFR-2S 4-Feb-14 DUP	1,3,5-trinitrobenzene	0.02	0.12	0.02	U	SW-846:8321A
	1,3-Dinitrobenzene	0.016	0.12	0.016	U	SW-846:8321A
	2,4,6-Trinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2,4-Dinitrotoluene	0.022	0.12	0.022	U	SW-846:8321A
	2,6-Dinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2-Amino-4,6-dinitrotoluene	0.024	0.12	0.024	U	SW-846:8321A
	4-Amino-2,6-dinitrotoluene	0.022	0.12	0.022	U	SW-846:8321A
	HMX	0.022	0.12	0.022	U	SW-846:8321A
	m-Nitrotoluene	0.029	0.12	0.029	U	SW-846:8321A
	Nitrobenzene	0.038	0.12	0.038	U	SW-846:8321A
	Nitroglycerin	0.052	0.16	0.052	U	SW-846:8321A
	o-Nitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	PETN	0.021	0.12	0.021	U	SW-846:8321A
	p-Nitrotoluene	0.03	0.12	0.03	U	SW-846:8321A
	RDX	0.024	0.12	0.024	U	SW-846:8321A
Tetryl	0.024	0.12	0.024	U	SW-846:8321A	
SWTA3-MW3 10-Feb-14	1,3,5-trinitrobenzene	0.02	0.12	0.02	U	SW-846:8321A
	1,3-Dinitrobenzene	0.016	0.12	0.016	U	SW-846:8321A
	2,4,6-Trinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2,4-Dinitrotoluene	0.022	0.12	0.022	U	SW-846:8321A
	2,6-Dinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2-Amino-4,6-dinitrotoluene	0.024	0.12	0.024	U	SW-846:8321A
	4-Amino-2,6-dinitrotoluene	0.022	0.12	0.022	U	SW-846:8321A
	HMX	0.022	0.12	0.022	U	SW-846:8321A
	m-Nitrotoluene	0.029	0.12	0.029	U	SW-846:8321A
	Nitrobenzene	0.038	0.12	0.038	U	SW-846:8321A
	Nitroglycerin	0.052	0.16	0.052	U	SW-846:8321A
	o-Nitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	PETN	0.021	0.12	0.021	U	SW-846:8321A
	p-Nitrotoluene	0.03	0.12	0.03	U	SW-846:8321A
	RDX	0.024	0.12	0.024	U	SW-846:8321A
Tetryl	0.024	0.12	0.024	U	SW-846:8321A	

U = Analyte not detected at or above the reporting limit or MDL

Table-3 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: High Explosive Compounds

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
SWTA3-MW4 11-Feb-14	1,3,5-trinitrobenzene	0.02	0.12	0.02	U	SW-846:8321A
	1,3-Dinitrobenzene	0.017	0.12	0.017	U	SW-846:8321A
	2,4,6-Trinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2,4-Dinitrotoluene	0.022	0.12	0.022	U	SW-846:8321A
	2,6-Dinitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	2-Amino-4,6-dinitrotoluene	0.025	0.12	0.025	U	SW-846:8321A
	4-Amino-2,6-dinitrotoluene	0.022	0.12	0.022	U	SW-846:8321A
	HMX	0.022	0.12	0.022	U	SW-846:8321A
	m-Nitrotoluene	0.029	0.12	0.029	U	SW-846:8321A
	Nitrobenzene	0.039	0.12	0.039	U	SW-846:8321A
	Nitroglycerin	0.053	0.17	0.053	U	SW-846:8321A
	o-Nitrotoluene	0.026	0.12	0.026	U	SW-846:8321A
	PETN	0.021	0.12	0.021	U	SW-846:8321A
	p-Nitrotoluene	0.031	0.12	0.031	U	SW-846:8321A
	RDX	0.025	0.12	0.025	U	SW-846:8321A
Tetryl	0.025	0.12	0.025	U	SW-846:8321A	

U = Analyte not detected at or above the reporting limit or MDL

Table-4 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds (EPA Method SW-846:8260B)

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-]	0.6
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-]	0.3
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	0.34
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	0.21
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	0.6
Vinyl Chloride	0.3
Xylene[1,2-]	0.3
Xylene[1,3-]+Xylene[1,4-]	0.3

Table-5 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta, Isotopic Uranium, Radium 226 and Radium 228

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)		MDA (pCi/L)	Laboratory Qualifier	Analytical Method
COYOTE SPRING 31-Jan-14	Actinium-228	13	± 5.8	19	U	EPA:901.1
	Americium-241	-12	± 13	44	U	EPA:901.1
	Beryllium-7	-9.2	± 12	42	U	EPA:901.1
	Bismuth-212	12	± 53	180	U	EPA:901.1
	Bismuth-214	9	± 6.6	22	UJ	EPA:901.1
	Cesium-134	-1.9	± 1.4	5	U	EPA:901.1
	Cesium-137	0.3	± 1.4	4.7	U	EPA:901.1
	Cobalt-60	0.96	± 1.4	4.9	U	EPA:901.1
	Gross alpha	-2.5	± 3.6	13	U	EPA:900
	Gross beta	20	± 7.1	22	U	EPA:900
	Iodine-131	-0.37	± 3.3	11	U	EPA:901.1
	Lead-212	0.39	± 3	10	U	EPA:901.1
	Lead-214	-0.87	± 6.4	21	UJ	EPA:901.1
	Potassium-40	1.9	± 46	150	U	EPA:901.1
	Protactinium-234m	150	± 220	750	U	EPA:901.1
	Radium-226	0.27	± 0.068	0.035		EPA 903.1
	Radium-228	0.65	± 0.14	0.46		Ra228
	Sodium-22	-1.3	± 1.4	5.1	U	EPA:901.1
	Thallium-208	3.7	± 1.4	4.6	U	EPA:901.1
	Thorium-234	-7.2	± 43	140	U	EPA:901.1
Uranium-234	10	± 1.1	0.074		HASL-300:ISOU	
Uranium-235	0.26	± 0.094	0.087		HASL-300:ISOU	
Uranium-238	2.3	± 0.34	0.18		HASL-300:ISOU	

J = the activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta, Isotopic Uranium, Radium 226 and Radium 228

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
MRN-3D 13-Feb-14	Actinium-228	-1.2 ± 10	34	U	EPA:901.1
	Americium-241	-1.6 ± 11	38	U	EPA:901.1
	Beryllium-7	3.4 ± 11	37	U	EPA:901.1
	Bismuth-212	20 ± 19	64	U	EPA:901.1
	Bismuth-214	2.6 ± 6.1	20	UJ	EPA:901.1
	Cesium-134	-3.9 ± 1.4	4.9	U	EPA:901.1
	Cesium-137	0.55 ± 1.4	4.6	U	EPA:901.1
	Cobalt-60	0.83 ± 1.6	5.5	U	EPA:901.1
	Gross alpha	3 ± 0.55	1.4		EPA:900
	Gross beta	3.3 ± 0.58	1.6		EPA:900
	Iodine-131	0.36 ± 2.3	7.7	U	EPA:901.1
	Lead-212	-0.39 ± 3.7	12	U	EPA:901.1
	Lead-214	-4.8 ± 5.1	17	UJ	EPA:901.1
	Potassium-40	4.9 ± 39	130	U	EPA:901.1
	Protactinium-234m	220 ± 230	750	U	EPA:901.1
	Radium-226	0.16 ± 0.081	0.087		EPA 903.1
	Radium-228	0.21 ± 0.11	0.46	U	Ra228
	Sodium-22	0.15 ± 1.4	4.7	U	EPA:901.1
	Thallium-208	3.7 ± 1.3	4.2	U	EPA:901.1
	Thorium-234	-23 ± 43	140	U	EPA:901.1
Uranium-234	3.1 ± 0.35	0.17		HASL-300:ISOU	
Uranium-235	0.036 ± 0.035	0.14	U	HASL-300:ISOU	
Uranium-238	1.2 ± 0.18	0.12		HASL-300:ISOU	

J = the activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta, Isotopic Uranium, Radium 226 and Radium 228

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)		MDA (pCi/L)	Laboratory Qualifier	Analytical Method
SFR-2S 4-Feb-14	Actinium-228	20	± 5.3	16		EPA:901.1
	Americium-241	-5.1	± 22	74	U	EPA:901.1
	Beryllium-7	9.8	± 11	36	U	EPA:901.1
	Bismuth-212	-5.5	± 19	65	U	EPA:901.1
	Bismuth-214	43	± 6.1	21	J	EPA:901.1
	Cesium-134	-1.5	± 1.5	5	U	EPA:901.1
	Cesium-137	-2.4	± 1.4	5	U	EPA:901.1
	Cobalt-60	2.5	± 1.6	5.4	U	EPA:901.1
	Gross alpha	18	± 1.7	1.6		EPA:900
	Gross beta	10	± 1.1	2.3		EPA:900
	Iodine-131	-5.3	± 2	6.9	U	EPA:901.1
	Lead-212	7	± 3.6	12	U	EPA:901.1
	Lead-214	32	± 5	19	J	EPA:901.1
	Potassium-40	24	± 39	130	U	EPA:901.1
	Protactinium-234m	360	± 240	770	U	EPA:901.1
	Radium-226	0.15	± 0.052	0.099		EPA 903.1
	Radium-228	0.34	± 0.12	0.48	U	Ra228
	Sodium-22	0.61	± 1.5	5.1	U	EPA:901.1
	Thallium-208	2.2	± 1.4	4.5	U	EPA:901.1
	Thorium-234	-3	± 48	160	U	EPA:901.1
Uranium-234	19	± 1.9	0.2		HASL-300:ISOU	
Uranium-235	0.27	± 0.1	0.19		HASL-300:ISOU	
Uranium-238	5.8	± 0.65	0.2		HASL-300:ISOU	

J = the activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta, Isotopic Uranium, Radium 226 and Radium 228

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)		MDA (pCi/L)	Laboratory Qualifier	Analytical Method
SFR-2S 4-Feb-14 DUP	Actinium-228	5.7	± 9.9	33	U	EPA:901.1
	Americium-241	19	± 31	100	U	EPA:901.1
	Beryllium-7	4	± 10	33	U	EPA:901.1
	Bismuth-212	21	± 17	57	U	EPA:901.1
	Bismuth-214	34	± 6.2	20	J	EPA:901.1
	Cesium-134	-2.4	± 1.4	4.7	U	EPA:901.1
	Cesium-137	-1.6	± 1.3	4.6	U	EPA:901.1
	Cobalt-60	-0.96	± 1.3	4.4	U	EPA:901.1
	Gross alpha	17	± 1.7	1.7		EPA:900
	Gross beta	8.7	± 1	2.3		EPA:900
	Iodine-131	-1.3	± 2	6.8	U	EPA:901.1
	Lead-212	5.9	± 4.2	14	U	EPA:901.1
	Lead-214	33	± 5.2	18	J	EPA:901.1
	Potassium-40	-11	± 35	120	U	EPA:901.1
	Protactinium-234m	-160	± 210	740	U	EPA:901.1
	Radium-226	0.18	± 0.054	0.037		EPA 903.1
	Radium-228	0.24	± 0.11	0.47	U	Ra228
	Sodium-22	2.2	± 1.2	4	U	EPA:901.1
	Thallium-208	0.22	± 2.7	8.9	U	EPA:901.1
	Thorium-234	-23	± 76	250	U	EPA:901.1
Uranium-234	20	± 1.8	0.11		HASL-300:ISOU	
Uranium-235	0.24	± 0.068	0.095		HASL-300:ISOU	
Uranium-238	5.2	± 0.53	0.11		HASL-300:ISOU	

J = the activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta, Isotopic Uranium, Radium 226 and Radium 228

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)		MDA (pCi/L)	Laboratory Qualifier	Analytical Method
SWTA3-MW3 10-Feb-14	Actinium-228	8.2	± 24	80	U	EPA:901.1
	Americium-241	-4.7	± 13	45	U	EPA:901.1
	Beryllium-7	-21	± 12	43	U	EPA:901.1
	Bismuth-212	32	± 20	67	U	EPA:901.1
	Bismuth-214	-1.3	± 6.6	22	UJ	EPA:901.1
	Cesium-134	-0.3	± 1.4	4.8	U	EPA:901.1
	Cesium-137	-1.5	± 1.4	4.8	U	EPA:901.1
	Cobalt-60	-1.6	± 1.3	4.8	U	EPA:901.1
	Gross alpha	2.9	± 0.44	1		EPA:900
	Gross beta	5.6	± 0.66	1.5		EPA:900
	Iodine-131	-2.4	± 3.5	12	U	EPA:901.1
	Lead-212	-0.26	± 3.7	12	U	EPA:901.1
	Lead-214	2	± 3	10	UJ	EPA:901.1
	Potassium-40	-38	± 47	160	U	EPA:901.1
	Protactinium-234m	310	± 240	780	U	EPA:901.1
	Radium-226	0.15	± 0.09	0.27	U	EPA 903.1
	Radium-228	-0.042	± 0.12	0.58	U	Ra228
	Sodium-22	1.2	± 1.4	4.7	U	EPA:901.1
	Thallium-208	4.7	± 1.5	4.6		EPA:901.1
	Thorium-234	51	± 20	63	U	EPA:901.1
Uranium-234	2.4	± 0.25	0.054		HASL-300:ISOU	
Uranium-235	0.073	± 0.032	0.077	U	HASL-300:ISOU	
Uranium-238	0.8	± 0.11	0.027		HASL-300:ISOU	

J = the activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE OB FFY 2014 Q-2 LTS GMP Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta, Isotopic Uranium, Radium 226 and Radium 228

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)		MDA (pCi/L)	Laboratory Qualifier	Analytical Method
SWTA3-MW4 11-Feb-14	Actinium-228	8.9	± 5	19	U	EPA:901.1
	Americium-241	11	± 31	100	U	EPA:901.1
	Beryllium-7	5.8	± 11	36	U	EPA:901.1
	Bismuth-212	41	± 18	56	U	EPA:901.1
	Bismuth-214	-2.6	± 6.7	22	UJ	EPA:901.1
	Cesium-134	0.2	± 2	6.8	U	EPA:901.1
	Cesium-137	-0.12	± 1.3	4.4	U	EPA:901.1
	Cobalt-60	-0.48	± 1.2	4.3	U	EPA:901.1
	Gross alpha	3.9	± 0.5	0.93		EPA:900
	Gross beta	4.1	± 0.59	1.5		EPA:900
	Iodine-131	-1.3	± 2.6	8.7	U	EPA:901.1
	Lead-212	-0.29	± 3.9	13	U	EPA:901.1
	Lead-214	-14	± 6.3	21	UJ	EPA:901.1
	Potassium-40	12	± 34	110	U	EPA:901.1
	Protactinium-234m	440	± 180	580	U	EPA:901.1
	Radium-226	0.08	± 0.071	0.25	U	EPA 903.1
	Radium-228	0.1	± 0.12	0.54	U	Ra228
	Sodium-22	1.5	± 1.2	4.1	U	EPA:901.1
	Thallium-208	3.2	± 1.3	4.1	U	EPA:901.1
	Thorium-234	-63	± 66	220	U	EPA:901.1
Uranium-234	2	± 0.21	0.026		HASL-300:ISOU	
Uranium-235	0.041	± 0.023	0.062	U	HASL-300:ISOU	
Uranium-238	0.82	± 0.11	0.053		HASL-300:ISOU	

J = the activity is an estimated value.

U = Result is less than the sample specific MDC or less than the associated TPU.