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RON CURRY
Secretary

February 22, 2010

Karen Agogino
POC, DOE/SSO
P.O Box 5400 MS 0184
Albuquerque, New Mexico 87185-5400

**Subject: Groundwater Monitoring at Sandia National Laboratories/New Mexico
Mixed Waste Landfill Conducted by NMED/DOE OB for FFY 2009 Q-4**

Dear Ms. Agogino:

This letter transmits the subject final report.

The monitoring results are provided to DOE as final. If you have any questions, or if you would like copies of the complete data set, please contact Chris Armijo at (505)845-5824 or contact me at (505)845-5933.

Sincerely,

Barry S. Birch
Program Manager
Sandia Oversight Section

BSB:ca

Enclosure: Final data submittal entitled: "Groundwater Monitoring at Sandia National Laboratories/New Mexico Mixed Waste Landfill Conducted by NMED/DOE OB for FFY 2009 Q-4" with the following enclosures:

- (1) Table-1 Total TAL Metals Results
- (2) Table-2 Dissolved TAL Metals Results
- (3) Table-3 Radionuclide Results
- (4) Table-4 Volatile Organic Compounds Results
- (5) Map of MWL Monitoring Well Locations

cc: Gayle Dye, DOE/NNSA

John Gould, DOE/SSO
John Pike, 377 MSG/CEV
John Cochran, SNL
Franz Lauffer, SNL/GWPP
Michael Skelly, SNL/NM Groundwater
Thomas Skibitski, Chief, DOE OB
Barry Birch, Program Manager, DOE OB/SOS
Chris Armijo, Environmental Scientist, DOE OB/SOS

File: SGE42.Groundwater Monitoring.MWL FFY 2009 Q-4



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**Groundwater Monitoring at Sandia National Laboratories/New Mexico Mixed Waste
Landfill Conducted by NMED/DOE OB for FFY 2009 Q-4**

The New Mexico Environment Department (NMED) DOE Oversight Bureau (Bureau) has compiled and assessed groundwater data from samples collected in July 2009. The Bureau collected groundwater samples from Mixed Waste Landfill groundwater monitoring wells MWL-BW2, MWL-MW7, MWL-MW8 and MWL-MW9. Split samples were collected using standard Sandia sampling procedures and equipment. Bureau samples were submitted ALS Laboratory Group in Fort Collins, CO for metals, inorganics, radionuclides and organics analyses. No anomalies were detected during these sampling events.

Data Assessment

Data results are compared to applicable Maximum Allowable Concentrations (MACs) from the New Mexico Water Quality Control Commission (WQCC) (20.6.2.3103A NMAC Human Health Standards) and Maximum Contaminant Levels (MCLs) from the EPA National Primary Drinking Water Regulations (40 CFR 141).

Results

Analytical results for total metals are listed in Table-1. Samples were analyzed for total (unfiltered) Target Analyte List (TAL) metals plus uranium. All metal concentrations were below established MCLs.

Analytical results for dissolved metals are listed in Table-2. Samples were analyzed for dissolved (filtered) TAL metals plus uranium. All metal concentrations were below established MCLs.

Analytical results for radionuclides are listed in Table-3. Samples were analyzed for gamma-emitting isotopes and gross alpha/beta. Gamma spectroscopy did not detect any isotopes above their associated minimum detectable activity (MDA). All gross alpha activities were below the 15 pCi/L MCL.

Volatile organic compounds (VOCs) detected above their associated method detection limit (MDL) are listed in Table-4. Toluene was detected above the MDL at all sites, but below the MCL of 1000 µg/L. All values were "J" flagged indicating that concentrations were an estimated value. Carbon disulfide was also detected at MWL-MW8 at a concentration of 0.85

µg/L, and the value was also “J” flagged. Currently there is no MCL or MAC for carbon disulfide.

Conclusions

No parameters were detected above established regulatory standards. Analytical data from Sandia during these sampling events have not been received at this time, so there is no direct comparison of results.

Response

Questions or comments should be addressed to Barry S. Birch by phone at (505)845-5933, by e-mail at barry.birch@state.nm.us, or to the address in the letterhead.

Enclosure: (1) Table-1 Total TAL Metals Results
 (2) Table-2 Dissolved TAL Metals Results
 (3) Table-3 Gamma Spectroscopy and Gross Alpha/Beta Results
 (4) Table-4 Detected Volatile Organic Compounds Results
 (5) Map of MWL Monitoring Well Locations

Distribution: Gayle Dye, DOE/NNSA
 Karen Agogino, POC, DOE/SSO
 John Gould, DOE/SSO
 John Cochran, SNL
 Franz Lauffer, SNL/GWPP
 Michael Skelly, SNL/NM Groundwater
 Thomas Skibitski, Chief, DOE OB
 Barry Birch, Program Manager, DOE OB/SOS
 Chris Armijo, Environmental Scientist, DOE OB/SOS

File: SGE42.Groundwater Monitoring. MWL FFY 2009 Q-4

Table 1- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-BW2 6-Jul-09	Aluminum	0.016	NE	NE	0.0082	0.1	B	SW-846:6010
	Antimony	0.00063	0.006	NE	0.000079	0.0003		SW-846:6020
	Arsenic	0.0011	0.01	0.1	0.00016	0.002	B	SW-846:6020
	Barium	0.095	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.000076	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	73	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.00055	0.1	0.05	0.00073	0.005	U	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.021	NE	NE	0.0036	0.05	B	SW-846:6010
	Lead	0.00037	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	23	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0016	NE	NE	0.00013	0.002	B	SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	4.5	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.0023	0.05	0.05	0.00018	0.001		SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	52	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0072	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0063	NE	NE	0.0006	0.005		SW-846:6010
	Zinc	0.0037	NE	NE	0.0039	0.005	B	SW-846:6010

Note:

B Result is an estimated value above MDL/IDL but less than reporting limit.
 NE Not Established
 U Analyte was analyzed for but was not detected

Table 1- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-MW7 7-Jul-09	Aluminum	0.0091	NE	NE	0.0082	0.1	U	SW-846:6010
	Antimony	0.000037	0.006	NE	0.000079	0.0003	B	SW-846:6020
	Arsenic	0.0014	0.01	0.1	0.00016	0.002	B	SW-846:6020
	Barium	0.097	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.000062	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	56	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.00055	0.1	0.05	0.00073	0.005	U	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.012	NE	NE	0.0036	0.05	B	SW-846:6010
	Lead	0.00012	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	19	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0017	NE	NE	0.00013	0.002	B	SW-846:6010
	Mercury	0.000046	0.002	0.002	0.0000081	0.0001	B	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	5.2	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.00018	0.05	0.05	0.00018	0.001	U	SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	42	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0078	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0049	NE	NE	0.0006	0.005	B	SW-846:6010
	Zinc	0.014	NE	NE	0.0039	0.005		SW-846:6010

Note:

B Result is an estimated value above MDL/IDL but less than reporting limit.
 NE Not Established
 U Analyte was analyzed for but was not detected

Table 1- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-MW8 8-Jul-09	Aluminum	0.15	NE	NE	0.0082	0.1		SW-846:6010
	Antimony	0.0001	0.006	NE	0.000079	0.0003	B	SW-846:6020
	Arsenic	0.00064	0.01	0.1	0.00016	0.002	B	SW-846:6020
	Barium	0.13	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.0001	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	60	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.0017	0.1	0.05	0.00073	0.005	B	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.26	NE	NE	0.0036	0.05		SW-846:6010
	Lead	0.00027	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	20	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.011	NE	NE	0.00013	0.002		SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	5.8	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.0003	0.05	0.05	0.00018	0.001	B	SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	43	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0077	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0019	NE	NE	0.0006	0.005	B	SW-846:6010
	Zinc	0.054	NE	NE	0.0039	0.005		SW-846:6010

Note:

- B Result is an estimated value above MDL/IDL but less than reporting limit.
- NE Not Established
- U Analyte was analyzed for but was not detected

Table 1- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Total TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-MW9 9-Jul-09	Aluminum	0.047	NE	NE	0.0082	0.1	B	SW-846:6010
	Antimony	0.000024	0.006	NE	0.000079	0.0003	B	SW-846:6020
	Arsenic	0.003	0.01	0.1	0.00016	0.002		SW-846:6020
	Barium	0.093	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.00011	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	59	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.00076	0.1	0.05	0.00073	0.005	B	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.065	NE	NE	0.0036	0.05		SW-846:6010
	Lead	0.00018	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	20	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0064	NE	NE	0.00013	0.002		SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	5.2	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.00098	0.05	0.05	0.00018	0.001	B	SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	41	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0087	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0083	NE	NE	0.0006	0.005		SW-846:6010
	Zinc	0.073	NE	NE	0.0039	0.005		SW-846:6010

Note:

B Result is an estimated value above MDL/IDL but less than reporting limit.
 NE Not Established
 U Analyte was analyzed for but was not detected

Table 2- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Dissolved TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-BW2 6-Jul-09	Aluminum	0.0091	NE	NE	0.0082	0.1	U	SW-846:6010
	Antimony	0.000024	0.006	NE	0.000079	0.0003	U	SW-846:6020
	Arsenic	0.00094	0.01	0.1	0.00016	0.002	B	SW-846:6020
	Barium	0.094	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.000063	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	73	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.00055	0.1	0.05	0.00073	0.005	U	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.0013	NE	NE	0.0036	0.05	U	SW-846:6010
	Lead	0.000082	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	23	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0013	NE	NE	0.00013	0.002	B	SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	4.4	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.0021	0.05	0.05	0.00018	0.001		SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	52	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0073	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0064	NE	NE	0.0006	0.005		SW-846:6010
	Zinc	0.0026	NE	NE	0.0039	0.005	B	SW-846:6010

Note:

B Result is an estimated value above MDL/IDL but less than reporting limit.
NE Not Established
U Analyte was analyzed for but was not detected

Table 2- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Dissolved TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-MW7 7-Jul-09	Aluminum	0.015	NE	NE	0.0082	0.1	B	SW-846:6010
	Antimony	0.000041	0.006	NE	0.000079	0.0003	B	SW-846:6020
	Arsenic	0.0015	0.01	0.1	0.00016	0.002	B	SW-846:6020
	Barium	0.097	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.000057	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	58	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.0011	0.1	0.05	0.00073	0.005	B	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.0013	NE	NE	0.0036	0.05	U	SW-846:6010
	Lead	0.000076	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	20	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0019	NE	NE	0.00013	0.002	B	SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.0013	NE	NE	0.0009	0.005	B	SW-846:6010
	Potassium	5.2	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.00037	0.05	0.05	0.00018	0.001	B	SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	42	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0078	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.007	NE	NE	0.0006	0.005		SW-846:6010
	Zinc	0.011	NE	NE	0.0039	0.005		SW-846:6010

Note:

B Result is an estimated value above MDL/IDL but less than reporting limit.
NE Not Established
U Analyte was analyzed for but was not detected

Table 2- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Dissolved TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-MW8 8-Jul-09	Aluminum	0.013	NE	NE	0.0082	0.1	B	SW-846:6010
	Antimony	0.0001	0.006	NE	0.000079	0.0003	B	SW-846:6020
	Arsenic	0.00055	0.01	0.1	0.00016	0.002	B	SW-846:6020
	Barium	0.13	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.000081	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	58	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.00077	0.1	0.05	0.00073	0.005	B	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.0013	NE	NE	0.0036	0.05	U	SW-846:6010
	Lead	0.00012	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	19	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0023	NE	NE	0.00013	0.002		SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	5.7	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.00049	0.05	0.05	0.00018	0.001	B	SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	43	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0075	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0014	NE	NE	0.0006	0.005	B	SW-846:6010
	Zinc	0.04	NE	NE	0.0039	0.005		SW-846:6010

Note:

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 NE Not Established
 U Analyte was analyzed for but was not detected

Table 2- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Dissolved TAL Metals

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	WQCC MAC (mg/L)	MDL (mg/L)	Quantitation Limit (mg/L)	Laboratory Qualifier	Analytical Method
MWL-MW9 9-Jul-09	Aluminum	0.017	NE	NE	0.0082	0.1	B	SW-846:6010
	Antimony	0.000024	0.006	NE	0.000079	0.0003	U	SW-846:6020
	Arsenic	0.0032	0.01	0.1	0.00016	0.002		SW-846:6020
	Barium	0.093	2	1	0.00014	0.002		SW-846:6010
	Beryllium	0.00015	0.004	NE	0.0001	0.001	U	SW-846:6010
	Cadmium	0.00011	0.005	NE	0.00003	0.0003	B	SW-846:6020
	Calcium	59	NE	NE	0.014	0.5		SW-846:6010
	Chromium	0.00055	0.1	0.05	0.00073	0.005	U	SW-846:6010
	Cobalt	0.00065	NE	NE	0.00068	0.002	U	SW-846:6010
	Copper	0.0014	1.3	NE	0.00055	0.002	U	SW-846:6010
	Iron	0.0013	NE	NE	0.0036	0.05	U	SW-846:6010
	Lead	0.000087	0.015	0.05	0.000024	0.0005	B	SW-846:6020
	Magnesium	20	NE	NE	0.0052	0.5		SW-846:6010
	Manganese	0.0037	NE	NE	0.00013	0.002		SW-846:6010
	Mercury	0.0000078	0.002	0.002	0.0000081	0.0001	U	SW-846:7470
	Nickel	0.00095	NE	NE	0.0009	0.005	U	SW-846:6010
	Potassium	5.2	NE	NE	0.03	0.5		SW-846:6010
	Selenium	0.00089	0.05	0.05	0.00018	0.001	B	SW-846:6020
	Silver	0.00001	NE	0.05	0.0000085	0.0001	U	SW-846:6020
	Sodium	41	NE	NE	0.006	0.5		SW-846:6010
	Thallium	0.000032	0.002	NE	0.000018	0.0002	U	SW-846:6020
	Uranium	0.0087	0.03	0.03	0.0000041	0.0001		SW-846:6020
	Vanadium	0.0083	NE	NE	0.0006	0.005		SW-846:6010
	Zinc	0.0066	NE	NE	0.0039	0.005		SW-846:6010

Note:

B Result is an estimated value above MDL/IDL but less than reporting limit.
 NE Not Established
 U Analyte was analyzed for but was not detected

Table 3- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Gamma Spectroscopy & Gross Alpha/Beta

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
MWL-BW2 6-Jul-09	Actinium-228	7.3 ± 8.3	19	U	713R10
	Aluminum-26	2.1 ± 3.7	6.2	U	713R10
	Americium-241	-4.9 ± 15	26	U	713R10
	Antimony-124	-5.1 ± 4	6.9	U	713R10
	Antimony-125	-11 ± 6.8	12	U	713R10
	Beryllium-7	21 ± 26	43	U	713R10
	Bismuth-212	18 ± 40	67	U	713R10
	Bismuth-214	8.9 ± 14	23	U,J	713R10
	Cadmium-109	-9.1 ± 87	150	U	713R10
	Cerium-139	-1.8 ± 2	3.4	U	713R10
	Cerium-144	0.46 ± 11	19	U	713R10
	Cesium-134	0.12 ± 4.5	7.5	U	713R10
	Cesium-137	-1.5 ± 3	5.2	U,M	713R10
	Chromium-51	13 ± 32	54	U	713R10
	Cobalt-56	-7.2 ± 5.9	11	U	713R10
	Cobalt-57	0.094 ± 1.5	2.5	U	713R10
	Cobalt-58	-2 ± 3.4	6	U	713R10
	Cobalt-60	-1.8 ± 3.5	6.1	U	713R10
	Europium-152	-9.9 ± 17	30	U	713R10
	Europium-154	-16 ± 17	31	U	713R10
	Europium-155	-1.6 ± 6.4	11	U	713R10
	Gross Alpha	4.8 ± 1.2	1.2		724R10
	Gross Beta	8.3 ± 2	2.2	M3	724R10
	Iodine-131	-15 ± 14	24	U	713R10
	Iron-59	10 ± 8	13	U	713R10
	Lead-212	0.27 ± 9.7	16	U	713R10
	Lead-214	7 ± 5.2	8.3	U,J	713R10
	Manganese-54	-1.4 ± 3.1	5.4	U	713R10
	Niobium-94	-2.1 ± 3.1	5.3	U	713R10
	Niobium-95	0.77 ± 3.2	5.5	U	713R10
	Potassium-40	8 ± 79	130	U	713R10
	Protactinium-234m	510 ± 520	840	U	713R10
	Ruthenium-106	7.2 ± 26	44	U	713R10
	Scandium-46	1.9 ± 3.2	5.4	U	713R10
	Silver-110m	3 ± 2.8	4.8	U	713R10
	Sodium-22	0.5 ± 3	5.2	U	713R10
	Strontium-85	-1.5 ± 4.2	7.1	U	713R10
	Thallium-208	-0.63 ± 6.1	10	U	713R10
	Thorium-227	-3.5 ± 18	30	U	713R10
	Thorium-234	27 ± 81	130	U	713R10
	Uranium-235	6.8 ± 21	35	U	713R10
	Zinc-65	-4.4 ± 6.6	12	U	713R10

Notes:

J

Activity is an estimated value

M

The requested MDC not met.

M3

The requested MDC was not met, but the reported activity is greater than the reported MDC.

TI

Gamma: Nuclide identification is tentative.

U

Result is less than the sample specific MDC.

Table 3- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Gamma Spectroscopy & Gross Alpha/Beta

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
MWL-MW7 7-Jul-09	Actinium-228	18 ± 15	23	U	713R10
	Aluminum-26	0.41 ± 3.4	5.8	U	713R10
	Americium-241	-6.2 ± 28	48	U	713R10
	Antimony-124	-3.4 ± 3.7	6.5	U	713R10
	Antimony-125	1.9 ± 6.9	12	U	713R10
	Beryllium-7	4.7 ± 26	44	U	713R10
	Bismuth-212	4.9 ± 43	73	U	713R10
	Bismuth-214	10 ± 6.6	10	U,J	713R10
	Cadmium-109	-0.89 ± 75	130	U	713R10
	Cerium-139	1.2 ± 2.1	3.4	U	713R10
	Cerium-144	-8.3 ± 14	24	U	713R10
	Cesium-134	-1.3 ± 3	5.2	U	713R10
	Cesium-137	-0.31 ± 2.9	5	U,M	713R10
	Chromium-51	0.23 ± 32	55	U	713R10
	Cobalt-56	5 ± 5.7	9.3	U	713R10
	Cobalt-57	-0.82 ± 4	6.6	U	713R10
	Cobalt-58	-1.7 ± 3.3	5.7	U	713R10
	Cobalt-60	-1.7 ± 3	5.4	U	713R10
	Europium-152	2.1 ± 15	25	U	713R10
	Europium-154	-10 ± 17	30	U	713R10
	Europium-155	-3 ± 8.8	15	U	713R10
	Gross Alpha	3.7 ± 0.91	0.72		724R10
	Gross Beta	0.71 ± 0.94	1.5	U,M	724R10
	Iodine-131	5.6 ± 13	22	U	713R10
	Iron-59	-6.1 ± 7.5	13	U	713R10
	Lead-212	7 ± 4.5	7.2	U	713R10
	Lead-214	4.9 ± 11	18	U,J	713R10
	Manganese-54	-0.64 ± 3	5.1	U	713R10
	Niobium-94	0.17 ± 3	5.1	U	713R10
	Niobium-95	0.64 ± 3.1	5.3	U	713R10
	Potassium-40	-19 ± 91	150	U	713R10
	Protactinium-234m	740 ± 510	800	U	713R10
	Ruthenium-106	-8.2 ± 28	48	U	713R10
	Scandium-46	-2.8 ± 3	5.4	U	713R10
	Silver-110m	2.8 ± 2.9	4.6	U	713R10
	Sodium-22	2 ± 2.9	4.8	U	713R10
	Strontium-85	1.8 ± 4.2	6.8	U	713R10
	Thallium-208	2.1 ± 4.6	7.7	U	713R10
	Thorium-227	-11 ± 14	23	U	713R10
	Thorium-234	88 ± 46	72	TI	713R10
	Uranium-235	4.3 ± 14	23	U	713R10
	Zinc-65	2.7 ± 6.4	11	U	713R10

Notes:

J

Activity is an estimated value

M

The requested MDC not met.

M3

The requested MDC was not met, but the reported activity is greater than the reported MDC.

TI

Gamma: Nuclide identification is tentative.

U

Result is less than the sample specific MDC.

Table 3- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Gamma Spectroscopy & Gross Alpha/Beta

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
MWL-MW8 8-Jul-09	Actinium-228	-13 ± 23	39	U	713R10
	Aluminum-26	5.5 ± 3.9	6	U	713R10
	Americium-241	1.9 ± 2.9	4.7	U	713R10
	Antimony-124	-2.5 ± 3.4	5.9	U	713R10
	Antimony-125	0.2 ± 6.7	11	U	713R10
	Beryllium-7	2.1 ± 23	39	U	713R10
	Bismuth-212	34 ± 43	71	U	713R10
	Bismuth-214	4.1 ± 13	21	U,J	713R10
	Cadmium-109	8 ± 28	47	U	713R10
	Cerium-139	-1.8 ± 1.5	2.7	U	713R10
	Cerium-144	-1.4 ± 9.7	16	U	713R10
	Cesium-134	-0.81 ± 3.9	6.6	U	713R10
	Cesium-137	-0.62 ± 2.8	4.7	U	713R10
	Chromium-51	-25 ± 27	47	U	713R10
	Cobalt-56	-2.2 ± 6.2	11	U	713R10
	Cobalt-57	0.074 ± 2.8	4.6	U	713R10
	Cobalt-58	1.3 ± 3.2	5.4	U	713R10
	Cobalt-60	-1.6 ± 3.4	6.1	U	713R10
	Europium-152	10 ± 17	28	U	713R10
	Europium-154	0 ± 16	28	U	713R10
	Europium-155	-2.9 ± 4.6	7.9	U	713R10
	Gross Alpha	3.9 ± 0.91	0.68		724R10
	Gross Beta	2.7 ± 1.1	1.6	M3	724R10
	Iodine-131	4.7 ± 12	21	U	713R10
	Iron-59	-3.5 ± 7.7	13	U	713R10
	Lead-212	2.7 ± 7.1	12	U	713R10
	Lead-214	7.1 ± 5.5	8.8	U,J	713R10
	Manganese-54	0.069 ± 2.8	4.9	U	713R10
	Niobium-94	0.16 ± 3	5	U	713R10
	Niobium-95	2.3 ± 3.4	5.5	U	713R10
	Potassium-40	-10 ± 82	140	U	713R10
	Protactinium-234m	-13 ± 500	850	U	713R10
	Ruthenium-106	1.6 ± 25	42	U	713R10
	Scandium-46	-0.041 ± 3.1	5.3	U	713R10
	Silver-110m	-3.2 ± 2.7	4.8	U	713R10
	Sodium-22	1.2 ± 3.3	5.6	U	713R10
	Strontium-85	6.2 ± 3.9	5.8	TI	713R10
	Thallium-208	5.7 ± 3.1	4.7	TI	713R10
	Thorium-227	15 ± 12	20	U	713R10
	Thorium-234	42 ± 47	76	U	713R10
	Uranium-235	7.8 ± 33	54	U	713R10
	Zinc-65	-2.3 ± 7	12	U	713R10

Notes:

J

Activity is an estimated value

M

The requested MDC not met.

M3

The requested MDC was not met, but the reported activity is greater than the reported MDC.

TI

Gamma: Nuclide identification is tentative.

U

Result is less than the sample specific MDC.

Table 3- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Gamma Spectroscopy & Gross Alpha/Beta

Monitoring Well/ Sample Date	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
MWL-MW9 9-Jul-09	Actinium-228	17 ± 6.9	15	TI	713R10
	Aluminum-26	-1.6 ± 3.4	6	U	713R10
	Americium-241	2.3 ± 24	41	U	713R10
	Antimony-124	5.1 ± 2.9	4.5	TI	713R10
	Antimony-125	-0.95 ± 5.9	10	U	713R10
	Beryllium-7	-10 ± 21	35	U	713R10
	Bismuth-212	12 ± 36	59	U	713R10
	Bismuth-214	-0.059 ± 12	20	U,J	713R10
	Cadmium-109	-54 ± 61	100	U	713R10
	Cerium-139	-2.7 ± 1.9	3.2	U	713R10
	Cerium-144	2.1 ± 12	20	U	713R10
	Cesium-134	1.5 ± 3.5	5.7	U	713R10
	Cesium-137	-0.087 ± 3.9	6.5	U,M	713R10
	Chromium-51	27 ± 25	41	U	713R10
	Cobalt-56	1 ± 5	8.5	U	713R10
	Cobalt-57	-0.035 ± 1.5	2.5	U	713R10
	Cobalt-58	-1.1 ± 2.8	4.8	U	713R10
	Cobalt-60	-3.6 ± 2.9	5.2	U	713R10
	Europium-152	-14 ± 15	26	U	713R10
	Europium-154	4.6 ± 14	24	U	713R10
	Europium-155	4 ± 7	12	U	713R10
	Gross Alpha	5.1 ± 1.1	0.79		724R10
	Gross Beta	0.71 ± 1.1	1.8	U,M	724R10
	Iodine-131	-6.9 ± 11	18	U	713R10
	Iron-59	6.9 ± 6.4	10	U	713R10
	Lead-212	-0.068 ± 6.4	11	U	713R10
	Lead-214	2 ± 9.1	15	U,J	713R10
	Manganese-54	1.5 ± 2.5	4.2	U	713R10
	Niobium-94	0.92 ± 2.6	4.3	U	713R10
	Niobium-95	1.6 ± 2.6	4.3	U	713R10
	Potassium-40	30 ± 66	110	U	713R10
	Protactinium-234m	100 ± 430	720	U	713R10
	Ruthenium-106	-13 ± 22	38	U	713R10
	Scandium-46	-0.95 ± 2.7	4.7	U	713R10
	Silver-110m	-1.6 ± 2.5	4.2	U	713R10
	Sodium-22	-0.55 ± 2.8	4.8	U	713R10
	Strontium-85	4 ± 3.4	5.4	U	713R10
	Thallium-208	1.6 ± 5.5	9.3	U	713R10
	Thorium-227	-1.1 ± 13	21	U	713R10
	Thorium-234	-17 ± 89	150	U	713R10
	Uranium-235	16 ± 12	19	U	713R10
	Zinc-65	-2.3 ± 5.8	10	U	713R10

Notes:

- J Activity is an estimated value
- M The requested MDC not met.
- M3 The requested MDC was not met, but the reported activity is greater than the reported MDC.
- TI Gamma: Nuclide identification is tentative.
- U Result is less than the sample specific MDC.

Table 4- NMED DOE Oversight Bureau FFY 2009 Q-4 Mixed Waste Landfill Groundwater Quality Results: Detected Volatile Organic Compounds

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	WQCC MAC (µg/L)	MDL (µg/L)	Quantitation Limit (µg/L)	Laboratory Qualifier	Analytical Method
MWL-BW2 6-Jul-09	Toluene	0.37	1000	750	0.17	1	J	SW8260_25
MWL-MW7 7-Jul-09	Toluene	0.7	1000	750	0.17	1	J	SW8260_25
MWL-MW8 8-Jul-09	Carbon Disulfide	0.85	NE	NE	0.17	1	J	SW8260_25
	Toluene	0.52	1000	750	0.17	1	J	SW8260_25
MWL-MW9 9-Jul-09	Toluene	0.97	1000	750	0.17	1	J	SW8260_25

Notes:

J

Result is an estimated value above the MDL but less than the QL.

NE

Not Established

Sandia National Laboratory Wells



Legend

- SNL Well
- US Waters
- ER Site
- KAFB Boundary
- Technical Area

0 0.045 0.09 0.18
Miles