

DOE Oversight Bureau, New Mexico Environment Department

**Groundwater Monitoring at
Sandia National Laboratories/New Mexico
Burn Site**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2014 Q-3**

**Prepared by Chris Armijo, Geoscientist
Sandia Oversight Section
P.O. Box 5400 MS 1396
Albuquerque, NM 87185-5400
(505) 845-5823
chris.armijo1@state.nm.us**

Final Report

2/20/2015

The purpose of this communication is to transmit groundwater data collected by New Mexico Environment Department DOE Oversight Bureau from Burn Site Groundwater monitoring wells during the third quarter of federal fiscal year (FFY) 2014.

Acknowledgment:

This material is based upon work supported by the Department of Energy Office of Environmental Management under Award Number *DE-EM0002420*.

Disclaimer:

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Introduction

The New Mexico Environment Department (NMED) DOE Oversight Bureau has compiled and assessed groundwater data collected during June 2014. The Oversight Bureau collected groundwater samples from Burn Site Groundwater monitoring wells CYN-MW4, CYN-MW7, CYN-MW8, CYN-MW9, CYN-MW10, CYN-MW11, CYN-MW12, and CYN-MW13. Split samples were collected using standard Sandia sampling procedures and equipment. The samples were submitted to an independent analytical laboratory, where they were analyzed for total target analyte list (TAL) metals plus uranium, anions, nitrate-nitrite, gamma-emitting isotopes, gross alpha and beta, and tritium. Nitrate-nitrite levels exceeded the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) of 10 mg/L at monitoring wells CYN-MW9, CYN-MW12, and CYN-MW13.

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 target analyte list (TAL) metals are presented in Table-1. Samples were analyzed for total TAL metals plus uranium. All metal concentrations were detected below established EPA MCLs.

Analytical results for anions (bromide, chloride, fluoride, and sulfate) and nitrate-nitrite are presented in Table-2. No anions were detected above established EPA MCLs. Nitrate concentrations were detected above the EPA MCL of 10 mg/L at monitoring wells CYN-MW9 (35 mg/L), CYN-MW12 (12 mg/L) and CYN-MW13 (33 mg/L).

Analytical results for radionuclides are listed in Table-3. Samples were analyzed for gross alpha, gross beta, gamma-emitting isotopes, and tritium. No isotopes were detected above EPA MCLs. Gross alpha ranged from 4.7 pCi/L at CYN-MW11, to 29 pCi/L at CYN-MW4. The EPA MCL for gross alpha is 15 pCi/L, excluding all uranium. No samples were analyzed for isotopic uranium.

Conclusions

Groundwater samples were collected from Burn Site Groundwater monitoring wells CYN-MW4, CYN-MW7, CYN-MW8, CYN-MW9, CYN-MW10, CYN-MW11, CYN-MW12, and CYN-MW13. Elevated levels of nitrates were detected above the EPA MCL at monitoring wells CYN-MW9, CYN-MW12 and CYN-MW13. Nitrate concentrations were 35 mg/L, 12 mg/L and 33 mg/L, respectively. Nitrate levels at these wells have historically exceeded the EPA MCL.

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW4 16-Jun-14	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00024	0.006	0.0003	0.00017	J	SW-846:6020B
	Arsenic	0.00098	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.047	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00038	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	75	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00065	0.1	0.005	0.00062	J	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.71	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	33	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.0031	NE	0.002	0.00017	B	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0023	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	7.1	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.016	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	43	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.00015	0.002	0.0002	0.000042	JB	SW-846:6020B	
Uranium-238	0.013	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.0007	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.0054	NE	0.006	0.0011	J	SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW7 17-Jun-14	Aluminum	0.025	NE	0.1	0.018	J	SW-846:6010B_3005A
	Antimony	0.00021	0.006	0.0003	0.00017	J	SW-846:6020B
	Arsenic	0.00087	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.11	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00035	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	110	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.028	NE	0.06	0.0057	J	SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	20	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.00017	NE	0.002	0.00017	U	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0026	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	2.9	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.0045	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	39	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.00011	0.002	0.0002	0.000042	JB	SW-846:6020B	
Uranium-238	0.0068	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.0031	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.011	NE	0.006	0.0011		SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW8 18-Jun-14	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00017	0.006	0.0003	0.00017	U	SW-846:6020B
	Arsenic	0.0009	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.059	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00033	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.0003	0.005	0.0003	0.00012	J	SW-846:6020B
	Calcium	120	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.067	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	23	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.0025	NE	0.002	0.00017	B	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0039	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	2.7	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.0069	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	43	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.00006	0.002	0.0002	0.000042	JB	SW-846:6020B	
Uranium-238	0.0082	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.0032	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.0074	NE	0.006	0.0011		SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW9 26-Jun-14	Aluminum	0.029	NE	0.1	0.018	J	SW-846:6010B_3005A
	Antimony	0.00017	0.006	0.0003	0.00017	U	SW-846:6020B
	Arsenic	0.00053	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.059	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00036	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	140	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.11	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	38	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.00017	NE	0.002	0.00017	U	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0031	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	2.7	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.0052	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	40	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.000042	0.002	0.0002	0.000042	U	SW-846:6020B	
Uranium-238	0.0063	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.0022	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.0038	NE	0.006	0.0011	J	SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW10 20-Jun-14	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00017	0.006	0.0003	0.00017	U	SW-846:6020B
	Arsenic	0.00065	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.056	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00041	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	120	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.38	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	30	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.00044	NE	0.002	0.00017	JB	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0024	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	2.1	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.007	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	35	NE	0.5	0.012	B	SW-846:6010B_3005A
	Thallium	0.000042	0.002	0.0002	0.000042	U	SW-846:6020B
Uranium-238	0.0055	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.0025	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.003	NE	0.006	0.0011	J	SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW11 23-Jun-14	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00052	0.006	0.0003	0.00017		SW-846:6020B
	Arsenic	0.00048	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.081	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.0004	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00012	0.005	0.0003	0.00012	U	SW-846:6020B
	Calcium	140	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.59	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	39	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.25	NE	0.002	0.00017	B	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0032	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	3.7	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.004	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	38	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.00007	0.002	0.0002	0.000042	JB	SW-846:6020B	
Uranium-238	0.0052	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.00071	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.023	NE	0.006	0.0011		SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW12 24-Jun-14	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00017	0.006	0.0003	0.00017	U	SW-846:6020B
	Arsenic	0.00027	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.035	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00032	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00025	0.005	0.0003	0.00012	J	SW-846:6020B
	Calcium	150	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00078	0.1	0.005	0.00062	J	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.13	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	39	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.033	NE	0.002	0.00017	B	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0026	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	3.2	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.0072	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	40	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.00007	0.002	0.0002	0.000042	JB	SW-846:6020B	
Uranium-238	0.0082	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.0013	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.012	NE	0.006	0.0011		SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW12 24-Jun-14 DUP	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00017	0.006	0.0003	0.00017	U	SW-846:6020B
	Arsenic	0.00032	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.035	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00033	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00035	0.005	0.0003	0.00012		SW-846:6020B
	Calcium	150	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.05	NE	0.06	0.0057	J	SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	39	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.026	NE	0.002	0.00017	B	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.002	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	3.2	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.0072	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	40	NE	0.5	0.012	B	SW-846:6010B_3005A
Thallium	0.00005	0.002	0.0002	0.000042	JB	SW-846:6020B	
Uranium-238	0.0083	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.00076	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.014	NE	0.006	0.0011		SW-846:6010B_3005A	

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

Table-1 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Total Target Analyte List Metals plus Uranium

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Reporting Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
CYN-MW13 25-Jun-14	Aluminum	0.018	NE	0.1	0.018	U	SW-846:6010B_3005A
	Antimony	0.00017	0.006	0.0003	0.00017	U	SW-846:6020B
	Arsenic	0.00053	0.01	0.002	0.00025	J	SW-846:6020B
	Barium	0.11	2	0.002	0.00022	B	SW-846:6010B_3005A
	Beryllium	0.00028	0.004	0.001	0.00018	J	SW-846:6010B_3005A
	Cadmium	0.00017	0.005	0.0003	0.00012	J	SW-846:6020B
	Calcium	110	NE	0.5	0.014		SW-846:6010B_3005A
	Chromium	0.00062	0.1	0.005	0.00062	U	SW-846:6010B_3005A
	Cobalt	0.00057	NE	0.002	0.00057	U	SW-846:6010B_3005A
	Copper	0.0011	NE	0.002	0.0011	U	SW-846:6010B_3005A
	Iron	0.073	NE	0.06	0.0057		SW-846:6010B_3005A
	Lead	0.00025	NE	0.0005	0.00025	U	SW-846:6020B
	Magnesium	20	NE	0.5	0.015		SW-846:6010B_3005A
	Manganese	0.023	NE	0.002	0.00017	B	SW-846:6010B_3005A
	Mercury	0.00006	0.002	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0014	NE	0.005	0.0012	JB	SW-846:6010B_3005A
	Potassium	2.5	NE	0.5	0.12		SW-846:6010B_3005A
	Selenium	0.0016	0.05	0.001	0.00054		SW-846:6020B
	Silver	0.00004	NE	0.0001	0.00004	U	SW-846:6020B
	Sodium	24	NE	0.5	0.012	B	SW-846:6010B_3005A
	Thallium	0.00008	0.002	0.0002	0.000042	JB	SW-846:6020B
Uranium-238	0.0056	0.03	0.0001	0.000088		SW-846:6020B	
Vanadium	0.002	NE	0.005	0.00062	J	SW-846:6010B_3005A	
Zinc	0.019	NE	0.006	0.0011		SW-846:6010B_3005A	

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Anions 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
CYN-MW4 16-Jun-14	Bromide	0.37	NE	0.2	0.06		EPA:300.0
	Chloride	27	NE	2	0.62		EPA:300.0
	Fluoride	0.84	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	0.13	10	0.01	0.003		EPA:353.2
	Sulfate	130	NE	10	3		EPA:300.0
CYN-MW7 17-Jun-14	Bromide	0.61	NE	0.2	0.06		EPA:300.0
	Chloride	46	NE	2	0.62		EPA:300.0
	Fluoride	1.4	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	2	10	0.02	0.006		EPA:353.2
	Sulfate	90	NE	1	0.3		EPA:300.0
CYN-MW8 18-Jun-14	Bromide	0.76	NE	0.2	0.06		EPA:300.0
	Chloride	64	NE	2	0.62		EPA:300.0
	Fluoride	1.5	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	4.3	10	0.05	0.015		EPA:353.2
	Sulfate	120	NE	10	3		EPA:300.0
CYN-MW9 26-Jun-14	Bromide	0.71	NE	0.2	0.06		EPA:300.0
	Chloride	58	NE	2	0.62		EPA:300.0
	Fluoride	0.66	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	35	10	0.2	0.06		EPA:353.2
	Sulfate	140	NE	10	3		EPA:300.0
CYN-MW10 20-Jun-14	Bromide	0.65	NE	0.2	0.06		EPA:300.0
	Chloride	50	NE	2	0.62		EPA:300.0
	Fluoride	0.72	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	3.5	10	0.05	0.015		EPA:353.2
	Sulfate	160	NE	10	3		EPA:300.0
CYN-MW11 23-Jun-14	Bromide	1	NE	0.2	0.06		EPA:300.0
	Chloride	87	NE	2	0.62		EPA:300.0
	Fluoride	0.8	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	7	10	0.1	0.03		EPA:353.2
	Sulfate	170	NE	10	3		EPA:300.0
CYN-MW12 24-Jun-14	Bromide	0.92	NE	0.2	0.06		EPA:300.0
	Chloride	91	NE	2	0.62		EPA:300.0
	Fluoride	1.2	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	12	10	0.2	0.06		EPA:353.2
	Sulfate	210	NE	10	3		EPA:300.0

NE = Not Established

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Anions 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
CYN-MW12 24-Jun-14 DUP	Bromide	0.92	NE	0.2	0.06		EPA:300.0
	Chloride	91	NE	2	0.62		EPA:300.0
	Fluoride	1.2	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	12	10	0.2	0.06		EPA:353.2
	Sulfate	210	NE	10	3		EPA:300.0
CYN-MW13 25-Jun-14	Bromide	0.3	NE	0.2	0.06		EPA:300.0
	Chloride	20	NE	2	0.62		EPA:300.0
	Fluoride	1.8	4	0.1	0.03		EPA:300.0
	Nitrate-Nitrite as Nitrogen	33	10	0.2	0.06		EPA:353.2
	Sulfate	80	NE	1	0.3		EPA:300.0

NE = Not Established

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW4 16-Jun-14	Actinium-228	12 ± 4.9	18	U	EPA:901.1
	Americium-241	-15 ± 13	45	U	EPA:901.1
	Beryllium-7	26 ± 18	58	U	EPA:901.1
	Bismuth-212	23 ± 22	73	U	EPA:901.1
	Bismuth-214	7 ± 3.1	10	UJ	EPA:901.1
	Cesium-134	-1.6 ± 1.5	5.1	U	EPA:901.1
	Cesium-137	-0.24 ± 1.4	4.8	U	EPA:901.1
	Cobalt-60	1.2 ± 1.4	4.7	U	EPA:901.1
	Gross alpha	29 ± 2.5	1.3		EPA:900
	Gross beta	9.4 ± 0.91	1.5		EPA:900
	Iodine-131	36 ± 36	120	U	EPA:901.1
	Lead-212	8.2 ± 2.2	7		EPA:901.1
	Lead-214	4.8 ± 2.9	9.6	UJ	EPA:901.1
	Potassium-40	-2.2 ± 50	170	U	EPA:901.1
	Protactinium-234m	110 ± 240	800	U	EPA:901.1
	Sodium-22	2.4 ± 1.5	4.8	U	EPA:901.1
	Thallium-208	5.1 ± 1.5	4.7		EPA:901.1
	Thorium-234	85 ± 21	64		EPA:901.1
Tritium	-150 ± 95	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW7 17-Jun-14	Actinium-228	-0.096 ± 10	35	U	EPA:901.1
	Americium-241	4 ± 31	100	U	EPA:901.1
	Beryllium-7	11 ± 15	51	U	EPA:901.1
	Bismuth-212	30 ± 18	58	U	EPA:901.1
	Bismuth-214	1.5 ± 6.3	21	UJ	EPA:901.1
	Cesium-134	-3.5 ± 1.4	4.9	U	EPA:901.1
	Cesium-137	-2.1 ± 1.3	4.6	U	EPA:901.1
	Cobalt-60	-2.9 ± 1.3	4.7	U	EPA:901.1
	Gross alpha	14 ± 1.3	1.1		EPA:900
	Gross beta	4.3 ± 0.52	1.2		EPA:900
	Iodine-131	-23 ± 27	92	U	EPA:901.1
	Lead-212	-0.91 ± 4.3	14	U	EPA:901.1
	Lead-214	-0.035 ± 5.2	17	UJ	EPA:901.1
	Potassium-40	3.2 ± 38	130	U	EPA:901.1
	Protactinium-234m	-280 ± 380	1300	U	EPA:901.1
	Sodium-22	-1 ± 1.3	4.6	U	EPA:901.1
	Thallium-208	4.7 ± 2.4	7.7	U	EPA:901.1
	Thorium-234	-9.8 ± 61	200	U	EPA:901.1
Tritium	-66 ± 95	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW8 18-Jun-14	Actinium-228	12 ± 5.6	20	U	EPA:901.1
	Americium-241	-4.7 ± 7.5	25	U	EPA:901.1
	Beryllium-7	7.8 ± 15	51	U	EPA:901.1
	Bismuth-212	1.5 ± 20	67	U	EPA:901.1
	Bismuth-214	10 ± 3.1	9.8	J	EPA:901.1
	Cesium-134	-5.7 ± 1.5	5.2	U	EPA:901.1
	Cesium-137	-0.15 ± 1.4	4.8	U	EPA:901.1
	Cobalt-60	-1.3 ± 1.7	6.1	U	EPA:901.1
	Gross alpha	20 ± 1.8	1.4		EPA:900
	Gross beta	6.1 ± 0.68	1.5		EPA:900
	Iodine-131	3.3 ± 21	72	U	EPA:901.1
	Lead-212	-2 ± 4.1	14	U	EPA:901.1
	Lead-214	12 ± 2.6	8.1	J	EPA:901.1
	Potassium-40	110 ± 40	130	U	EPA:901.1
	Protactinium-234m	44 ± 250	850	U	EPA:901.1
	Sodium-22	2.5 ± 1.7	5.4	U	EPA:901.1
	Thallium-208	3.3 ± 1.5	4.9	U	EPA:901.1
	Thorium-234	-4.7 ± 40	130	U	EPA:901.1
Tritium	-41 ± 96	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW9 26-Jun-14	Actinium-228	14 ± 5	16	U	EPA:901.1
	Americium-241	-6.4 ± 6.5	22	U	EPA:901.1
	Beryllium-7	-5.2 ± 12	40	U	EPA:901.1
	Bismuth-212	23 ± 18	60	U	EPA:901.1
	Bismuth-214	-1.6 ± 5.3	18	UJ	EPA:901.1
	Cesium-134	-1.3 ± 1.3	4.4	U	EPA:901.1
	Cesium-137	-1 ± 1.3	4.5	U	EPA:901.1
	Cobalt-60	-1.2 ± 1.3	4.8	U	EPA:901.1
	Gross alpha	5.2 ± 0.69	1.4		EPA:900
	Gross beta	3.6 ± 0.53	1.4		EPA:900
	Iodine-131	-0.89 ± 13	43	U	EPA:901.1
	Lead-212	1.7 ± 3.8	12	U	EPA:901.1
	Lead-214	-2.5 ± 5	17	UJ	EPA:901.1
	Potassium-40	7.1 ± 32	110	U	EPA:901.1
	Protactinium-234m	110 ± 220	730	U	EPA:901.1
	Sodium-22	-0.16 ± 1.3	4.5	U	EPA:901.1
	Thallium-208	1.1 ± 2.7	9.1	U	EPA:901.1
	Thorium-234	34 ± 33	110	U	EPA:901.1
Tritium	-99 ± 95	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW10 20-Jun-14	Actinium-228	12 ± 9.7	40	U	EPA:901.1
	Americium-241	5 ± 7.5	25	U	EPA:901.1
	Beryllium-7	-20 ± 17	58	U	EPA:901.1
	Bismuth-212	26 ± 24	78	U	EPA:901.1
	Bismuth-214	2.6 ± 7.4	25	UJ	EPA:901.1
	Cesium-134	-2.2 ± 1.6	5.8	U	EPA:901.1
	Cesium-137	1.7 ± 1.7	5.8	U	EPA:901.1
	Cobalt-60	0.11 ± 2.1	7.1	U	EPA:901.1
	Gross alpha	5.2 ± 0.67	1.2		EPA:900
	Gross beta	2.8 ± 0.64	1.9		EPA:900
	Iodine-131	-4.9 ± 24	82	U	EPA:901.1
	Lead-212	3.7 ± 3.4	11	U	EPA:901.1
	Lead-214	-0.59 ± 6.5	21	UJ	EPA:901.1
	Potassium-40	-19 ± 51	170	U	EPA:901.1
	Protactinium-234m	370 ± 280	930	U	EPA:901.1
	Sodium-22	1.9 ± 2	6.6	U	EPA:901.1
	Thallium-208	5.9 ± 1.7	5.3		EPA:901.1
	Thorium-234	-13 ± 45	150	U	EPA:901.1
Tritium	-93 ± 95	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW11 23-Jun-14	Actinium-228	9.9 ± 6.5	28	U	EPA:901.1
	Americium-241	-120 ± 41	140	U	EPA:901.1
	Beryllium-7	-7.3 ± 13	43	U	EPA:901.1
	Bismuth-212	30 ± 17	55	U	EPA:901.1
	Bismuth-214	10 ± 4.5	19	UJ	EPA:901.1
	Cesium-134	-2.4 ± 1.2	4.2	U	EPA:901.1
	Cesium-137	-0.59 ± 1.2	4	U	EPA:901.1
	Cobalt-60	-0.92 ± 1.2	4.1	U	EPA:901.1
	Gross alpha	4.7 ± 0.67	1.4		EPA:900
	Gross beta	5.4 ± 0.74	1.9		EPA:900
	Iodine-131	-8.4 ± 15	51	U	EPA:901.1
	Lead-212	-1.4 ± 3.9	13	U	EPA:901.1
	Lead-214	-10 ± 6.6	22	UJ	EPA:901.1
	Potassium-40	18 ± 39	130	U	EPA:901.1
	Protactinium-234m	-81 ± 190	670	U	EPA:901.1
	Sodium-22	0.89 ± 1.2	4.1	U	EPA:901.1
	Thallium-208	0.82 ± 2.6	8.6	U	EPA:901.1
	Thorium-234	-36 ± 58	190	U	EPA:901.1
Tritium	-150 ± 94	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW12 24-Jun-14	Actinium-228	15 ± 4.4	19	U	EPA:901.1
	Americium-241	4 ± 7.7	26	U	EPA:901.1
	Beryllium-7	6 ± 14	48	U	EPA:901.1
	Bismuth-212	17 ± 20	67	U	EPA:901.1
	Bismuth-214	16 ± 3.1	9.2	J	EPA:901.1
	Cesium-134	-3.9 ± 1.4	5	U	EPA:901.1
	Cesium-137	1.4 ± 1.5	4.9	U	EPA:901.1
	Cobalt-60	-0.8 ± 1.7	5.9	U	EPA:901.1
	Gross alpha	12 ± 1.3	1.8		EPA:900
	Gross beta	4.8 ± 0.68	1.8		EPA:900
	Iodine-131	13 ± 15	51	U	EPA:901.1
	Lead-212	3.1 ± 4	13	U	EPA:901.1
	Lead-214	7.9 ± 2.6	8.3	UJ	EPA:901.1
	Potassium-40	33 ± 42	140	U	EPA:901.1
	Protactinium-234m	250 ± 250	840	U	EPA:901.1
	Sodium-22	-2.8 ± 1.7	6	U	EPA:901.1
	Thallium-208	-1.3 ± 2.6	8.7	U	EPA:901.1
	Thorium-234	4.1 ± 34	120	U	EPA:901.1
Tritium	-230 ± 94	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW12 24-Jun-14 DUP	Actinium-228	16 ± 4	15		EPA:901.1
	Americium-241	0.6 ± 7.7	26	U	EPA:901.1
	Beryllium-7	5.2 ± 13	44	U	EPA:901.1
	Bismuth-212	-9.6 ± 18	61	U	EPA:901.1
	Bismuth-214	4.5 ± 6.1	20	UJ	EPA:901.1
	Cesium-134	0.096 ± 2	6.7	U	EPA:901.1
	Cesium-137	1.1 ± 1.2	4.1	U	EPA:901.1
	Cobalt-60	0.49 ± 1.4	4.9	U	EPA:901.1
	Gross alpha	9.5 ± 1.2	2.3		EPA:900
	Gross beta	5.9 ± 0.83	2.1		EPA:900
	Iodine-131	32 ± 14	45	U	EPA:901.1
	Lead-212	-0.33 ± 3.4	11	U	EPA:901.1
	Lead-214	-8.6 ± 4.8	16	UJ	EPA:901.1
	Potassium-40	1.3 ± 39	130	U	EPA:901.1
	Protactinium-234m	410 ± 170	550	U	EPA:901.1
	Sodium-22	-0.56 ± 1.4	5	U	EPA:901.1
	Thallium-208	5.6 ± 1.4	4.4		EPA:901.1
	Thorium-234	29 ± 37	130	U	EPA:901.1
Tritium	-150 ± 94	320	U	EPA:906.0	

J = The activity is an estimated value.

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

Table-2 NMED DOE OB FFY 2014 Q-3 Burn Site Groundwater Quality Results: Gamma Spectroscopy, Gross Alpha, Gross Beta and Tritium

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
CYN-MW13 25-Jun-14	Actinium-228	17 ± 4.5	14		EPA:901.1
	Americium-241	-0.093 ± 1.3	4.3	U	EPA:901.1
	Beryllium-7	-27 ± 12	40	U	EPA:901.1
	Bismuth-212	40 ± 15	48	U	EPA:901.1
	Bismuth-214	-4 ± 5.3	18	UJ	EPA:901.1
	Cesium-134	-1.2 ± 1.1	3.9	U	EPA:901.1
	Cesium-137	0.13 ± 1.1	3.7	U	EPA:901.1
	Cobalt-60	-2 ± 1.2	4.2	U	EPA:901.1
	Gross alpha	7.3 ± 0.83	1.3		EPA:900
	Gross beta	3.3 ± 0.58	1.6		EPA:900
	Iodine-131	-8.2 ± 11	36	U	EPA:901.1
	Lead-212	3.8 ± 2.9	9.5	U	EPA:901.1
	Lead-214	-6.1 ± 4.9	16	UJ	EPA:901.1
	Potassium-40	7.3 ± 34	110	U	EPA:901.1
	Protactinium-234m	-54 ± 200	690	U	EPA:901.1
	Sodium-22	-1.7 ± 1.2	4.3	U	EPA:901.1
	Thallium-208	-0.96 ± 2.3	7.6	U	EPA:901.1
	Thorium-234	12 ± 20	67	U	EPA:901.1
Tritium	-69 ± 95	320	U	EPA:906.0	

J = The activity is an estimated value.

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