

Appendix G. Background water quality data for dissolved metals and total nitrate in groundwater samples collected on seven sampling dates in 2008 and 2009 from the new background water quality monitoring well MWL-BW2 at the Sandia MWL dump.

- Dissolved concentration of Cadmium in groundwater samples from well MWL-MW2.

Cadmium was not detected at a method detection limit of 0.11 ug/L in filtered groundwater samples collected on seven sampling dates in 2008 and 2009. Duplicate samples were collected on 2 of the sampling dates.

- The background concentration for Cadmium in groundwater at the water table in the fine-grained alluvial fan sediments is less than 0.11 ug/L.

- Dissolved concentration of Chromium in groundwater samples from well MWL-MW2.

The dissolved chromium concentrations measured in the seven sampling events in well MWL-MW2 in 2008 and 2009 are as follows:

- 1). 04-09-08 [2.54 ug/L J(estimated value)]; 2). 07-17-08 [1.86 ug/L J];
3). 10-01-08 [ND(not detected) @ 1.5 ug/L, duplicate ND] 4). 01-05-09 [ND @ 1.5 ug/L];
5). 04-01-09 [ND @ 1.5 ug/L]; 6). 07-06-09 [ND @ 2.5 ug/L];
7). 10-06-09 [ND @2.5 ug/L. duplicate ND]
- The median dissolved concentration of Chromium is the estimated concentration of 1.86 ug/L.
- The background concentration for Chromium in groundwater at the water table in the fine-grained alluvial fan sediments is 1.86 ug/L.

- Dissolved concentration of Nickel in groundwater samples from well MWL-MW2.

The dissolved nickel concentrations measured in the seven sampling events in well MWL-MW2 in 2008 and 2009 are as follows:

- 1). 04-09-08 [1.02 ug/L J(estimated value)]; 2). 07-17-08 [1.35 ug/L J];
3). 10-01-08 [1.12 ug/L J, duplicate 1.09 ug/L J] 4). 01-05-09 [1.22 ug/L J];
5). 04-01-09 [1.31 ug/L J]; 6). 07-06-09 [1.71 ug/L J];
7). 10-06-09 [0.817 ug/L J duplicate 0.813 ug/L J]
- The median dissolved concentration of Nickel is the estimated concentration of 1.22 ug/L.
- The background concentration for Nickel in groundwater at the water table in the fine-grained alluvial fan sediments is 1.22 ug/L.

- Total Nitrate in groundwater samples from well MWL-MW2.

The Total Nitrate concentrations measured in the seven sampling events in well MWL-MW2 in 2008 and 2009 are as follows:

- 1). 04-09-08 [1.86 mg/L]; 2). 07-17-08 [1.98 mg/L];
3). 10-01-08 [2.34 mg/L, duplicate 1.98 mg/L] 4). 01-05-09 [2.12 mg/L];
5). 04-01-09 [2.06 mg/L]; 6). 07-06-09 [2.01 mg/L];
7). 10-06-09 [2.04 mg/L duplicate 1.98 mg/L]
- The median concentration of Total Nitrate is the estimated concentration of 2.01 mg/L.
- The background concentration for Total Nitrate in groundwater at the water table in the fine-grained alluvial fan sediments is 2.01 mg/L.

Dissolved Metals Results in the DOE/Sandia Groundwater Monitoring Report for the Sandia MWL dump for Calendar Year 2008

Table A-6
Summary of Total Metals Results (Filtered)
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 09-Apr-06	Aluminum	ND	0.010	0.020	NE	U		085758-010	SW846 6020
	Antimony	ND	0.0005	0.002	0.006	B, U		085758-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	B, U		085758-010	SW846 6020
	Barium	0.0969	0.0005	0.002	2.00			085758-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085758-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085758-010	SW846 6020
	Calcium	63.3	0.100	0.500	NE			085758-010	SW846 6020
	Chromium	0.00254	0.0025	0.010	0.100	J	0.013U	085758-010	SW846 6020
	Cobalt	0.000362	0.0001	0.001	NE	B, J	0.00094U	085758-010	SW846 6020
	Copper	0.00109	0.0003	0.001	NE			085758-010	SW846 6020
	Iron	0.626	0.010	0.025	NE	B		085758-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085758-010	SW846 6020
	Magnesium	22.0	0.005	0.015	NE			085758-010	SW846 6020
	Manganese	0.0227	0.001	0.005	NE			085758-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085758-010	SW846 7470
	Molybdenum	0.0021	0.0001	0.0005	NE			085758-010	SW846 6020
	Nickel	0.00102	0.0005	0.002	NE	J	NJ-	085758-010	SW846 6020
	Potassium	3.56	0.080	0.300	NE			085758-010	SW846 6020
	Selenium	0.00108	0.001	0.005	0.050	J		085758-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U	UJ	085758-010	SW846 6020
	Sodium	57.0	0.400	1.25	NE			085758-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085758-010	SW846 6020
	Uranium-235	0.000047	0.00001	0.00007	0.030	J		085758-010	SW846 6020
	Uranium-238	0.00679	0.00005	0.0002	0.030			085758-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085758-010	SW846 6020
	Zinc	0.00307	0.0026	0.010	NE	J		085758-010	SW846 6020

Refer to footnotes at end of table.

Table A-6 (Continued)
Summary of Total Metals Results (Filtered)
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 17-Jul-08	Aluminum	ND	0.005	0.015	NE	U		086358-010	SW846 6020
	Antimony	ND	0.0005	0.002	0.006	U		086358-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086358-010	SW846 6020
	Barium	0.116	0.0005	0.002	2.00			086358-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086358-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086358-010	SW846 6020
	Calcium	68.1	0.200	1.00	NE	B		086358-010	SW846 6020
	Chromium	0.00186	0.0015	0.003	0.100	J		086358-010	SW846 6020
	Cobalt	0.000389	0.0001	0.001	NE	J		086358-010	SW846 6020
	Copper	0.000539	0.0003	0.001	NE	J		086358-010	SW846 6020
	Iron	0.273	0.010	0.025	NE			086358-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086358-010	SW846 6020
	Magnesium	21.5	0.0052	0.015	NE			086358-010	SW846 6020
	Manganese	0.0608	0.001	0.005	NE			086358-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086358-010	SW846 7470
	Molybdenum	0.00271	0.0001	0.0005	NE	B		086358-010	SW846 6020
	Nickel	0.00135	0.0005	0.002	NE	J		086358-010	SW846 6020
	Potassium	4.35	0.080	0.300	NE			086358-010	SW846 6020
	Selenium	0.00211	0.001	0.005	0.050	J		086358-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086358-010	SW846 6020
	Sodium	56.3	0.800	2.50	NE		J	086358-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086358-010	SW846 6020
	Uranium	0.0072	0.00005	0.0002	0.030			086358-010	SW846 6020
	Uranium-235	0.00005	0.00001	0.00007	0.030	J	J+	086358-010	SW846 6020
	Uranium-238	0.00715	0.00005	0.0002	0.030			086358-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086358-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	B, U		086358-010	SW846 6020

Refer to footnotes at end of table.

Table A-6 (Continued)
Summary of Total Metals Results (Filtered)
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 01-Oct-08	Aluminum	0.0182	0.005	0.015	NE	B	0.042U	086812-010	SW846 6020
	Antimony	ND	0.0005	0.002	0.006	U		086812-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086812-010	SW846 6020
	Barium	0.0948	0.005	0.020	2.00			086812-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086812-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086812-010	SW846 6020
	Calcium	65.3	0.200	1.00	NE	B		086812-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086812-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	U		086812-010	SW846 6020
	Copper	0.000792	0.0003	0.001	NE	J		086812-010	SW846 6020
	Iron	0.232	0.010	0.025	NE	B		086812-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086812-010	SW846 6020
	Magnesium	21.5	0.0052	0.015	NE			086812-010	SW846 6020
	Manganese	0.00218	0.001	0.005	NE	J		086812-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U		086812-010	SW846 7470
	Nickel	0.00112	0.0005	0.002	NE	J		086812-010	SW846 6020
	Potassium	4.21	0.080	0.300	NE			086812-010	SW846 6020
	Selenium	0.00188	0.001	0.005	0.050	J		086812-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086812-010	SW846 6020
	Sodium	53.4	0.800	2.50	NE			086812-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086812-010	SW846 6020
	Uranium	0.00705	0.00005	0.0002	0.030			086812-010	SW846 6020
	Uranium-235	0.000051	0.00001	0.00007	0.030	J	J+	086812-010	SW846 6020
	Uranium-238	0.007	0.00005	0.0002	0.030		J	086812-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086812-010	SW846 6020
	Zinc	0.00291	0.0026	0.010	NE	J		086812-010	SW846 6020

Refer to footnotes at end of table

Groundwater Monitoring, 2008

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 (Duplicate) 01-Oct-08	Aluminum	0.0799	0.005	0.015	NE	B		086813-010	SW846 6020
	Antimony	ND	0.0005	0.002	0.006	U		086813-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086813-010	SW846 6020
	Barium	0.100	0.005	0.020	2.00			086813-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086813-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086813-010	SW846 6020
	Calcium	70.1	0.200	1.00	NE	B		086813-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086813-010	SW846 6020
	Cobalt	0.000104	0.0001	0.001	NE	J		086813-010	SW846 6020
	Copper	0.00053	0.0003	0.001	NE	J		086813-010	SW846 6020
	Iron	0.234	0.010	0.025	NE	B		086813-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086813-010	SW846 6020
	Magnesium	22.7	0.0052	0.015	NE			086813-010	SW846 6020
	Manganese	0.00211	0.001	0.005	NE	J		086813-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U		086813-010	SW846 7470
	Nickel	0.00109	0.0005	0.002	NE	J		086813-010	SW846 6020
	Potassium	3.95	0.080	0.300	NE			086813-010	SW846 6020
	Selenium	0.00199	0.001	0.005	0.050	J		086813-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086813-010	SW846 6020
	Sodium	58.2	0.800	2.50	NE			086813-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086813-010	SW846 6020
	Uranium	0.00724	0.00005	0.0002	0.030			086813-010	SW846 6020
	Uranium-235	0.00005	0.00001	0.00007	0.030	J	J+	086813-010	SW846 6020
	Uranium-238	0.00719	0.00005	0.0002	0.030		J	086813-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086813-010	SW846 6020
	Zinc	0.00285	0.0026	0.010	NE	J		086813-010	SW846 6020

Refer to footnotes at end of table

Table A-6 (Concluded)
 Summary of Total Metals Results (Filtered)
 Mixed Waste Landfill, Sandia National Laboratories/New Mexico
 Groundwater Monitoring, 2008

^gValidation Qualifiers (If cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.)

- J+ = The associated numerical value is an estimated quantity with suspected positive bias.
- NJ- = Presumptive evidence of the presence of the material at an estimated quantity with a suspected negative bias.
- U = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

^hU.S. Environmental Protection Agency, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.

- BW = Background well.
- CFR = Code of Federal Regulations.
- ID = Identification.
- MCL = Maximum contaminant level.
- MDL = Method detection limit.
- mg/L = Milligram(s) per liter.
- MW = Monitoring well.
- MWL = Mixed Waste Landfill.
- ND = Not detected (at method detection limit).
- NE = Not established.
- NMAC = New Mexico Administrative Code.
- PQL = Practical quantitation limit.

aMDL is the minimum concentration that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix-specific.

bPQL is the lowest concentration of analytes in a sample that can be reliably determined within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions.

cMCL is established by the U.S. Environmental Protection Agency Primary Water Regulations (40 CFR 141.11[b]), and subsequent amendments or the New Mexico Environmental Improvement Board in 20 NMAC 7.1.

dLaboratory Qualifiers:

B = Analyte is detected in associated laboratory method blank.

J = Amount detected is below the PQL.

U = Analyte is absent or below the MDL.

Dissolved Metals Results in the DOE/Sandia Groundwater Monitoring Report for the Sandia MWL dump for Calendar Year 2009

Table A-8
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	MCL (mg/L)	Maximum Background (mg/L) ¹	Laboratory Qualifier ²	Validation Qualifier ³	Sample No.	Analytical Method ⁴
MWL-BW2 05-Jan-09	Aluminum	ND	0.005	0.015	NE	NE	U		086943-010	SW846 6020
	Antimony	ND	0.0005	0.002	0.006	0.006	U		086943-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		086943-010	SW846 6020
	Barium	0.0964	0.0005	0.002	2.00	0.12			086943-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		086943-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		086943-010	SW846 6020
	Calcium	69.5	0.100	0.500	NE	NE	B		086943-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	0.043	U		086943-010	SW846 6020
	Cobalt	0.00011	0.0001	0.001	NE	0.0025	J		086943-010	SW846 6020
	Copper	0.000645	0.0003	0.001	NE	<0.05	J		086943-010	SW846 6020
	Iron	0.180	0.010	0.025	NE	NE	B		086943-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.01	U		086943-010	SW846 6020
	Magnesium	22.7	0.0052	0.015	NE	NE			086943-010	SW846 6020
	Manganese	0.00112	0.001	0.005	NE	NE	J		086943-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	0.002	U		086943-010	SW846 7470
	Nickel	0.00122	0.0005	0.002	NE	0.028	J	J*	086943-010	SW846 6020
	Potassium	4.13	0.080	0.300	NE	NE			086943-010	SW846 6020
	Selenium	0.00146	0.001	0.005	0.050	0.005	J		086943-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	<0.01	U		086943-010	SW846 6020
	Sodium	56.7	0.400	1.25	NE	NE			086943-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		086943-010	SW846 6020
	Titanium	0.00757	0.00005	0.0002	0.030	0.0052	B		086943-010	SW846 6020
	Vanadium	0.00429	0.003	0.010	NE	0.013	J		086943-010	SW846 6020
	Zinc	0.00358	0.0026	0.010	NE	0.26	J		086943-010	SW846 6020

Refer to footnotes at end of table.

Table A-8 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	MCL (mg/L)	Maximum Background (mg/L) ¹	Laboratory Qualifier ²	Validation Qualifier ³	Sample No.	Analytical Method ⁴
MWL-BW2 01-Apr-09	Aluminum	ND	0.005	0.015	NE	NE	U		087151-010	SW846 6020
	Antimony	ND	0.0005	0.002	0.006	0.006	U		087151-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		087151-010	SW846 6020
	Barium	0.0966	0.0005	0.002	2.00	0.12			087151-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		087151-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		087151-010	SW846 6020
	Calcium	66.8	0.100	0.500	NE	NE	B		087151-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	0.043	U		087151-010	SW846 6020
	Cobalt	0.000127	0.0001	0.001	NE	0.0025	J		087151-010	SW846 6020
	Copper	0.000691	0.0003	0.001	NE	<0.05	J		087151-010	SW846 6020
	Iron	0.215	0.010	0.025	NE	NE			087151-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.01	U		087151-010	SW846 6020
	Magnesium	28.0	0.0052	0.015	NE	NE			087151-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		087151-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	0.002	U	UJ	087151-010	SW846 7470
	Nickel	0.00131	0.0005	0.002	NE	0.028	J		087151-010	SW846 6020
	Potassium	3.93	0.080	0.300	NE	NE			087151-010	SW846 6020
	Selenium	0.0019	0.001	0.005	0.050	0.005	J		087151-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	<0.01	U		087151-010	SW846 6020
	Sodium	56.7	0.400	1.25	NE	NE			087151-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		087151-010	SW846 6020
	Titanium	0.00755	0.00005	0.0002	0.030	0.0052	B		087151-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	0.013	U		087151-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.26	U		087151-010	SW846 6020

Refer to footnotes at end of table.

Table A-8 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	MCL (mg/L)	Maximum Background (mg/L) ¹	Laboratory Qualifier ²	Validation Qualifier ³	Sample No.	Analytical Method ⁴
MWL-BW2 06-Jul-09	Aluminum	0.0215	0.010	0.030	NE	NE	B, J	0.134U	087489-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		087489-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	0.014	U		087489-010	SW846 6020
	Barium	0.0635	0.0005	0.002	2.00	0.12			087489-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		087489-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		087489-010	SW846 6020
	Calcium	68.6	0.100	1.00	NE	NE	B		087489-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		087489-010	SW846 6020
	Cobalt	0.000186	0.0001	0.001	NE	0.0025	J		087489-010	SW846 6020
	Copper	0.000806	0.0003	0.001	NE	<0.05	J		087489-010	SW846 6020
	Iron	0.320	0.010	0.100	NE	NE			087489-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.01	U		087489-010	SW846 6020
	Magnesium	22.7	0.005	0.015	NE	NE			087489-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		087489-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	087489-010	SW846 7470
	Nickel	0.00171	0.0005	0.002	NE	0.028	J		087489-010	SW846 6020
	Potassium	3.90	0.080	0.300	NE	NE			087489-010	SW846 6020
	Selenium	0.00169	0.001	0.005	0.050	0.005	J		087489-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	<0.01	U		087489-010	SW846 6020
	Sodium	53.9	0.400	1.25	NE	NE			087489-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		087489-010	SW846 6020
	Uranium	0.00835	0.00005	0.0002	0.030	0.0052			087489-010	SW846 6020
	Vanadium	0.00614	0.003	0.010	NE	0.013	J		087489-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.26	U		087489-010	SW846 6020

Refer to footnotes at end of table.

Table A-8 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	MCL (mg/L)	Maximum Background (mg/L) ¹	Laboratory Qualifier ²	Validation Qualifier ³	Sample No.	Analytical Method ⁴
MWL-BW2 06-Oct-09	Aluminum	ND	0.010	0.030	NE	NE	U		087769-010	SW846 5020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		087769-010	SW846 5020
	Arsenic	0.00376	0.0015	0.005	0.010	0.014	B, J	0.014U	087769-010	SW846 5020
	Barium	0.103	0.0005	0.002	2.00	0.12			087769-010	SW846 5020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		087769-010	SW846 5020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		087769-010	SW846 5020
	Calcium	68.4	0.200	2.00	NE	NE	B		087769-010	SW846 5020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		087769-010	SW846 5020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		087769-010	SW846 5020
	Copper	0.000892	0.0003	0.001	NE	<0.05	J	0.012U	087769-010	SW846 5020
	Iron	0.153	0.010	0.100	NE	NE	B		087769-010	SW846 5020
	Lead	ND	0.0005	0.002	NE	0.01	U		087769-010	SW846 5020
	Magnesium	20.9	0.005	0.015	NE	NE		J	087769-010	SW846 5020
	Manganese	ND	0.001	0.005	NE	NE	U		087769-010	SW846 5020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	087769-010	SW846 7470
	Nickel	0.000817	0.0005	0.002	NE	0.028	J		087769-010	SW846 5020
	Potassium	4.32	0.080	0.300	NE	NE			087769-010	SW846 5020
	Selenium	0.00216	0.001	0.005	0.050	0.005	J		087769-010	SW846 5020
	Silver	ND	0.0002	0.001	NE	<0.01	U		087769-010	SW846 5020
	Sodium	51.5	0.800	2.50	NE	NE		J	087769-010	SW846 5020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		087769-010	SW846 5020
	Uranium	0.00732	0.00005	0.0002	0.030	0.0052			087769-010	SW846 5020
	Vanadium	0.0116	0.003	0.010	NE	0.013	B	0.041U	087769-010	SW846 5020
	Zinc	ND	0.0026	0.010	NE	0.26	U		087769-010	SW846 5020

Refer to footnotes at end of table.

Table A-8 (Continued)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	MCL (mg/L)	Maximum Background (mg/L) ¹	Laboratory Qualifier ²	Validation Qualifier ³	Sample No.	Analytical Method ⁴
MVL-BW2 (Duplicate) 06-Oct-09	Aluminum	ND	0.010	0.030	NE	NE	U		067770-010	SW846 6020
	Antimony	ND	0.0005	0.003	0.006	0.006	U		067770-010	SW846 6020
	Arsenic	0.00178	0.0015	0.005	0.010	0.014	B, J	0.014U	067770-010	SW846 6020
	Barium	0.102	0.0005	0.002	2.00	0.12			067770-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	0.004	U		067770-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	0.00047	U		067770-010	SW846 6020
	Calcium	67.4	0.200	2.00	NE	NE	B		067770-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	0.043	U		067770-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	0.0025	U		067770-010	SW846 6020
	Copper	0.00063	0.0003	0.001	NE	<0.05	J	0.012U	067770-010	SW846 6020
	Iron	0.158	0.010	0.100	NE	NE	B		067770-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	0.01	U		067770-010	SW846 6020
	Magnesium	19.2	0.005	0.015	NE	NE		J	067770-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	NE	U		067770-010	SW846 6020
	Mercury	ND	0.000066	0.0002	0.002	0.002	U	UJ	067770-010	SW846 7470
	Nickel	0.000813	0.0005	0.002	NE	0.028	J		067770-010	SW846 6020
	Potassium	4.06	0.080	0.300	NE	NE			067770-010	SW846 6020
	Selenium	0.00224	0.001	0.005	0.050	0.005	J		067770-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	<0.01	U		067770-010	SW846 6020
	Sodium	49.1	0.080	0.250	NE	NE		J	067770-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	0.002	U		067770-010	SW846 6020
	Uranium	0.00731	0.00005	0.0002	0.030	0.0052			067770-010	SW846 6020
	Vanadium	0.0103	0.003	0.010	NE	0.013	B	0.041U	067770-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	0.26	U		067770-010	SW846 6020

Refer to footnotes at end of table.

Table A-8 (Concluded)
Summary of Filtered Total Metal Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

- EPA = U.S. Environmental Protection Agency.
- ID = Identification.
- MCL = Maximum contaminant level.
- MDL = Method detection limit.
- mg/L = Milligram(s) per liter.
- ND = Not detected (at MDL).
- NE = Not established.
- PQL = Practical quantitation limit.
- SW = Solid waste.

¹Maximum background concentrations in groundwater (Dinwiddie, R.S. [New Mexico Environment Department], September 1997, Letter to M.J. Zamorski [U.S. Department of Energy], "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," September 27.).

²Laboratory Qualifier.

- B = Analyte is detected in associated laboratory method blank.
- J = Amount detected is below the practical quantitation limit (PQL).
- U = Analyte is absent or below the method detection limit.

³Validation Qualifier.

- if cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
- J = The associated value is an estimated quantity.
- J+ = The associated numerical value is an estimated quantity with suspected positive bias.
- U = The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
- UJ = The analyte was analyzed for but not detected. The associated value is an estimate and may be inaccurate or imprecise.

⁴EPA 1985, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.

Total Nitrate Results in the DOE/Sandia Groundwater Monitoring Report for the Sandia MWL dump for Calendar Year 2008

Table A-4
General Chemistry Analytical Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 09-Apr-08	Alkalinity, Total	243	0.725	1.00	NE	B		085758-016	SM 2320B
	Bromide	0.400	0.067	0.200	NE			085758-016	SW846 9056
	Chloride	66.2	0.660	2.00	NE			085758-016	SW846 9056
	Fluoride	0.658	0.033	0.100	4.0			085758-016	SW846 9056
	Sulfate	46.4	1.00	4.00	NE			085758-016	SW846 9056
	Nitrate plus Nitrite as N	1.86	0.100	0.500	10			085758-018	EPA 353.2

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 17-Jul-08	Alkalinity, Total	243	0.725	1.0	NE	B		086358-016	SM 2320B
	Bromide	0.403	0.067	0.200	NE			086358-016	SW846 9056
	Chloride	62.1	0.660	2.00	NE			086358-016	SW846 9056
	Fluoride	0.659	0.033	0.100	4.0			086358-016	SW846 9056
	Sulfate	44.5	1.00	4.00	NE			086358-016	SW846 9056
	Nitrate plus Nitrite as N	1.98	0.100	0.500	10	B		086358-018	EPA 353.2

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier ^d	Validation Qualifier ^e	Sample No.	Analytical Method ^f
MWL-BW2 01-Oct-08	Alkalinity, Total	241	0.725	1.00	NE			086812-016	SM 2320B
	Bromide	0.328	0.067	0.200	NE			086812-016	SW846 9056
	Chloride	62.6	0.660	2.00	NE	B		086812-016	SW846 9056
	Fluoride	0.712	0.033	0.100	4.0			086812-016	SW846 9056
	Sulfate	44.5	1.00	4.00	NE			086812-016	SW846 9056
	Nitrate plus Nitrite as N	2.34	0.050	0.250	10	B		086812-018	EPA 353.2
MWL-BW2 (Duplicate) 01-Oct-08	Alkalinity, Total	241	0.725	1.00	NE			086813-016	SM 2320B
	Bromide	0.331	0.067	0.200	NE			086813-016	SW846 9056
	Chloride	62.3	0.660	2.00	NE	B		086813-016	SW846 9056
	Fluoride	0.719	0.033	0.100	4.0			086813-016	SW846 9056
	Sulfate	45.4	1.00	4.00	NE			086813-016	SW846 9056
	Nitrate plus Nitrite as N	1.98	0.050	0.250	10	B		086813-018	EPA 353.2

Table A-4 (Concluded)
General Chemistry Analytical Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

^dLaboratory Qualifiers:

B = Analyte is detected in associated laboratory method blank.

^eValidation Qualifiers (if cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.):

U = The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

^fAnalytical methods used are referenced to either U.S. Environmental Protection Agency, 1979, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020,

U.S. Environmental Protection Agency, Cincinnati, Ohio; or U.S. Environmental Protection Agency, 1985, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.

BW = Background well.

CFR = Code of Federal Regulations.

EPA = U.S. Environmental Protection Agency.

ID = Identification.

MCL = Maximum contaminant level.

MDL = Method detection limit.

mg/L = Milligram(s) per liter.

MW = Monitoring well.

MWL = Mixed waste Landfill.

N = Nitrogen.

NE = Not established.

NMAC = New Mexico Administrative Code.

PQL = Practical quantitation limit.

Total Nitrate Results in the DOE/Sandia Groundwater Monitoring Report for the Sandia MWL dump for Calendar Year 2009

Table A-5
Summary of Nitrate plus Nitrite Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier	Validation Qualifier ^d	Sample No.	Analytical Method ^e
MWL-BW2 05-Jan-09	Nitrate plus nitrite as N	2.12	0.100	0.500	10			086943-018	EPA 353.2
MWL-MW7 06-Jan-09	Nitrate plus nitrite as N	3.15	0.250	1.25	10			086945-018	EPA 353.2
MWL-MW8 07-Jan-09	Nitrate plus nitrite as N	1.11	0.050	0.250	10			086950-018	EPA 353.2
MWL-MW8 (Duplicate) 07-Jan-09	Nitrate plus nitrite as N	1.12	0.050	0.250	10			086951-018	EPA 353.2
MWL-MW9 08-Jan-09	Nitrate plus nitrite as N	1.82	0.250	1.25	10			086953-018	EPA 353.2
MWL-BW2 01-Apr-09	Nitrate plus nitrite as N	2.06	0.100	0.500	10			087151-018	EPA 353.2
MWL-MW4 13-Apr-09	Nitrate plus nitrite as N	0.920	0.050	0.250	10			087159-018	EPA 353.2
MWL-MW5 02-Apr-09	Nitrate plus nitrite as N	1.39	0.050	0.250	10			087163-018	EPA 353.2
MWL-MW6 03-Apr-09	Nitrate plus nitrite as N	1.52	0.050	0.250	10			087158-018	EPA 353.2
MWL-MW5 (Duplicate) 03-Apr-09	Nitrate plus nitrite as N	1.72	0.100	0.500	10			087159-018	EPA 353.2
MWL-MW7 08-Apr-09	Nitrate plus nitrite as N	3.66	0.100	0.500	10			087165-018	EPA 353.2
MWL-MW8 07-Apr-09	Nitrate plus nitrite as N	1.61	0.100	0.500	10			087161-018	EPA 353.2
MWL-MW9 09-Apr-09	Nitrate plus nitrite as N	2.18	0.100	0.500	10			087167-018	EPA 353.2
MWL-BW2 05-Jul-09	Nitrate plus nitrite as N	2.01	0.050	0.250	10			087489-018	EPA 353.2
MWL-MW7 07-Jul-09	Nitrate plus nitrite as N	3.03	0.050	0.250	10			087492-018	EPA 353.2
MWL-MW8 08-Jul-09	Nitrate plus nitrite as N	0.175	0.010	0.050	10			087495-018	EPA 353.2
MWL-MW9 09-Jul-09	Nitrate plus nitrite as N	2.03	0.050	0.250	10			087500-018	EPA 353.2
MWL-MW9 (Duplicate) 09-Jul-09	Nitrate plus nitrite as N	1.96	0.050	0.250	10			087501-018	EPA 353.2

Table A-5 (Concluded)
Summary of Nitrate plus Nitrite Results
Mixed Waste Landfill Groundwater Monitoring, Sandia National Laboratories/New Mexico
Calendar Year 2009

Well ID	Analyte	Result (mg/L)	MDL ^a (mg/L)	PQL ^b (mg/L)	MCL ^c (mg/L)	Laboratory Qualifier	Validation Qualifier ^d	Sample No.	Analytical Method ^e
MWL-BW2 06-Oct-09	Nitrate plus nitrite as N	2.04	0.100	0.500	10			087769-018	EPA 353.2
MWL-BW2 (Duplicate) 06-Oct-09	Nitrate plus nitrite as N	1.98	0.100	0.500	10			087770-018	EPA 353.2
MWL-MW7 08-Oct-09	Nitrate plus nitrite as N	3.04	0.100	0.500	10			087774-018	EPA 353.2
MWL-MW8 07-Oct-09	Nitrate plus nitrite as N	0.850	0.050	0.250	10			087772-018	EPA 353.2
MWL-MW9 05-Oct-09	Nitrate plus nitrite as N	2.08	0.100	0.500	10			087765-018	EPA 353.2

^aThe MDL is the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero.
^bThe PQL is the lowest concentration of analyte in a sample that can be reliably determined within specified limits of precision and accuracy by the indicated method under routine laboratory operating conditions.
^cThe MCL is established by the EPA Primary Water Regulations (40 CFR 141.11(b)), and subsequent amendments.
^dIf cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples.
^eEPA 1979, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, U.S. Environmental Protection Agency, Cincinnati, Ohio.
CFR = Code of Federal Regulations.
EPA = U.S. Environmental Protection Agency.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
mg/L = Milligram(s) per liter.
PQL = Practical quantitation limit.