National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400

MAY 2 7 2009

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Road East Bldg 1
Santa Fe, NM 87505

Dear Mr. Bearzi:

On behalf of the Department of Energy/National Nuclear Security Administration (DOE/NNSA) and Sandia Corporation (Sandia), DOE/NNSA is submitting the Mixed Waste Landfill (MWL) Annual Groundwater Monitoring Report, Calendar Year 2008. This report presents the groundwater monitoring data from the annual sampling event conducted at the MWL in 2008.

During 2008, four monitoring wells at the MWL were plugged and abandoned (MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3) and four new monitoring wells were installed (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9). The new wells added to the MWL monitoring well network require sampling for eight consecutive quarters for a defined suite of parameters. In addition, sampling for perchlorate is required at the new wells for at least four consecutive quarters. Based on the results of the 2008 groundwater monitoring events, constituent concentrations remain within the historical ranges for the site at monitoring wells MWL-MW4, MWL-MW5, and MWL-MW6. Results for the new wells do not indicate any variance from historical ranges.

Should you have any questions regarding this submittal, please contact me at (505) 845-6036, or John Gould of my staff, at (505) 845-6089.

Sincerely,

Kimberly A. Davis
Acting Manager

Enclosure

cc w/enclosure:
W. Moats, NMED-HWB (Via Certified Mail)
L. King, EPA, Region 6 (Via Certified Mail)
T. Skibitski, NMED-OB
B. Birch, NMED-OB
J. Gould, SSO

cc w/o enclosure:
T. Longo, HQ/GTN, NA-56
D. Miller, SNL/NM, Org 6765, MS-0718
J. Cochran, SNL/NM, Org. 6765, MS-0719
M. Skelly, SNL/NM, Org. 6765, MS-0718
M. Mitchell, SNL/NM, Org. 6765, MS-0718
Records Center, SNL/NM, Org.6765, MS-1089
J. Estrada, SSO, MS-0184

CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: **Mixed Waste Landfill Groundwater Monitoring Report Calendar Year 2008**

Document author: **Kathy Turnham, Department 06765**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature: _____ 5/5/09
Date

Francis B. Nimick
Deputy to the Director
Nuclear Energy & Global Security Technologies
Center 6700
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185
Operator

and

Signature: _____ 5/27/09
Date

Kimberly A. Davis
Acting Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

Sandia National Laboratories

Sandia National Laboratories/New Mexico Environmental Restoration Project

MIXED WASTE LANDFILL GROUNDWATER MONITORING REPORT CALENDAR YEAR 2008

May 2009

United States Department of Energy
Sandia Site Office

Sandia is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly-owned subsidiary of Lockheed Martin Corporation, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

EXECUTIVE SUMMARY

Groundwater sampling was conducted at the Sandia National Laboratories Mixed Waste Landfill (MWL) in April, July, and October 2008. During 2008, four monitoring wells at the MWL were plugged and abandoned (MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3) and four new monitoring wells were installed (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9). The new wells added to the MWL monitoring well network require sampling for eight consecutive quarters for a defined suite of parameters. In addition, sampling for perchlorate is required at the new wells for at least four consecutive quarters. Monitoring wells were sampled in accordance with appropriate field operating procedures for groundwater sampling activities and mini-sampling and analysis plans (SNL/NM March 2008, June 2008, and October 2008). The field activities and results for this year's groundwater sampling events are presented in this report. Based on the results of the 2008 groundwater monitoring events, constituent concentrations remain within the historical ranges for the site.

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ACRONYMS AND ABBREVIATIONS

AOP	Administrative Operating Procedure
COC	constituent of concern
DO	dissolved oxygen
DOE	U.S. Department of Energy
EB	equipment blank
EPA	U.S. Environmental Protection Agency
FB	field blank
FOP	Field Operating Procedure
GEL	General Engineering Laboratories, Inc.
L	liter(s)
LTES	Long-Term Environmental Stewardship
MCL	maximum contaminant level
MDA	minimum detectable activity
MDL	method detection limit
μg	microgram(s)
mg	milligram(s)
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
ORP	oxidation-reduction potential
P&A	Plug and Abandon
pCi	picocurie(s)
pH	potential of hydrogen
PQL	practical quantitation limit
PVC	polyvinyl chloride
QC	quality control
RPD	relative percent difference
Sandia	Sandia Corporation
SAP	Sampling and Analysis Plan
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TA	Technical Area
TAL	target analyte list
VOC	volatile organic compound

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1.0 INTRODUCTION

Groundwater monitoring of seven wells was conducted at the Sandia National Laboratories/New Mexico (SNL/NM) Mixed Waste Landfill (MWL) throughout the 2008 calendar year. This report describes the field activities conducted during the sampling events and presents the analytical results. During 2008, fieldwork completed at the MWL included the plugging and abandonment of four wells and subsequent installation of four new groundwater monitoring wells. Because the MWL groundwater monitoring well network was revised, the 2008 groundwater monitoring at the MWL encompasses three sampling events that took place in April, July, and October 2008. In addition, for the 2008 monitoring event, perchlorate was added to the list of analytical parameters selected for monitoring at the MWL.

The MWL is located on Kirtland Air Force Base, 4 miles south of the SNL/NM Technical Area (TA)-I facilities and 5 miles southeast of Albuquerque International Sunport. The landfill is a 2.6-acre site in the north-central portion of TA-III (Figure 1-1). The MWL was established in 1959 as a disposal area for low-level radioactive and mixed waste generated by SNL/NM research facilities. The landfill accepted low-level radioactive and minor amounts of mixed waste from March 1959 through December 1988. Approximately 100,000 cubic feet of low-level radioactive and mixed waste containing approximately 6,300 curies (at the time of disposal) of activity were disposed of in the landfill.

Groundwater in the area of the MWL has been extensively characterized since 1990 for major ion chemistry, volatile organic compounds (VOCs), nitrate, metals, and radionuclides. Eighteen years of quarterly, semiannual, and annual data indicate that groundwater has not been contaminated by releases from the MWL (Goering et al. 2002; SNL/NM December 2001, January 2002, March 2002, July 2002, August 2002, October 2002, June 2003, September 2003, July 2004; Lyon and Goering January 2006; SNL/NM November 2006 and January 2008).

The MWL groundwater monitoring well network was revised in 2008. Four monitoring wells were plugged and abandoned (MWL-BW1, MWL-MW1, MWL-MW2, and MWL-MW3) and four new monitoring wells were installed (MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9). Figure 1-2 shows the current groundwater monitoring well network at the MWL. The well network consists of seven wells completed within the interfingering, fine-grained, alluvial fan deposits and coarse-grained, Ancestral Rio Grande deposits. The monitoring well network consists of one background well (MWL-BW2), one on-site well (MWL-MW4), and five downgradient or cross-gradient wells (MWL-MW5, MWL-MW6, MWL-MW7, MWL-MW8, and MWL-MW9) (Figure 1-2).

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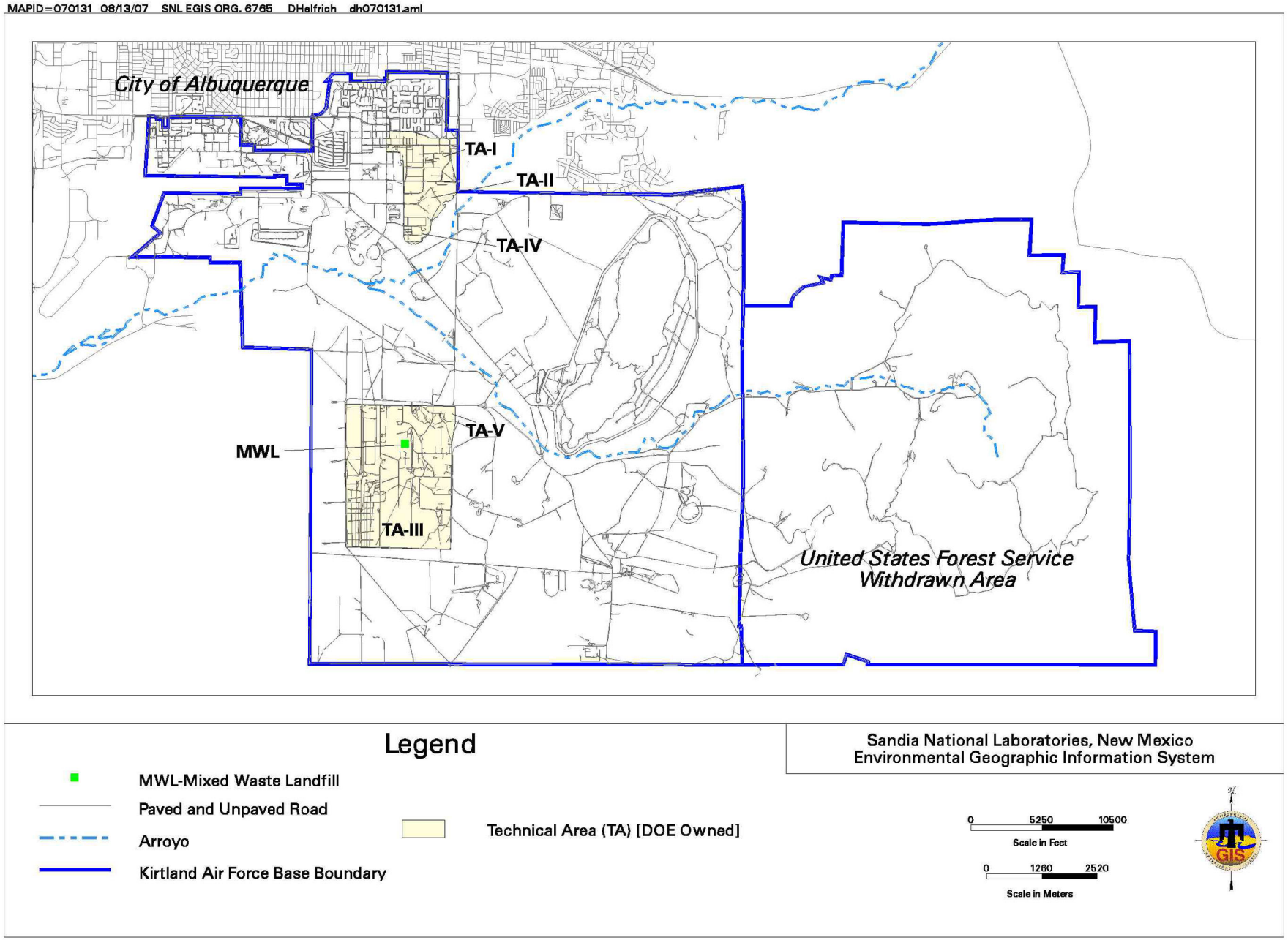
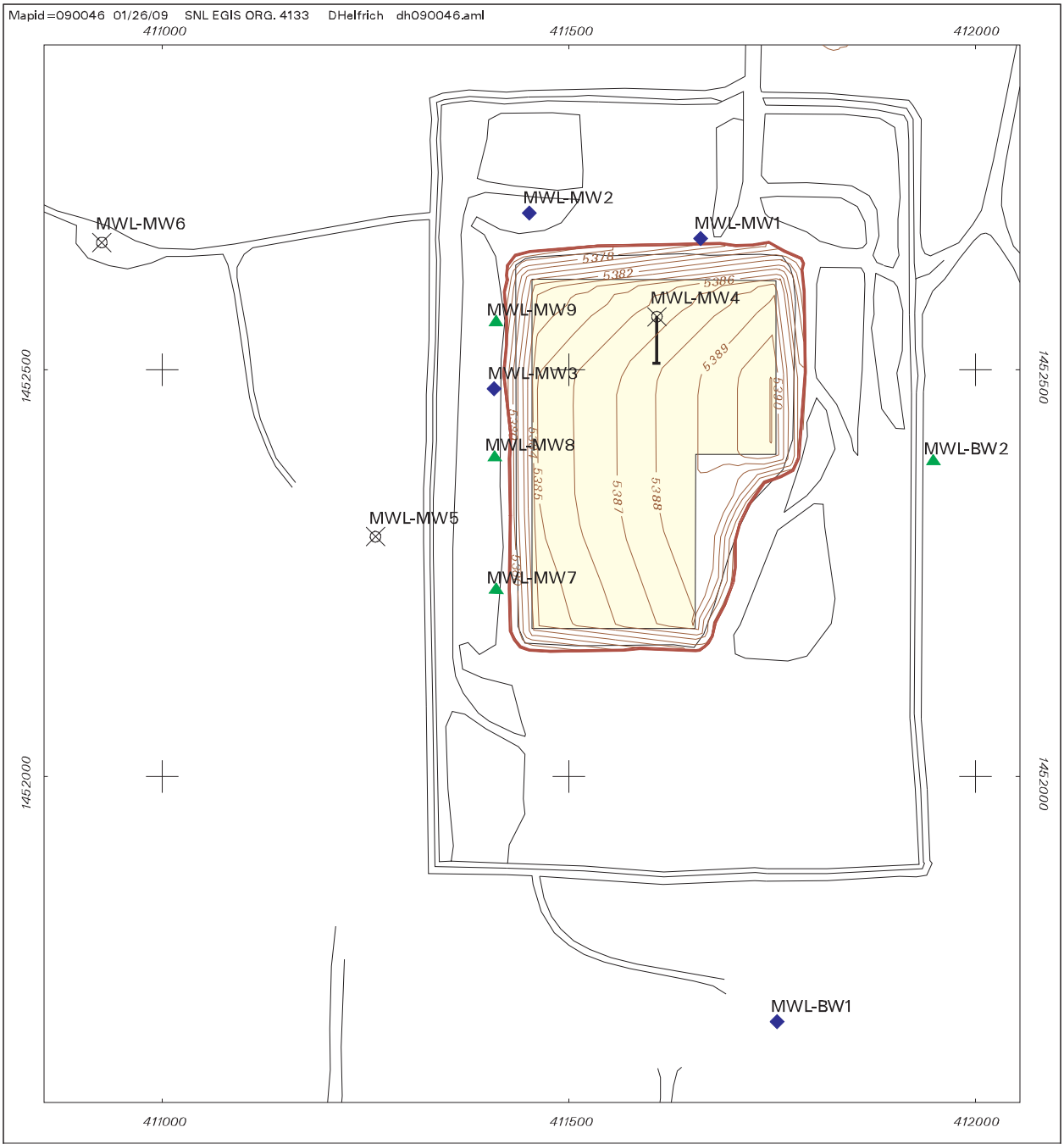


Figure 1-1 Location of Sandia National Laboratories and Kirtland Air Force Base



Legend

- Recently Installed Groundwater Monitoring Well
- Recently Plugged and Abandoned Groundwater Monitoring Well
- Groundwater Monitoring Well MWL-MW4 (showing horizontal extent)
- Groundwater Monitoring Well
- 1-ft Contour Interval for Proposed Soil Cover
- Toe of Proposed Soil Cover
- Road
- MWL Extent

Figure 1-2
Location of Recently Plugged and Abandoned Groundwater Monitoring Wells and Recently Installed Groundwater Monitoring Wells at the Mixed Waste Landfill

0 100 200
Scale in Feet

0 24 48
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

840857.04300000 A6

2.0 REGULATORY CRITERIA

Historically, the New Mexico Environment Department (NMED) Hazardous Waste Bureau has provided regulatory oversight of the MWL as Solid Waste Management Unit (SWMU) 76 under the Hazardous and Solid Waste Amendments module of the facility Resource Conservation and Recovery Act permit. The NMED confirmed that the MWL is properly designated as a SWMU (Dinwiddie June 1998) and, as such, must comply with the corrective action program defined in Title 20, New Mexico Administrative Code, Section 4.1.50, incorporating Title 40, Code of Federal Regulations, Section 264.101. The requirements for corrective action at the MWL, including those for groundwater monitoring, are established through the corrective measures process.

The NMED issued the Compliance Order on Consent (the Consent Order) in April 2004, which transferred the regulatory requirements for groundwater sampling at the MWL to the Consent Order (NMED April 2004). This report has been formatted to address the content criteria set forth in the Consent Order for Periodic Monitoring Reports. The following "crosswalk" table lists the required elements from the Consent Order and the corresponding section(s) in which these elements are addressed in this report.

Required Elements of the Consent Order (NMED April 2004)	MWL Groundwater Monitoring Report 2008 Sampling Events
1. Title Page and Signature Block (for the name, title, and organization of the preparer and the responsible U.S Department of Energy (DOE) and Sandia Corporation (Sandia) representative)	Title Page Signatures for full Sandia and DOE chain of command on the transmittal paperwork that accompanies the report from Sandia to the DOE to the NMED
2. Executive Summary (Abstract)	Executive Summary and Chapter 9.0
3. Table of Contents	Table of Contents
4. Introduction	Chapter 1.0 Introduction
5. Scope of Activities	Chapter 3.0 Scope of Activities
6. Regulatory Criteria	Chapter 2.0 Regulatory Criteria
7. Monitoring Results	Chapter 6.0 Summary of Analytical Results
8. Conclusions	Chapter 9.0 Summary and Conclusions
9. Tables	Appendix A
10. Figures	Chapter 1.0 Introduction; Chapter 4.0 Field Methods and Measurements
11. Appendices	Appendix A

Although radionuclides are being monitored at the MWL, the information related to radionuclides is provided voluntarily by the DOE/Sandia. The voluntary inclusion of such radionuclide information shall not be enforceable and shall not constitute the basis for any enforcement because such information falls wholly outside the requirements imposed by the NMED, as specified in Section III.A of the Consent Order (NMED April 2004).

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3.0 SCOPE OF ACTIVITIES

Groundwater sampling was conducted at the MWL in 2008 in accordance with the appropriate field operating procedures (FOPs) and Mini-Sampling and Analysis Plans (SAPs) (SNL/NM March 2008, June 2008, and October 2008). The monitoring well network changed in 2008. Four wells were plugged and abandoned and four replacement wells were installed. Seven monitoring wells at the MWL were sampled, including one on-site monitoring well (MWL-MW4), one background well (MWL-BW2), and five downgradient monitoring wells (MWL-MW5, MWL-MW6, MWL-MW7, MWL-MW8, and MWL-MW9). Three sampling events occurred at the MWL during 2008 on the following dates: April 8 to April 16; July 14 to July 17; and October 1 to October 8. Table 3-1 graphically represents the well installation, plugging and abandonment, and groundwater sampling events that took place in 2008.

Table 3-1
2008 Groundwater Sampling Events and Monitoring Well Network Changes at the Mixed Waste Landfill

Well ID	**Jan 2008**	**April 2008**	**May 2008**	**July 2008**	**Oct 2008**
MWL-BW1	Plugged and Abandoned				
MWL-BW2	Well Installed	1st Quarterly Sampling		2nd Quarterly Sampling	3nd Quarterly Sampling
MWL-MW1		Plugged and Abandoned			
MWL-MW2			Plugged and Abandoned		
MWL-MW3		Plugged and Abandoned			
MWL-MW4		Annual Sampling			
MWL-MW5		Annual Sampling			
MWL-MW6		Annual Sampling			
MWL-MW7			Well Installed	1st Quarterly Sampling	2nd Quarterly Sampling
MWL-MW8			Well Installed	1st Quarterly Sampling	2nd Quarterly Sampling
MWL-MW9			Well Installed	1st Quarterly Sampling	2nd Quarterly Sampling

BW = Background well.
ID = Identification.
MW = Monitoring well.
MWL = Mixed Waste Landfill.

3.1 Analytical Parameters

The analytical parameters selected for monitoring include target analyte list (TAL) metals, total uranium, VOCs and semivolatile organic compounds (SVOCs), nitrate plus nitrite, bromide, fluoride, chloride, sulfate, manganese II, total organic carbon, carbon dioxide, total dissolved solids, ferrous iron, and biochemical oxygen demand. Perchlorate analysis has been added to the analyte list for the newly installed wells for four quarters unless it is detected above the screening level of 4 micrograms (μg) per liter (L) (NMED April 2004, Table XI-1). Alkalinity titrations were performed in the field on groundwater samples collected from each well. Analyses for radiological parameters include gross alpha/beta activity, tritium, and gamma-emitting radionuclides.

3.2 Modification of Monitoring Well Network

In early 2007, it was determined that due to declining groundwater levels, MWL-BW1 was no longer useful for sampling; consequently, the NMED requested that MWL-BW1 be plugged and abandoned and replaced (Bearzi March 2007). At the time of the annual groundwater monitoring sampling event in 2007, approximately 1 foot of water was present within the well screen of MWL-BW1, and the well could not be sampled. On April 17, 2007, a monitoring well plug and abandon (P&A) plan for MWL-BW1 and replacement well construction plan for MWL-BW2 were submitted to the NMED (SNL/NM April 2007). In January 2008, MWL-BW1 was plugged in situ, and MWL-BW2 was installed according to the approved plan (SNL/NM April 2008).

In 2007, the NMED also requested the replacement of monitoring wells MWL-MW1 and MWL-MW3 because of low water levels in MWL-MW3 and problems with corrosion of the stainless-steel screens in both these wells (Bearzi July 2007). The DOE/Sandia submitted a P&A plan for MWL-MW1 and MWL-MW3 and replacement well construction plan for two new wells identified as MWL-MW7 and MWL-MW8 (SNL/NM July 2007a). On April 23 and April 24, 2008, MWL-MW1 and MWL-MW3 were abandoned in situ, and subsequently, in May 2008, monitoring wells MWL-MW7 and MWL-MW8 were installed (SNL/NM September 2008).

In February 2008, the NMED requested a work plan to P&A MWL-MW2 and to install a third new well (MWL-MW9), which was submitted to the NMED (SNL/NM February 2008). The NMED approved the work plan in March 2008 (Bearzi March 2008), and in May 2008, MWL-MW2 was plugged and abandoned and MWL-MW9 was installed (SNL/NM September 2008).

The monitoring wells MWL-MW7, MWL-MW8, and MWL-MW9 and background well MWL-BW2 are considered new wells and, as required by the Consent Order, Section XI, Table XI-1 (NMED April 2004), will be sampled for eight consecutive quarters for a defined suite of parameters, in addition to being sampled for perchlorate for at least four consecutive quarters. Preexisting wells MWL-MW4, MWL-MW5, and MWL-MW6 will continue to be sampled on an annual basis in April for the constituents listed in Section 3.1.

Installation reports for the new wells were submitted in April and September 2008 (SNL/NM April 2008 and September 2008) and approved by the NMED (Bearzi October 2008 and January 2009). All seven MWL wells are constructed of 5-inch, Schedule 80 polyvinyl

chloride (PVC) casing and have screens composed of slotted Schedule 80 PVC. Table A-1 (Appendix A) presents water levels measured during the 2008 sampling events.

In 1993, MWL-MW4 was completed at an angle of 6 degrees from vertical and is screened at two discrete intervals 20 feet apart (SNL/NM September 2002) to evaluate vertical anisotropy, vertical potentiometric gradients, and changes in aquifer parameters with depth. An inflatable packer separates the screened intervals, and pressure is maintained in the packer to prevent combining groundwater from the two screened sections of the aquifer. Although monitoring well MWL-MW4 is screened in two discrete intervals, only the upper interval was sampled, as this is the uppermost water-bearing interval beneath the MWL. References in this report to groundwater samples from MWL-MW4 refer to groundwater withdrawn from the upper interval. The total well depth measurement of MWL-MW4, presented in Table A-1, represents the upper interval distance from the top of the packer to the top of the casing.

The MWL groundwater samples were submitted for analysis to General Engineering Laboratories, Inc. (GEL) located in Charleston, South Carolina; Hall Analytical in Albuquerque, New Mexico; and Metro-Ohm Peak in Houston, Texas. All groundwater samples were collected using a Bennett™ pump.

Field quality control (QC) samples submitted to GEL included field duplicate samples, equipment blank (EB) samples, and field blank (FB) samples. Chapter 7.0 discusses the QC sample results.

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4.0 FIELD METHODS AND MEASUREMENTS

Field measurements performed during groundwater sampling activities included groundwater elevations and water quality parameters. The following sections present a detailed discussion of field activities and methods.

4.1 Groundwater Elevation Measurements

Depth-to-groundwater measurements were obtained using a Solinst™ depth-to-water well sounder prior to purging activities. Depth-to-groundwater measurements were performed in accordance with FOP 05-01, "Long-Term Environmental Stewardship (LTES) Groundwater Monitoring Well Sampling and Field Analytical Measurements" (SNL/NM August 2007a). Measurements were obtained from all monitoring wells available at the time of sampling. Table A-1 (Appendix A) presents groundwater elevations and static water height information.

Groundwater occurs approximately 500 feet below ground surface within Santa Fe Group deposits (basin fill) in either fine-grained, alluvial fan deposits or coarse-grained, Ancestral Rio Grande deposits. Hydraulic conductivity values average 1.64×10^{-2} feet/day in the alluvial fan deposits and 1.81 feet/day in the Ancestral Rio Grande deposits. Figure 4.1-1 shows the regional potentiometric surface of the basin fill aquifer west of the Sandia fault complex. Figure 4.1-2 shows the localized potentiometric surface of the basin fill aquifer at the MWL. The localized flow pattern shown in Figure 4.1-2 exhibits more variation in the flow field. The general regional flow gradient is from east-southeast to west-northwest, which is supported by the data presented in Figure 4.1-1.

4.2 Well Purging and Water Quality Measurements

Prior to sample collection, each monitoring well was purged to remove stagnant well casing water. Most MWL monitoring wells recharge slowly, and multiple days were required to purge and sample these wells. The monitoring wells were purged to dryness, allowed to recover, and then sampled to collect the most representative groundwater sample possible, given the low yields of these wells. The recovery period was based upon the recharge rate of the well and volume necessary for each sample. Total purge volumes presented in Table A-2 (Appendix A) are based upon measured volumes evacuated from each monitoring well prior to sample collection.

Well MWL-BW2 was purged a minimum of one saturated screen volume before sampling in conformance with FOP 05-01 (SNL/NM August 2007a). Wells MWL-MW7, MWL-MW8, and MWL-MW9 are low-yield monitoring wells. These wells were purged to dryness and allowed to recover before sampling to ensure the most representative groundwater sample possible.

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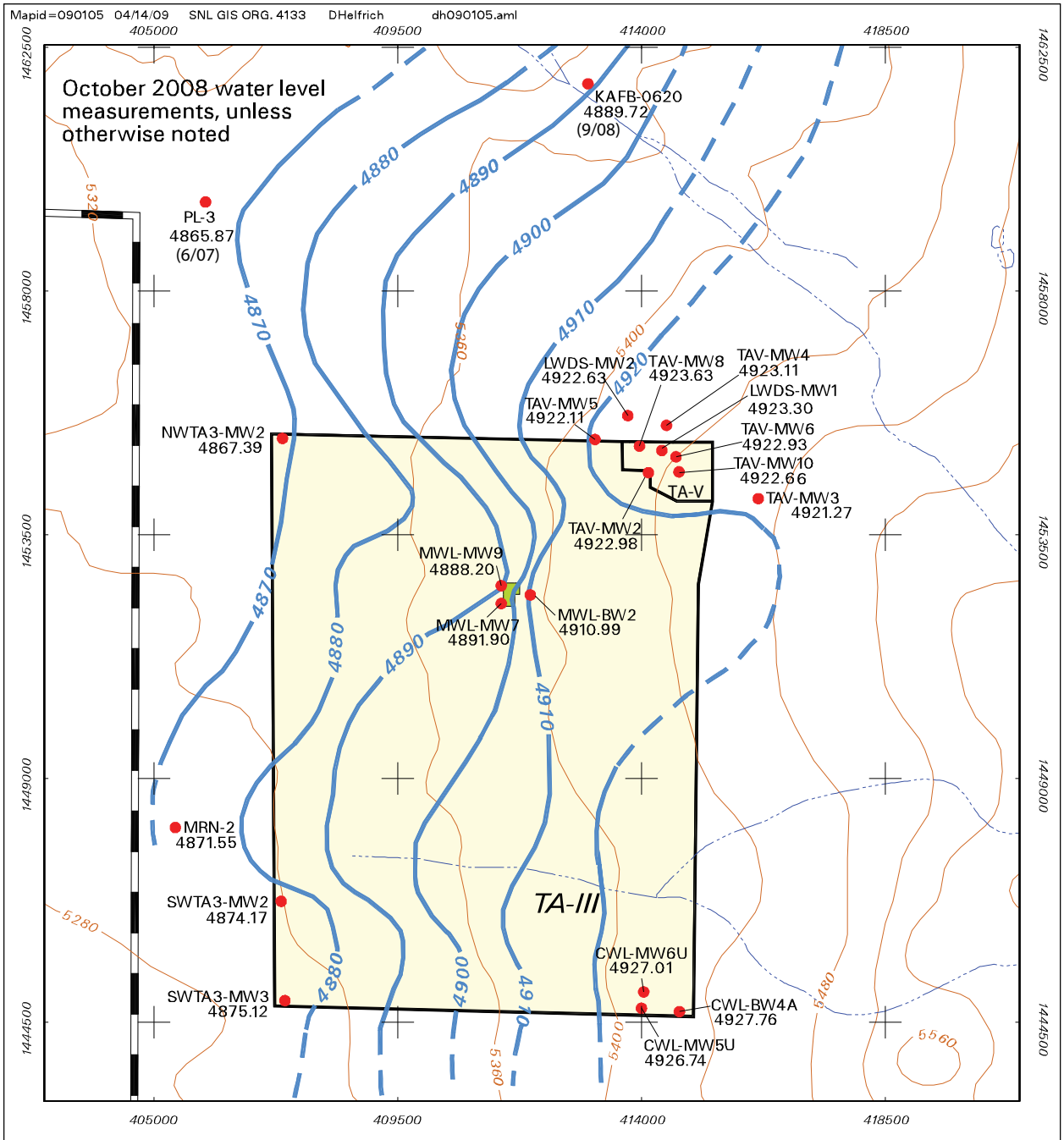

Legend

- 4875.12 — Monitoring Well with Water Table Elevation (feet above mean sea level)
- Surface Drainage
- 40-ft Ground Surface Contour Interval
- Kirtland Air Force Base Boundary
- Groundwater Elevation Contour (10-ft interval, dashed = inferred)
- Technical Area Boundary
- MWL - Mixed Waste Landfill

Figure 4.1-1
Regional Potentiometric Surface of the Basin Fill Aquifer in the Vicinity of Technical Area III

0 1500 3000
Scale in Feet

0 360 720
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

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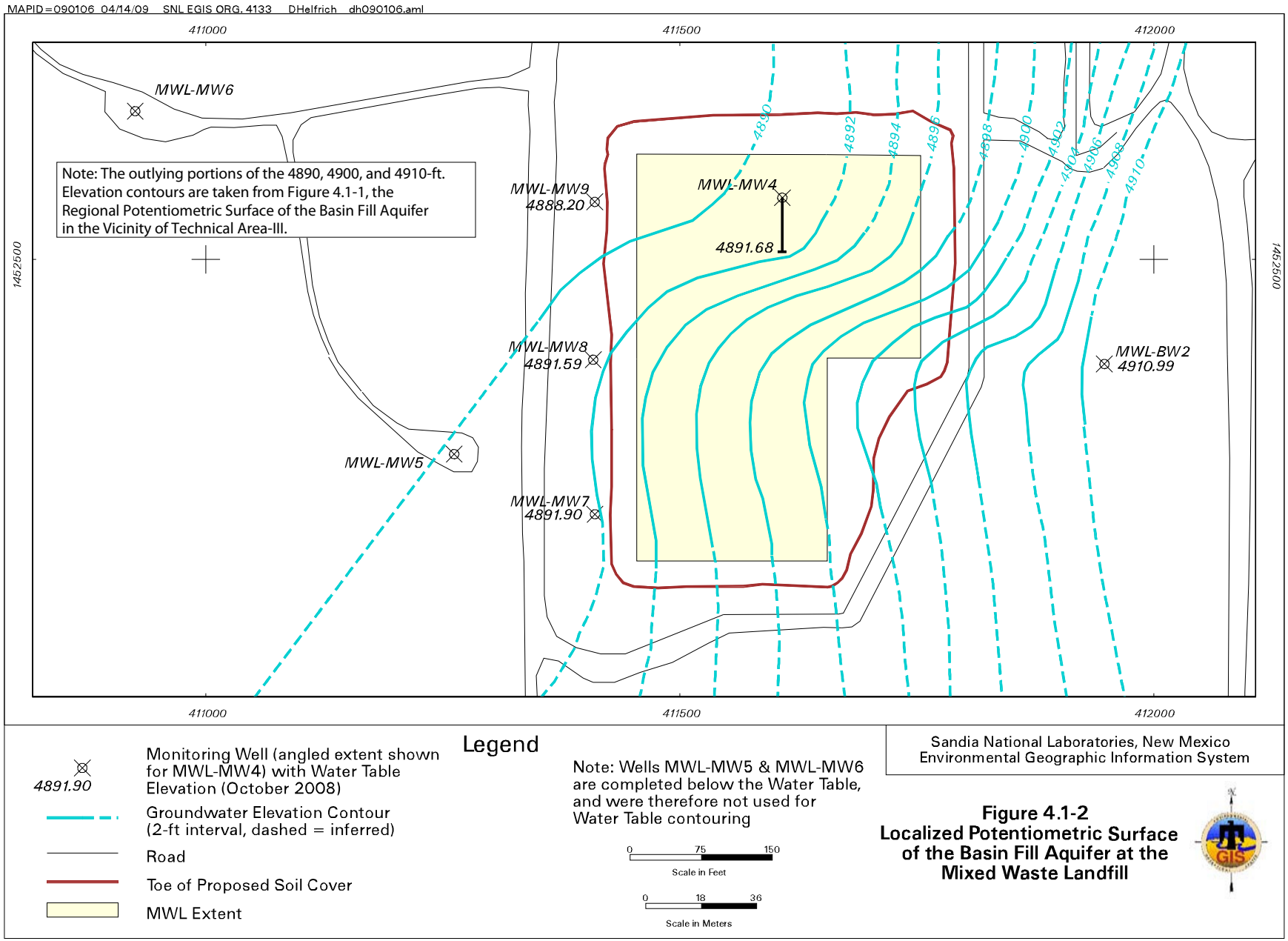

Figure 4.1-2
Localized Potentiometric Surface of the Basin Fill Aquifer at the Mixed Waste Landfill

Field analytical measurements were collected in accordance with FOP 05-01 (SNL/NM August 2007a). Groundwater temperature, specific conductance, potential of hydrogen (pH), oxidation-reduction potential (ORP), and dissolved oxygen (DO) were measured using a YSI™ Model 6820 flow cell and multiparameter water quality meter. Turbidity was measured with a Hach™ Model 2100P portable turbidity meter. In addition, a Hach™ field kit was used to perform alkalinity titrations. Water quality measurements were recorded on Field Measurement Log forms. Groundwater pH, temperature, specific conductance, turbidity, DO, and ORP were measured during purging, before sample collection. Table A-2 shows the final measurements taken before the samples were collected.

4.3 Pump Decontamination

The Bennett™ pump and tubing bundle used to collect groundwater samples were decontaminated prior to installation in MWL monitoring wells according to FOP 05-03, "LTES Groundwater Sampling Equipment and Decontamination" (SNL/NM August 2007b). The EB samples collected during the 2008 groundwater sampling events were collected after decontamination to verify the effectiveness of the decontamination procedure and are discussed in Section 7.1.1.

4.4 Sample Collection

All groundwater samples were collected directly from the pump discharge tube into prepared laboratory-provided sample containers. Where appropriate for the requested analysis, chemical preservatives were added to the sample containers at the laboratory prior to shipment.

Two groundwater samples were collected from each monitoring well for metals analyses. One unfiltered sample was collected for total metals analyses. The other sample was filtered through a 0.45-micron filter for dissolved metals analyses.

4.5 Sample Handling and Shipment

Immediately after collection, all sample containers were custody-taped, sealed in plastic bags, and placed on cold packs in shipping containers. Analysis Request/Chain-of-Custody forms were completed at the time of collection. The samples for chemical and radiological analyses were shipped via the SNL/NM Sample Management Office to the contracted analytical laboratory. Sample management activities followed SNL/NM Administrative Operating Procedure (AOP) 95-16, "Sample Management and Custody" (SNL/NM February 2007).

4.6 Waste Management

All purge and decontamination water was managed according to FOP 05-04, "LTES Groundwater Monitoring Waste Management" (SNL/NM August 2007c) and was containerized on site pending the results of the analyses. Waste labels were placed on all drums, and the corresponding sample numbers were marked on the outside of the drum with a permanent marker. The wastes were recorded on a Daily Log of Wastes Generated form and submitted to the SNL/NM Environmental Restoration Project Waste Disposal Coordinator.

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5.0 ANALYTICAL METHODS

Table A-3 (Appendix A) specifies the analytical parameters, appropriate test methods, and target analyte quantitation limits for sample analyses. The analytical methods are discussed in the following sections.

5.1 Chemical Analytical Methods

All chemical analyses were performed in accordance with the U.S. Environmental Protection Agency (EPA) test methods (EPA 1979, 1986, 1988, and 1999). Environmental samples were submitted to the following laboratories for the analyses listed:

- GEL:
  - VOCs by EPA Method 8260B
  - TAL metals by EPA Methods 6020 and 7470A (including total and isotopic uranium by EPA Method 6020)
  - Nitrate plus nitrite by EPA Method 353.2
  - Bromide, fluoride, chloride, and sulfate by EPA Method 9056
  - Total organic carbon by EPA Method 9060
  - Carbon dioxide by Laboratory-Specific Method SM 4500 CO2 D
  - Total alkalinity as calcium carbonate by EPA Method 310.1
  - Total dissolved solids by EPA Method 160.1
  - Perchlorate by EPA Method 314.0
- Hall Analytical:
  - Ferrous iron by Laboratory-Specific Method 3500M Fe2+
  - Biochemical oxygen demand by EPA Method 405.1
- Metro-Ohm Peak:
  - Manganese II by Laboratory-Specific Method C2-100 Mn2+

5.2 Radiological Analytical Methods

Radiological parameters and analytical methods include gamma-emitting radionuclides by EPA Method 901.1, gross alpha/beta activity by EPA Method 900.0, and tritium by EPA Method 906.0.

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6.0 SUMMARY OF ANALYTICAL RESULTS

Tables summarizing field measurements and analytical results are included in this report as Appendix A. Complete field and laboratory documentation are on file at the SNL/NM Customer Funded Records Center.

The results for chemical and radiological constituent analysis are compared with established EPA Safe Drinking Water Act Regulations maximum contaminant levels (MCLs) (EPA 2001), where applicable.

The QC samples associated with each sampling event are included in the analysis of results and are discussed in Chapter 7.0. Data qualifiers resulting from QC samples or data validation results are presented with the related data in respective data tables in Appendix A.

6.1 General Chemistry Parameters

The general chemistry analytical results are presented in Table A-4 (Appendix A). No general chemistry parameters exceed the MCLs (where established) in the groundwater samples. Nitrate plus nitrite (as nitrogen) and fluoride are the only two parameters that have established MCLs (10 and 4 milligrams [mg]/L, respectively). Nitrate plus nitrite (as nitrogen) concentrations range from 0.885 mg/L in the sample collected in July from MWL-MW8 to 3.24 mg/L in the sample collected in October from MWL-MW7. Fluoride was detected at concentrations ranging from 0.658 mg/L (April, MWL-BW2) to 1.06 mg/L (July, MWL-MW9).

6.2 Metals

Table A-5 (Appendix A) summarizes the metals results from all unfiltered groundwater samples collected during the 2008 groundwater monitoring events at the MWL. Samples were analyzed for TAL metals according to EPA Method 6020 (EPA 1986). No metals were detected in the unfiltered samples at concentrations that exceed the established MCLs.

Table A-6 (Appendix A) summarizes the results for TAL metals analysis for the filtered samples collected during the 2008 groundwater monitoring events. No detections of any metals in the filtered samples exceed the respective MCLs.

Samples from MWL-MW7, MWL-MW8, and MWL-MW9 were analyzed for total uranium during both quarterly sampling events (July and October). All results, presented in Tables A-5 and A-6, are less than the MCL of 0.03 mg/L and are consistent with previous sampling events at the MWL.

Uranium isotopes uranium-235 and uranium-238 were determined as mass concentrations during metals analysis on the inductively-coupled plasma mass spectrometer using EPA Method 6020. The isotopic mass concentrations are reported in units of mg/L and are presented in Tables A-5 and A-6 with the results for unfiltered and filtered samples analyzed by this method. All uranium isotope values are consistent with past results.

Uranium-235 values range from 0.000047 mg/L in unfiltered samples from MWL-BW2 in October and MWL-MW8 in July and the filtered sample from MWL-BW2 in April to 0.000066 mg/L in the filtered sample from MWL-MW5 (duplicate) in April. Uranium-238 values range from 0.00661 mg/L in the unfiltered sample from MWL-BW2 in April to 0.009 mg/L in the unfiltered sample from MWL-MW5 in April.

6.3 Volatile and Semivolatile Organic Compounds

Table A-7 (Appendix A) summarizes the results for detected VOCs and SVOCs, and Table A-8 (Appendix A) presents the analytical method and corresponding method detection limits (MDLs) for VOCs and SVOCs. Trace concentrations of acetone and toluene were reported for groundwater samples from the MWL monitoring wells. The MCL for toluene is 1,000 μg/L, and the concentration detected in the sample from MWL-MW9 collected in July was 0.51 μg/L. No MCL is established for acetone, and the concentrations detected in two samples collected in April were 3.82 mg/L (MWL-MW4) and 2.31 mg/L (MWL-MW6). The results for acetone and toluene presented in Table A-7 are qualified as estimated values and are less than the respective practical quantitation limits (PQLs).

6.4 Perchlorate

During 2008, recently installed groundwater monitoring wells MWL-MW7, MWL-MW8, and MWL-MW9 and background monitoring well MWL-BW2 were added to the perchlorate screening monitoring well network and require perchlorate screening.

The Consent Order (NMED April 2004) requires that new wells be sampled for perchlorate for a minimum of four quarters. If perchlorate is detected above the screening level in a specific well, monitoring will continue for that well at a frequency negotiated with the NMED. Four consecutive nondetections using the screening level of 4 μg/L are considered by the NMED to be evidence of the absence of perchlorate, such that additional monitoring for perchlorate in that well would not be required.

The sampling results for perchlorate for these wells are presented in Table A-9 (Appendix A). No detections of perchlorate at or above the screening level of 4 μg/L were reported for the environmental samples from the groundwater monitoring wells MWL-MW7, MWL-MW8, MWL-MW9, and MWL-BW2.

6.5 Radiological Parameters

Groundwater samples from the MWL monitoring wells were analyzed for gamma-emitting radionuclides, gross alpha/beta activity, and tritium. The results for tritium, gross alpha/beta, and gamma spectroscopy activity are presented in Table A-10 (Appendix A) and are compared with the established EPA MCLs (no MCL has been established for tritium). No radiological parameters were detected above established MCLs.

Gross alpha activity levels were detected above laboratory reporting limits in all environmental samples. Uncorrected gross alpha activity levels range from 4.06 ± 2.08 picocuries (pCi)/L in the MWL-MW7 sample from October to 17.8 ± 10.5 pCi/L in the MWL-MW6 sample from April.

Gross beta activity levels range from 3.25 ± 1.84 pCi/L in the MWL-BW2 sample from July to 12.1 ± 4.75 pCi/L in the MWL-MW5 sample from April.

A reanalysis of the uncorrected gross alpha sample from MWL-MW6 was requested. The reanalysis conducted included samples from MWL-MW4 and MWL-MW5, as these were contained in the same laboratory QC batch as the sample from MWL-MW6. The results from the reanalysis confirmed the initial results; however, after subtracting activity associated with uranium (corrected alpha activity), the values are below the established MCL (Table A-11).

Corrected gross alpha activity values (Table A-11) are obtained by subtracting uranium alpha contribution from the gross alpha activity. Two methods were used to determine corrected gross alpha activity (Table A-11). Neither method resulted in corrected gross alpha activity that exceeds the established MCL of 15 pCi/L.

Neither tritium, analyzed by EPA Method 906.0, nor gamma-emitting isotopes, analyzed by EPA Method 901.1, were detected above the minimum detectable activity (MDA) in any of the groundwater samples.

Although no detections of tritium above the MDA were reported, the results are presented in Table A-10 (Appendix A), as tritium is considered a constituent of concern (COC) at the MWL.

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7.0 QUALITY CONTROL SAMPLE RESULTS

The QC samples were prepared both in the field and in the laboratory in order to assess the quality of the data generated during the sampling activities. All data were reviewed in accordance with AOP 00-03, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM July 2007b). The results for each QC analysis and the impact on data quality are discussed in the following sections.

7.1 Field Quality Control Samples

The QC samples collected in the field included EB samples, laboratory-prepared FB samples, and field duplicate samples. An FB sample provides a method to check for potential sources of sample contamination or sampling error. An EB sample is collected to verify the effectiveness of the sampling equipment decontamination process, and a duplicate sample is collected immediately after a routine sample and provides information about sampling variability. The following sections discuss the analytical results for each QC sample type.

7.1.1 Equipment Blank Samples

A total of four EB samples were collected during the 2008 sampling events at the MWL. Two samples were collected during the April 2008 event, and one EB sample each was collected during the two quarterly events conducted in July and October 2008. The VOCs acetone, bromodichloromethane, and dibromochloromethane were detected in various EB samples. No corrective action is necessary, as these compounds were not detected in the associated environmental samples. Detected metal constituents include aluminum, calcium, chromium, iron, magnesium, and sodium. The results for these constituents, with the exception of chromium, in the associated environmental samples are either not detected at the laboratory MDL or detected at concentrations greater than five times the blank contamination; therefore, no corrective action is required for any metal, except chromium. Chromium was qualified as not detected in the MWL-MW5 duplicate sample from April 2008 because the sampling result is less than five times the blank contamination. General chemistry parameters chloride and sulfate were detected in the July 2008 EB sample, and alkalinity and fluoride in the October 2008 sample. The results for the associated environmental samples are not qualified as the results are greater than five times the blank contamination.

- April 2008—Two EB samples were collected prior to sampling MWL-BW2 and MWL-MW5. Detected VOCs include acetone and dibromochloromethane. No corrective action is required as these compounds were not detected in the associated environmental samples. Detected metal constituents include aluminum, calcium, chromium, iron, magnesium, and sodium. No corrective action is required for aluminum, calcium, iron, magnesium, or sodium as the results for the associated environmental samples are either not detected or detected at concentrations greater than five times the blank contamination. The chromium result in the MWL-MW5 duplicate sample was qualified as not detected as the result for the associated environmental sample is less than the blank contamination.

- July 2008 (Quarterly)—One EB sample was collected prior to sampling MWL-MW7. Sodium, chloride, and sulfate were detected in the EB sample. No corrective action is required as the results for the associated environmental samples are greater than five times the blank contamination.

- October 2008 (Quarterly)—One EB sample was collected prior to sampling MWL-BW2. The VOCs bromodichloromethane and dibromochloromethane were detected in the EB but not in the associated environmental samples. Magnesium was the only metal detected in the EB sample. The results for the associated environmental samples were not qualified as the results are greater than five times the blank contamination. Alkalinity and fluoride were also detected in the EB sample. The results for the associated environmental samples were not qualified as the results are greater than five times the blank contamination.

7.1.2 Field Blank Samples

An FB sample was collected in October 2008 at the MWL-MW8 sample collection point and submitted for VOC analysis only. Bromodichloromethane and dibromochloromethane were detected in the FB sample but not in the associated environmental sample.

7.1.3 Field Duplicate Samples

Duplicate groundwater samples were collected at MWL-MW5 (April), MWL-MW7 (July), and MWL-BW2 (October). Relative percent difference (RPD) precision measurements were performed for all detected chemical analytes between duplicate samples to measure sample variability and are presented in Table A-12 (Appendix A). The QC acceptance criteria for bromide in duplicate sample MWL-MW7 (July) showed an RPD of 81 percent. The remaining values are all less than the 20-percent threshold.

7.2 Laboratory Quality Control Samples

Although some analytical results were qualified as not detected or as estimated values during the data validation process, no significant data quality problems were noted for any 2008 MWL groundwater monitoring samples, except for potassium-40. Potassium-40 activities were qualified as unusable in three MWL samples, as the peak did not meet identification criteria during gamma spectroscopy analysis at the laboratory.

General laboratory QC issues included calibration verification samples and matrix spike samples outside acceptance criteria for organic analyses and method blank and calibration blank contamination for inorganic analyses.

8.0 VARIANCES AND NONCONFORMANCES

All analytical and field methods complied with the requirements specified in the annual and quarterly MWL Groundwater Monitoring Mini-SAPs (SNL/NM March 2008, June 2008, and September 2008) and there were no variances from the plans. Project-specific issues associated with the sampling events are noted as follows.

SNL/NM requested that GEL reanalyze gross alpha samples collected from MWL-MW4, MWL-MW5, and MWL-MW6. All associated groundwater samples were analyzed in the same laboratory analytical batch. The activity results initially reported for samples collected in April 2008 from MWL-MW4 and MWL-MW5 were slightly higher than historical results. The initial activity reported for the sample collected in April 2008 from MWL-MW6 exceeded the MCL of 15 pCi/L. The results from reanalysis of the samples verify the initial analytical results. For both the initial and reanalysis, the results are reported as uncorrected gross alpha activity (i.e., not corrected by subtracting activity associated with naturally occurring uranium or radium); when corrected, the values are below the MCL of 15 pCi/L (Table A-11).

Acetone and toluene were detected in three MWL groundwater monitoring samples. Neither compound is a COC at the MWL, although historically, toluene has been detected in MWL groundwater samples. Acetone concentrations in samples from MWL-MW4 and MWL-MW6 were qualified as estimated values during data validation, as calibration verification samples did not meet acceptance criteria. Toluene was detected well below the MCL of 1,000 µg/L in the sample from MWL-MW9. The laboratory qualified toluene as an estimated value because the concentration was detected below the effective laboratory PQL.

The bromide duplicate results from the newly installed well, MWL-MW7, showed a high RPD between the initial result and its duplicate sample. The RPD of 81 percent can be attributed to lack of sample population. In addition, MWL-MW7 is characteristically a low-yield well. The well was purged to dryness and allowed to recover before sampling to ensure the most representative sample possible given the low yield of this monitoring well. More data is necessary to determine whether a trend is occurring. Bromide is not a COC at the MWL.

The QC results indicate that a low level of sample contamination from bromodichloromethane and dibromochloromethane occurred in the analytical laboratory. Neither of these compounds are found in the environmental sample, and neither is considered a COC at the MWL.

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9.0 SUMMARY AND CONCLUSIONS

Groundwater sampling and analysis were conducted according to the mini-SAPs (SNL/NM March 2008, June 2008, and October 2008) at the MWL during three different monitoring events in 2008. No inorganic or organic constituents were detected at concentrations that exceed the respective MCLs in any of the groundwater samples. In addition, no detections of organic compounds greater than the MCLs (where applicable) or PQLs were reported. Toluene was detected at a concentration less than the MCL and PQL but greater than the MDL in one sample, and thus qualified as an estimated value.

Total uranium results from the 2008 samples were consistent with data from previous sampling events and are well within the range of historic MWL groundwater data. Groundwater data from the newly installed wells do not have a sufficient historical data set to identify trends for the results.

No general chemistry parameters exceed the established MCLs in any of the groundwater samples. The analytical results for radioactivity and radionuclides show no levels greater than the corresponding MCLs. Based on the results of the three MWL 2008 groundwater monitoring events, constituent concentrations remain within the historical ranges for the site.

The results for the laboratory QC samples and the data validation results indicate that the 2008 groundwater sampling results for the MWL are defensible as representative of the uppermost portion of the regional aquifer.

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APPENDIX A
Summary Tables of Field Measurements and Analytical Results

Table A-1
Groundwater Elevations, Pump Setting Depths, and Static Water Level Information
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well Number	Date of Measurement	Measurement Point Elevation (FAMSL[a])	Depth to Water (FBTOC)	Groundwater Elevation (FAMSL[a])	Total Well Depth[b] (FAMSL)	Static Water Height (feet)	Pump Setting Depth (FBTOC)
MWL-MW4	04-07-08	5383.46	494.44	4891.73[c]	4878.59[c]	13.14[c]	503[d]
MWL-MW5	04-07-08	5379.89	492.66	4887.23	4856.15	31.08	517
MWL-MW6	04-07-08	5372.64	486.53	4886.11	4839.46	46.65	527
MWL-MW7	07-16-08	5380.63	488.88	4891.75	4878.96	12.79	493
	10-06-08		488.82	4891.81		12.85	
MWL-MW8	07-14-08	5381.99	490.55	4891.44	4880.07	11.37	496.5
	10-07-08		490.71	4891.28		11.21	
MWL-MW9	07-15-08	5379.24	492.07	4887.17	4876.63	10.54	497
	10-08-08		491.23	4888.01		11.38	
MWL-BW2	04-07-08	5388.35	477.18	4911.17	4884.00	27.17	499
	07-17-08		477.47	4910.88		26.88	
	10-01-08		477.62	4910.73		26.73	

[a]Measurement point is the top of well casing.
[b]Total well depth to bottom of sump.
[c]Elevation, well depth, and pump depth reflects well MWL-MW4 orientation of 6 degrees from vertical.
[d]Depth to the bottom of the dedicated pump is 503.01 feet below ground surface; for MWL-MW4, the "bottom of the well" is measured from the top of the packer.
BW = Background well.
FAMSL = Feet above mean sea level.
FBTOC = Feet below top of casing.
MW = Monitoring well.
MWL = Mixed Waste Landfill.

Table A-2
Summary of Purge Volumes and Purge Indicator Measurements
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Sample Attributes	Measurement Relative to Sampling	Purge Volume (gallons)	pH (at 25°C)	Temp (°C)	Specific Conductivity (μmhos/cm)	Turbidity (NTU)	ORP (mV)	DO (% Sat)
MWL-MW4[a] Date purge began: 04-15-08 Date sampled: 04-16-08	Before Sampling	26	7.36	19.32	601	3.58	20.0	18.8
		27	7.37	19.42	602	3.24	1.8	8.0
		28	7.30	19.42	601	3.17	-2.3	6.7
MWL-MW5 Date purge began: 04-10-08 Date sampled: 04-10-08	Before Sampling	52	7.04	15.98	868	0.79	149.3	26.7
		54	7.04	15.83	868	0.83	148.6	26.8
		56	7.04	15.18	869	0.77	147.9	26.5
MWL-MW6 Date purge began: 04-08-08 Date sampled: 04-08-08	Before Sampling	52	7.17	20.91	824	0.67	214.4	31.0
		54	7.17	20.88	824	0.63	214.3	31.4
		56	7.17	21.09	824	0.63	214.2	31.3
MWL-BW2 Date purge began: 04-09-08 Date sampled: 04-09-08	Before Sampling	62	7.13	18.98	704	1.51	114.4	14.3
		64	7.13	18.93	703	1.55	115.3	14.5
		66	7.13	18.78	704	1.53	114.9	14.3
MWL-MW7[a] Date purge began: 07-16-08 Date sampled: 07-16-08	Before Sampling	12	7.47	22.39	590	19.3	161.3	55.7
		13	7.47	22.40	590	16.8	160.0	54.8
		14	7.47	22.39	590	14.1	159.8	54.7
MWL-MW8[a] Date purge began: 07-14-08 Date sampled: 07-14-08	Before Sampling	11	7.51	28.75	617	8.34	121.8	45.6
		12	7.56	26.93	613	7.79	117.7	50.8
		13	7.35	23.05	607	7.25	138.9	69.8

Refer to footnotes at end of table.

Table A-2 (Continued)
Summary of Purge Volumes and Purge Indicator Measurements
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Sample Attributes	Measurement Relative to Sampling	Purge Volume (gallons)	pH (at 25°C)	Temp (°C)	Specific Conductivity (µmhos/cm)	Turbidity (NTU)	ORP (mV)	DO (% Sat)
MWL-MW9[a] Date purge began: 07-15-08 Date sampled: 07-15-08	Before Sampling	2.5	7.37	20.76	529	1.06	231.9	41.9
		5.5	7.55	21.65	552	2.10	83.5	54.2
		6	7.58	23.55	556	0.82	77.9	55.0
MWL-BW2 Date purge began: 07-17-08 Date sampled: 07-17-08	Before Sampling	56	7.30	23.01	700	0.90	-79.3	22.0
		58	7.31	23.02	702	0.89	-55.2	29.5
		60	7.31	23.04	702	0.92	-31.7	29.6
MWL-MW7[a] Date purge began: 10-06-08 Date sampled: 10-06-08	Before Sampling	8	7.39	17.52	631	1.13	163.2	43.3
		9	7.39	17.77	633	1.23	164.2	43.6
		10	7.39	17.97	632	1.18	164.9	44.3
MWL-MW8[a] Date purge began: 10-07-08 Date sampled: 10-07-08	Before Sampling	7	7.36	18.55	633	3.50	155.1	35.7
		11.5	7.36	19.38	632	2.02	153.9	24.1
		12	7.36	19.49	634	1.91	151.2	23.7
MWL-MW9[a] Date purge began: 10-08-08 Date sampled: 10-08-08	Before Sampling	5.5	7.40	18.56	595	1.84	145.0	28.8
		10	7.33	19.37	621	3.66	148.1	32.9
		11	7.29	19.44	624	3.66	146.7	27.1

Refer to footnotes at end of table.

Table A-2 (Concluded)
Summary of Purge Volumes and Purge Indicator Measurements
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Sample Attributes	Measurement Relative to Sampling	Purge Volume (gallons)	pH (at 25°C)	Temp (°C)	Specific Conductivity (μmhos/cm)	Turbidity (NTU)	ORP (mV)	DO (% Sat)
MWL-BW2	Before Sampling	36	7.18	21.42	766	0.89	119.0	6.4
Date purge began: 10-01-08		38	7.18	21.51	766	0.91	119.9	6.4
Date sampled: 10-01-08		39	7.18	21.54	766	0.70	119.7	6.3

[a]Wells were purged to dryness. Purge volumes show total gallons removed prior to sampling.

°C = Degrees Celsius.
% Sat = Percent saturation.
BW = Background well.
DO = Dissolved oxygen.
μmhos/cm = Micromhos per centimeter.
mV = Millivolts.
MW = Monitoring well.
MWL = Mixed Waste Landfill.
NTU = Nephelometric turbidity units.
ORP = Oxidation-reduction potential.
pH = Potential of hydrogen.
Temp = Temperature.

Table A-3
Analytical Parameters, Test Methods, and Target Quantitation Limits
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Analytical Parameter	Test Method[a]	Target Quantitation Limit[b]
Total Metals TAL and Uranium	SW846-6020 SW846-7470A	0.00007–2.5 mg/L
Volatile Organic Compounds	SW846-8260B	1.0–5.0 μg/L
Nitrate plus Nitrite (as nitrogen)	EPA 353.2	0.50 mg/L
Major Anions Bromide, Fluoride, Chloride, and Sulfate	SW846-9056	0.100–4.0 mg/L
Total Organic Carbon	SW846-9060	1.0 mg/L
Carbon Dioxide	SM 4500 CO2 D[c]	1.0 mg/L
Total Alkalinity as Calcium Carbonate	EPA 310.1	1.0–2.0 mg/L
Total Dissolved Solids	EPA 160.1	10 mg/L
Perchlorate	EPA 314.0[d]	0.012 mg/L
Ferrous Iron	3500M Fe2+[c]	0.01–0.10 mg/L
Biochemical Oxygen Demand	EPA 405.1	2.0–4.0 mg/L
Manganese II	C2-100 Mn2+[c]	0.320 mg/L
Radionuclides Gamma-Emitting Radionuclides Gross Alpha Activity Gross Beta Activity Tritium	 EPA 901.1[e] EPA 900.0[e] EPA 900.0[e] EPA 906.0[e]	 MDA is isotope-specific 1.06–2.33 pCi/L 1.26–1.75 pCi/L 159–198 pCi/L

[a]Analytical 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, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Rev. 1, U.S. Environmental Protection Agency, Washington, D.C.
[b]For target compounds only. Reporting limits may be elevated if an interfering component is present or if sample dilution is required.
[c]Laboratory-specific analytical methods.
[d]U.S. Environmental Protection Agency, 1999. "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014, U.S. Environmental Protection Agency, Washington, D.C.
[e]U.S. Environmental Protection Agency, 1980. "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio.
EPA = U.S. Environmental Protection Agency.
MDA = Minimum detectable activity.
μg/L = Microgram(s) per liter.
mg/L = Milligram(s) per liter.
pCi/L = Picocurie(s) per liter.
TAL = Target analyte list.

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
MWL-MW4 16-Apr-08	Alkalinity, Total	219	0.725	1.00	NE	B		085770-016	SM 2320B
	Bromide	0.354	0.067	0.200	NE			085770-016	SW846 9056
	Chloride	49.1	0.660	2.00	NE			085770-016	SW846 9056
	Fluoride	0.893	0.033	0.100	4.0			085770-016	SW846 9056
	Sulfate	39.7	0.100	0.400	NE			085770-016	SW846 9056
	Nitrate plus Nitrite as N	1.09	0.050	0.250	10			085770-018	EPA 353.2
MWL-MW5 10-Apr-08	Alkalinity, Total	317	0.725	1.00	NE	B		085775-016	SM 2320B
	Bromide	0.496	0.067	0.200	NE			085775-016	SW846 9056
	Chloride	84.2	0.660	2.00	NE			085775-016	SW846 9056
	Fluoride	0.697	0.033	0.100	4.0			085775-016	SW846 9056
	Sulfate	53.0	1.00	4.00	NE			085775-016	SW846 9056
	Nitrate plus Nitrite as N	1.37	0.100	0.500	10			085775-018	EPA 353.2
MWL-MW5 (Duplicate) 10-Apr-08	Alkalinity, Total	316	0.725	1.00	NE	B		085776-016	SM 2320B
	Bromide	0.509	0.067	0.200	NE			085776-016	SW846 9056
	Chloride	85.6	0.660	2.00	NE			085776-016	SW846 9056
	Fluoride	0.709	0.033	0.100	4.0			085776-016	SW846 9056
	Sulfate	53.9	1.00	4.00	NE			085776-016	SW846 9056
	Nitrate plus Nitrite as N	1.36	0.100	0.500	10			085776-018	EPA 353.2
MWL-MW6 08-Apr-08	Alkalinity, Total	298	0.725	1.00	NE	B		085779-016	SM 2320B
	Bromide	0.469	0.067	0.200	NE			085779-016	SW846 9056
	Chloride	76.0	0.660	2.00	NE			085779-016	SW846 9056
	Fluoride	0.711	0.033	0.100	4.0			085779-016	SW846 9056
	Sulfate	49.9	1.00	4.00	NE			085779-016	SW846 9056
	Nitrate plus Nitrite as N	1.64	0.050	0.250	10			085779-018	EPA 353.2

Refer to footnotes at end of table.

Table A-4 (Continued)
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 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
MWL-MW7 16-Jul-08	Alkalinity, Total	212	0.725	1.00	NE	B		086362-016	SM 2320B
	Bromide	0.276	0.067	0.200	NE			086362-016	SW846 9056
	Chloride	42.0	0.660	2.00	NE			086362-016	SW846 9056
	Fluoride	0.995	0.033	0.100	4.0			086362-016	SW846 9056
	Sulfate	38.8	0.100	0.400	NE			086362-016	SW846 9056
	Nitrate plus Nitrite as N	3.13	0.100	0.500	10	B		086362-018	EPA 353.2
MWL-MW7 (Duplicate) 16-Jul-08	Alkalinity, Total	213	0.725	1.00	NE	B		086363-016	SM 2320B
	Bromide	0.650	0.067	0.200	NE			086363-016	SW846 9056
	Chloride	41.9	0.660	2.00	NE			086363-016	SW846 9056
	Fluoride	0.986	0.033	0.100	4.0			086363-016	SW846 9056
	Sulfate	38.9	0.100	0.400	NE			086363-016	SW846 9056
	Nitrate plus Nitrite as N	3.21	0.100	0.500	10	B		086363-018	EPA 353.2
MWL-MW8 14-Jul-08	Alkalinity, Total	220	0.725	1.00	NE	B		086365-016	SM 2320B
	Bromide	0.350	0.067	0.200	NE			086365-016	SW846 9056
	Chloride	48.8	0.660	2.00	NE			086365-016	SW846 9056
	Fluoride	0.949	0.033	0.100	4.0			086365-016	SW846 9056
	Sulfate	39.6	0.100	0.400	NE			086365-016	SW846 9056
	Nitrate plus Nitrite as N	0.885	0.050	0.250	10	B		086365-018	EPA 353.2
MWL-MW9 15-Jul-08	Alkalinity, Total	206	0.725	1.00	NE	B		086367-016	SM 2320B
	Bromide	0.286	0.067	0.200	NE			086367-016	SW846 9056
	Chloride	40.9	0.660	2.00	NE			086367-016	SW846 9056
	Fluoride	1.06	0.033	0.100	4.0			086367-016	SW846 9056
	Sulfate	36.9	1.00	4.00	NE			086367-016	SW846 9056
	Nitrate plus Nitrite as N	2.32	0.100	0.500	10	B		086367-018	EPA 353.2

Refer to footnotes at end of table.

Table A-4 (Continued)
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 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
MWL-MW7 06-Oct-08	Alkalinity, Total	212	0.725	1.00	NE			086815-016	SM 2320B
	Bromide	0.294	0.067	0.200	NE			086815-016	SW846 9056
	Chloride	40.9	0.330	1.00	NE			086815-016	SW846 9056
	Fluoride	1.02	0.033	0.100	4.0			086815-016	SW846 9056
	Sulfate	36.9	0.100	0.400	NE			086815-016	SW846 9056
	Nitrate plus Nitrite as N	3.24	0.100	0.500	10	B	0.060 U	086815-018	EPA 353.2
MWL-MW8 07-Oct-08	Alkalinity, Total	217	0.725	1.00	NE	B		086817-016	SM 2320B
	Bromide	0.291	0.067	0.200	NE			086817-016	SW846 9056
	Chloride	45.2	0.330	1.00	NE			086817-016	SW846 9056
	Fluoride	1.02	0.033	0.100	4.0			086817-016	SW846 9056
	Sulfate	35.4	0.100	0.400	NE			086817-016	SW846 9056
	Nitrate plus Nitrite as N	1.36	0.050	0.250	10	B	0.060 U	086817-018	EPA 353.2
MWL-MW9 08-Oct-08	Alkalinity, Total	210	0.725	1.00	NE			086820-016	SM 2320B
	Bromide	0.292	0.067	0.200	NE			086820-016	SW846 9056
	Chloride	40.9	0.330	1.00	NE			086820-016	SW846 9056
	Fluoride	0.952	0.033	0.100	4.0			086820-016	SW846 9056
	Sulfate	37.5	1.00	4.00	NE			086820-016	SW846 9056
	Nitrate plus Nitrite as N	2.03	0.050	0.250	10	B	0.060 U	086820-018	EPA 353.2

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

[b]PQL 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.

[c]MCL 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.

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

[d]Laboratory Qualifiers:
B = Analyte is detected in associated laboratory method blank.

[e]Validation 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.

[f]Analytical 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, 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.
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.

Table A-5
Summary of Total Metals Results (Unfiltered)
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	Aluminum	0.0861	0.010	0.020	NE			085758-009	SW846 6020
16-Apr-08	Antimony	ND	0.0005	0.002	0.006	B, U		085758-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	B, U		085758-009	SW846 6020
	Barium	0.0952	0.0005	0.002	2.00			085758-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085758-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085758-009	SW846 6020
	Calcium	63.2	0.100	0.500	NE			085758-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085758-009	SW846 6020
	Cobalt	0.000366	0.0001	0.001	NE	B, J	0.00094 U	085758-009	SW846 6020
	Copper	0.00112	0.0003	0.001	NE			085758-009	SW846 6020
	Iron	0.716	0.0100	0.025	NE	B		085758-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085758-009	SW846 6020
	Magnesium	23.0	0.025	0.075	NE			085758-009	SW846 6020
	Manganese	0.0199	0.001	0.005	NE			085758-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085758-009	SW846 7470
	Nickel	0.00094	0.0005	0.002	NE	J		085758-009	SW846 6020
	Potassium	3.49	0.080	0.300	NE			085758-009	SW846 6020
	Selenium	0.00136	0.001	0.005	0.050	J		085758-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U	UJ	085758-009	SW846 6020
	Sodium	61.9	0.400	1.25	NE			085758-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085758-009	SW846 6020
	Uranium-235	0.000049	0.00001	0.00007	0.030	J		085758-009	SW846 6020
	Uranium-238	0.00661	0.00005	0.0002	0.030			085758-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085758-009	SW846 6020
	Zinc	0.00342	0.0026	0.010	NE	J		085758-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW4	Aluminum	ND	0.010	0.020	NE	U		085770-009	SW846 6020
16-Apr-08	Antimony	ND	0.0005	0.002	0.006	U		085770-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		085770-009	SW846 6020
	Barium	0.105	0.0005	0.002	2.00			085770-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085770-009	SW846 6020
	Cadmium	0.000136	0.00011	0.001	0.005	J		085770-009	SW846 6020
	Calcium	61.7	0.100	0.500	NE			085770-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085770-009	SW846 6020
	Cobalt	0.000547	0.0001	0.001	NE	J		085770-009	SW846 6020
	Copper	0.000914	0.0003	0.001	NE	J		085770-009	SW846 6020
	Iron	0.569	0.010	0.025	NE			085770-009	SW846 6020
	Lead	0.000722	0.0005	0.002	NE	J		085770-009	SW846 6020
	Magnesium	19.1	0.005	0.015	NE			085770-009	SW846 6020
	Manganese	0.0542	0.001	0.005	NE			085770-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085770-009	SW846 7470
	Molybdenum	0.00903	0.0001	0.0005	NE			085770-009	SW846 6020
	Nickel	0.00506	0.0005	0.002	NE			085770-009	SW846 6020
	Potassium	4.28	0.080	0.300	NE			085770-009	SW846 6020
	Selenium	0.00144	0.001	0.005	0.050	J		085770-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		085770-009	SW846 6020
	Sodium	45.0	0.080	0.250	NE			085770-009	SW846 6020
	Thallium	0.00039	0.0003	0.001	0.002	J		085770-009	SW846 6020
	Uranium-235	0.000055	0.00001	0.00007	0.030	J		085770-009	SW846 6020
	Uranium-238	0.00759	0.00005	0.0002	0.030			085770-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085770-009	SW846 6020
	Zinc	0.010	0.0026	0.010	NE			085770-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW5	Aluminum	0.0135	0.010	0.020	NE	J		085775-009	SW846 6020
10-Apr-08	Antimony	ND	0.0005	0.002	0.006	U		085775-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		085775-009	SW846 6020
	Barium	0.128	0.0005	0.002	2.00			085775-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085775-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085775-009	SW846 6020
	Calcium	94.5	0.100	0.500	NE	B		085775-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085775-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	U		085775-009	SW846 6020
	Copper	0.00122	0.0003	0.001	NE	B	0.0032 U	085775-009	SW846 6020
	Iron	0.129	0.010	0.025	NE	B		085775-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085775-009	SW846 6020
	Magnesium	28.1	0.005	0.015	NE			085775-009	SW846 6020
	Manganese	0.0124	0.001	0.005	NE			085775-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085775-009	SW846 7470
	Molybdenum	0.00336	0.0001	0.0005	NE			085775-009	SW846 6020
	Nickel	0.00199	0.0005	0.002	NE	J		085775-009	SW846 6020
	Potassium	5.57	0.080	0.300	NE			085775-009	SW846 6020
	Selenium	0.00115	0.001	0.005	0.050	J		085775-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		085775-009	SW846 6020
	Sodium	70.1	0.400	1.25	NE			085775-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085775-009	SW846 6020
	Uranium-235	0.000063	0.00001	0.00007	0.030	J	J+	085775-009	SW846 6020
	Uranium-238	0.009	0.00005	0.0002	0.030			085775-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085775-009	SW846 6020
	Zinc	0.00435	0.0026	0.010	NE	J		085775-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW5 (Duplicate)	Aluminum	0.0114	0.010	0.020	NE	J		085776-009	SW846 6020
10-Apr-08	Antimony	ND	0.0005	0.002	0.006	U		085776-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		085776-009	SW846 6020
	Barium	0.127	0.0005	0.002	2.00			085776-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085776-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085776-009	SW846 6020
	Calcium	90.2	0.100	0.500	NE	B		085776-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085776-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	U		085776-009	SW846 6020
	Copper	0.00125	0.0003	0.001	NE	B	0.0032 U	085776-009	SW846 6020
	Iron	0.121	0.010	0.025	NE	B		085776-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085776-009	SW846 6020
	Magnesium	29.0	0.005	0.015	NE			085776-009	SW846 6020
	Manganese	0.0107	0.001	0.005	NE			085776-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085776-009	SW846 7470
	Molybdenum	0.00325	0.0001	0.0005	NE			085776-009	SW846 6020
	Nickel	0.00185	0.0005	0.002	NE	J		085776-009	SW846 6020
	Potassium	5.42	0.080	0.300	NE			085776-009	SW846 6020
	Selenium	0.00181	0.001	0.005	0.050	J		085776-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		085776-009	SW846 6020
	Sodium	64.1	0.400	1.25	NE			085776-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085776-009	SW846 6020
	Uranium-235	0.000065	0.00001	0.00007	0.030	J	J+	085776-009	SW846 6020
	Uranium-238	0.00876	0.00005	0.0002	0.030			085776-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085776-009	SW846 6020
	Zinc	0.00318	0.0026	0.010	NE	J		085776-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW6	Aluminum	ND	0.010	0.020	NE	U		085779-009	SW846 6020
08-Apr-08	Antimony	ND	0.0005	0.002	0.006	B, U		085779-009	SW846 6020
	Arsenic	0.00295	0.0015	0.005	0.010	B, J		085779-009	SW846 6020
	Barium	0.115	0.0025	0.010	2.00			085779-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085779-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085779-009	SW846 6020
	Calcium	81.5	0.100	0.500	NE			085779-009	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085779-009	SW846 6020
	Cobalt	0.000347	0.0001	0.001	NE	B, J	0.00094 U	085779-009	SW846 6020
	Copper	0.00138	0.0003	0.001	NE			085779-009	SW846 6020
	Iron	0.675	0.010	0.025	NE	B		085779-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085779-009	SW846 6020
	Magnesium	29.2	0.025	0.075	NE			085779-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	U		085779-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085779-009	SW846 6020
	Molybdenum	0.00274	0.0001	0.0005	NE			085779-009	SW846 6020
	Nickel	0.00111	0.0005	0.002	NE	J	NJ-	085779-009	SW846 6020
	Potassium	4.44	0.080	0.300	NE			085779-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		085779-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U	UJ	085779-009	SW846 6020
	Sodium	63.5	0.400	1.25	NE			085779-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085779-009	SW846 6020
	Uranium-235	0.000059	0.00001	0.00007	0.030	J		085779-009	SW846 6020
	Uranium-238	0.00856	0.00005	0.0002	0.030			085779-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085779-009	SW846 6020
	Zinc	0.00287	0.0026	0.010	NE	J		085779-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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	Aluminum	0.0449	0.005	0.015	NE			086358-009	SW846 6020
17-Jul-08	Antimony	ND	0.0005	0.002	0.006	U		086358-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086358-009	SW846 6020
	Barium	0.118	0.0005	0.002	2.00			086358-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086358-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086358-009	SW846 6020
	Calcium	67.3	0.200	1.00	NE	B		086358-009	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086358-009	SW846 6020
	Cobalt	0.000421	0.0001	0.001	NE	J		086358-009	SW846 6020
	Copper	0.00064	0.0003	0.001	NE	J		086358-009	SW846 6020
	Iron	0.340	0.010	0.025	NE			086358-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086358-009	SW846 6020
	Magnesium	20.2	0.0052	0.015	NE			086358-009	SW846 6020
	Manganese	0.0704	0.001	0.005	NE			086358-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086358-009	SW846 7470
	Nickel	0.00133	0.0005	0.002	NE	J		086358-009	SW846 6020
	Potassium	4.36	0.080	0.300	NE			086358-009	SW846 6020
	Selenium	0.00185	0.001	0.005	0.050	J		086358-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086358-009	SW846 6020
	Sodium	48.7	0.080	0.250	NE		J	086358-009	SW846 6020
	Thallium	0.000352	0.0003	0.001	0.002	J		086358-009	SW846 6020
	Uranium	0.00715	0.00005	0.0002	0.030			086358-009	SW846 6020
	Uranium-235	0.00005	0.00001	0.00007	0.030	J	J+	086358-009	SW846 6020
	Uranium-238	0.0071	0.00005	0.0002	0.030			086358-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086358-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	B, U		086358-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW7	Aluminum	0.00694	0.005	0.015	NE	J		086362-009	SW846 6020
16-Jul-08	Antimony	ND	0.0005	0.002	0.006	B, U		086362-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086362-009	SW846 6020
	Barium	0.104	0.0005	0.002	2.00			086362-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086362-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086362-009	SW846 6020
	Calcium	54.2	0.200	1.00	NE	B		086362-009	SW846 6020
	Chromium	0.0017	0.0015	0.003	0.100	B, J	0.0086 U	086362-009	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	U		086362-009	SW846 6020
	Copper	0.000792	0.0003	0.001	NE	J		086362-009	SW846 6020
	Iron	0.187	0.010	0.025	NE	B		086362-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086362-009	SW846 6020
	Magnesium	17.4	0.0052	0.015	NE			086362-009	SW846 6020
	Manganese	0.00926	0.001	0.005	NE			086362-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086362-009	SW846 7470
	Nickel	0.0014	0.0005	0.002	NE	J		086362-009	SW846 6020
	Potassium	4.83	0.080	0.300	NE			086362-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086362-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086362-009	SW846 6020
	Sodium	46.0	0.080	0.250	NE			086362-009	SW846 6020
	Thallium	0.000311	0.0003	0.001	0.002	J		086362-009	SW846 6020
	Uranium	0.00781	0.00005	0.0002	0.030			086362-009	SW846 6020
	Uranium-235	0.000056	0.00001	0.00007	0.030	J	J+	086362-009	SW846 6020
	Uranium-238	0.00775	0.00005	0.0002	0.030			086362-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086362-009	SW846 6020
	Zinc	0.00261	0.0026	0.010	NE	J		086362-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW7 (Duplicate)	Aluminum	0.0275	0.005	0.015	NE			086363-009	SW846 6020
16-Jul-08	Antimony	ND	0.0005	0.002	0.006	B, U		086363-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086363-009	SW846 6020
	Barium	0.105	0.0005	0.002	2.00			086363-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086363-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086363-009	SW846 6020
	Calcium	54.5	0.200	1.00	NE	B		086363-009	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	B, U		086363-009	SW846 6020
	Cobalt	0.000125	0.0001	0.001	NE	J	UJ	086363-009	SW846 6020
	Copper	0.000876	0.0003	0.001	NE	J		086363-009	SW846 6020
	Iron	0.194	0.010	0.025	NE	B		086363-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086363-009	SW846 6020
	Magnesium	16.8	0.0052	0.015	NE			086363-009	SW846 6020
	Manganese	0.01	0.001	0.005	NE			086363-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086363-009	SW846 7470
	Nickel	0.00129	0.0005	0.002	NE	J		086363-009	SW846 6020
	Potassium	4.97	0.080	0.300	NE			086363-009	SW846 6020
	Selenium	0.00116	0.001	0.005	0.050	J		086363-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086363-009	SW846 6020
	Sodium	42.9	0.080	0.250	NE			086363-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086363-009	SW846 6020
	Uranium	0.00808	0.00005	0.0002	0.030			086363-009	SW846 6020
	Uranium-235	0.000057	0.00001	0.00007	0.030	J	J+	086363-009	SW846 6020
	Uranium-238	0.00803	0.00005	0.0002	0.030			086363-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086363-009	SW846 6020
	Zinc	0.00268	0.0026	0.010	NE	J		086363-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW8	Aluminum	0.0211	0.005	0.015	NE			086365-009	SW846 6020
14-Jul-08	Antimony	0.000595	0.0005	0.002	0.006	B, J	0.0060 U	086365-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086365-009	SW846 6020
	Barium	0.133	0.0005	0.002	2.00			086365-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086365-009	SW846 6020
	Cadmium	0.000195	0.00011	0.001	0.005	J		086365-009	SW846 6020
	Calcium	55.1	0.200	1.00	NE	B		086365-009	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086365-009	SW846 6020
	Cobalt	0.000171	0.0001	0.001	NE	J		086365-009	SW846 6020
	Copper	0.00111	0.0003	0.001	NE			086365-009	SW846 6020
	Iron	0.167	0.010	0.025	NE	B		086365-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086365-009	SW846 6020
	Magnesium	17.3	0.0052	0.015	NE		J	086365-009	SW846 6020
	Manganese	0.238	0.001	0.005	NE			086365-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086365-009	SW846 7470
	Nickel	0.00223	0.0005	0.002	NE			086365-009	SW846 6020
	Potassium	5.80	0.080	0.300	NE			086365-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	B, U		086365-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086365-009	SW846 6020
	Sodium	52.5	0.800	2.50	NE			086365-009	SW846 6020
	Thallium	0.000312	0.0003	0.001	0.002	J		086365-009	SW846 6020
	Uranium	0.00705	0.00005	0.0002	0.030			086365-009	SW846 6020
	Uranium-235	0.000047	0.00001	0.00007	0.030	J	J+	086365-009	SW846 6020
	Uranium-238	0.007	0.00005	0.0002	0.030			086365-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086365-009	SW846 6020
	Zinc	0.00324	0.0026	0.010	NE	B, J	0.030 U	086365-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW9	Aluminum	0.104	0.005	0.015	NE			086367-009	SW846 6020
15-Jul-08	Antimony	ND	0.0005	0.002	0.006	B, U		086367-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086367-009	SW846 6020
	Barium	0.101	0.0005	0.002	2.00			086367-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086367-009	SW846 6020
	Cadmium	0.000127	0.00011	0.001	0.005	J		086367-009	SW846 6020
	Calcium	51.8	0.200	1.00	NE	B		086367-009	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	B, U		086367-009	SW846 6020
	Cobalt	0.000203	0.0001	0.001	NE	J	UJ	086367-009	SW846 6020
	Copper	0.00105	0.0003	0.001	NE			086367-009	SW846 6020
	Iron	0.300	0.010	0.025	NE	B		086367-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086367-009	SW846 6020
	Magnesium	16.8	0.0052	0.015	NE			086367-009	SW846 6020
	Manganese	0.023	0.001	0.005	NE			086367-009	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086367-009	SW846 7470
	Nickel	0.00139	0.0005	0.002	NE	J		086367-009	SW846 6020
	Potassium	5.54	0.080	0.300	NE			086367-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086367-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086367-009	SW846 6020
	Sodium	39.5	0.080	0.250	NE			086367-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086367-009	SW846 6020
	Uranium	0.00879	0.00005	0.0002	0.030			086367-009	SW846 6020
	Uranium-235	0.000061	0.00001	0.00007	0.030	J	J+	086367-009	SW846 6020
	Uranium-238	0.00873	0.00005	0.0002	0.030			086367-009	SW846 6020
	Vanadium	ND	0.030	0.100	NE	U		086367-009	SW846 6020
	Zinc	0.00396	0.0026	0.010	NE	J		086367-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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	Aluminum	0.0166	0.005	0.015	NE	B	0.042 U	086812-009	SW846 6020
01-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086812-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086812-009	SW846 6020
	Barium	0.0984	0.005	0.020	2.00			086812-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086812-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086812-009	SW846 6020
	Calcium	67.3	0.200	1.00	NE	B		086812-009	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086812-009	SW846 6020
	Cobalt	0.0001	0.0001	0.001	NE	J		086812-009	SW846 6020
	Copper	0.000713	0.0003	0.001	NE	J		086812-009	SW846 6020
	Iron	0.243	0.010	0.025	NE	B		086812-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086812-009	SW846 6020
	Magnesium	21.6	0.0052	0.015	NE			086812-009	SW846 6020
	Manganese	0.00267	0.001	0.005	NE	J		086812-009	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U		086812-009	SW846 7470
	Nickel	0.000983	0.0005	0.002	NE	J		086812-009	SW846 6020
	Potassium	4.15	0.080	0.300	NE			086812-009	SW846 6020
	Selenium	0.00156	0.001	0.005	0.050	J		086812-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086812-009	SW846 6020
	Sodium	56.2	0.800	2.50	NE			086812-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086812-009	SW846 6020
	Uranium	0.00697	0.00005	0.0002	0.030			086812-009	SW846 6020
	Uranium-235	0.000047	0.00001	0.00007	0.030	J	J+	086812-009	SW846 6020
	Uranium-238	0.00692	0.00005	0.0002	0.030		J	086812-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086812-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	U		086812-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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 (Duplicate)	Aluminum	0.00578	0.005	0.015	NE	B, J	0.042 U	086813-009	SW846 6020
01-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086813-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086813-009	SW846 6020
	Barium	0.0962	0.005	0.020	2.00			086813-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086813-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086813-009	SW846 6020
	Calcium	68.1	0.200	1.00	NE	B		086813-009	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086813-009	SW846 6020
	Cobalt	0.000113	0.0001	0.001	NE	J		086813-009	SW846 6020
	Copper	0.0005	0.0003	0.001	NE	J		086813-009	SW846 6020
	Iron	0.240	0.010	0.025	NE	B		086813-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086813-009	SW846 6020
	Magnesium	21.9	0.0052	0.015	NE			086813-009	SW846 6020
	Manganese	0.00262	0.001	0.005	NE	J		086813-009	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U		086813-009	SW846 7470
	Nickel	0.00104	0.0005	0.002	NE	J		086813-009	SW846 6020
	Potassium	3.98	0.080	0.300	NE			086813-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086813-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086813-009	SW846 6020
	Sodium	56.2	0.800	2.50	NE			086813-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086813-009	SW846 6020
	Uranium	0.00696	0.00005	0.0002	0.030			086813-009	SW846 6020
	Uranium-235	0.000047	0.00001	0.00007	0.030	J	J+	086813-009	SW846 6020
	Uranium-238	0.00692	0.00005	0.0002	0.030		J	086813-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086813-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	U		086813-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW7	Aluminum	0.0162	0.005	0.015	NE	B	0.043 U	086815-009	SW846 6020
06-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086815-009	SW846 6020
	Arsenic	0.00253	0.0015	0.005	0.010	B, J	0.0087 U	086815-009	SW846 6020
	Barium	0.103	0.0005	0.002	2.00			086815-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086815-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086815-009	SW846 6020
	Calcium	53.9	0.200	1.00	NE			086815-009	SW846 6020
	Chromium	0.00164	0.0015	0.003	0.100	J		086815-009	SW846 6020
	Cobalt	0.000185	0.0001	0.001	NE	J		086815-009	SW846 6020
	Copper	0.000992	0.0003	0.001	NE	J		086815-009	SW846 6020
	Iron	0.250	0.010	0.025	NE			086815-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086815-009	SW846 6020
	Magnesium	19.4	0.052	0.150	NE		J	086815-009	SW846 6020
	Manganese	ND	0.001	0.005	NE	U		086815-009	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U	UJ	086815-009	SW846 7470
	Nickel	0.00119	0.0005	0.002	NE	J		086815-009	SW846 6020
	Potassium	5.03	0.080	0.300	NE			086815-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086815-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086815-009	SW846 6020
	Sodium	39.6	0.080	0.250	NE		J	086815-009	SW846 6020
	Thallium	0.000376	0.0003	0.001	0.002	J		086815-009	SW846 6020
	Uranium	0.00791	0.00005	0.0002	0.030			086815-009	SW846 6020
	Uranium-235	0.000056	0.00001	0.00007	0.030	J	J+	086815-009	SW846 6020
	Uranium-238	0.00785	0.00005	0.0002	0.030			086815-009	SW846 6020
	Vanadium	0.00651	0.003	0.010	NE	J		086815-009	SW846 6020
	Zinc	ND	0.0026	0.010	NE	U		086815-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW8	Aluminum	0.216	0.005	0.015	NE	B		086817-009	SW846 6020
07-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086817-009	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086817-009	SW846 6020
	Barium	0.118	0.0005	0.002	2.00			086817-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086817-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086817-009	SW846 6020
	Calcium	55.1	0.200	1.00	NE			086817-009	SW846 6020
	Chromium	0.00201	0.0015	0.003	0.100	J		086817-009	SW846 6020
	Cobalt	0.000226	0.0001	0.001	NE	J		086817-009	SW846 6020
	Copper	0.00147	0.0003	0.001	NE			086817-009	SW846 6020
	Iron	0.483	0.010	0.025	NE			086817-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086817-009	SW846 6020
	Magnesium	20.1	0.052	0.150	NE		J	086817-009	SW846 6020
	Manganese	0.0221	0.001	0.005	NE			086817-009	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U	UJ	086817-009	SW846 7470
	Nickel	0.00183	0.0005	0.002	NE	J		086817-009	SW846 6020
	Potassium	6.51	0.080	0.300	NE			086817-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086817-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086817-009	SW846 6020
	Sodium	49.2	0.080	0.250	NE		J	086817-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086817-009	SW846 6020
	Uranium	0.00809	0.00005	0.0002	0.030			086817-009	SW846 6020
	Uranium-235	0.000058	0.00001	0.00007	0.030	J	J+	086817-009	SW846 6020
	Uranium-238	0.00803	0.00005	0.0002	0.030			086817-009	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086817-009	SW846 6020
	Zinc	0.00387	0.0026	0.010	NE	J		086817-009	SW846 6020

Refer to footnotes at end of table.

Table A-5 (Continued)
Summary of Total Metals Results (Unfiltered)
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-MW9	Aluminum	0.140	0.005	0.015	NE	B		086820-009	SW846 6020
08-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086820-009	SW846 6020
	Arsenic	0.00365	0.0015	0.005	0.010	B, J	0.0087 U	086820-009	SW846 6020
	Barium	0.0858	0.0005	0.002	2.00			086820-009	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086820-009	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086820-009	SW846 6020
	Calcium	51.2	0.200	1.00	NE			086820-009	SW846 6020
	Chromium	0.00158	0.0015	0.003	0.100	J		086820-009	SW846 6020
	Cobalt	0.000255	0.0001	0.001	NE	J		086820-009	SW846 6020
	Copper	0.00102	0.0003	0.001	NE			086820-009	SW846 6020
	Iron	0.394	0.010	0.025	NE			086820-009	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086820-009	SW846 6020
	Magnesium	18.9	0.052	0.150	NE		J	086820-009	SW846 6020
	Manganese	0.0189	0.001	0.005	NE			086820-009	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U	UJ	086820-009	SW846 7470
	Nickel	0.00122	0.0005	0.002	NE	J		086820-009	SW846 6020
	Potassium	4.67	0.080	0.300	NE			086820-009	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086820-009	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086820-009	SW846 6020
	Sodium	40.7	0.080	0.250	NE		J	086820-009	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086820-009	SW846 6020
	Uranium	0.00846	0.00005	0.0002	0.030			086820-009	SW846 6020
	Uranium-235	0.000059	0.00001	0.00007	0.030	J	J+	086820-009	SW846 6020
	Uranium-238	0.0084	0.00005	0.0002	0.030			086820-009	SW846 6020
	Vanadium	0.00849	0.003	0.010	NE	J		086820-009	SW846 6020
	Zinc	0.00324	0.0026	0.010	NE	J		086820-009	SW846 6020

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

[b]PQL 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.

[c]MCL 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.

[d]Laboratory 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.

Table A-5 (Concluded)
Summary of Total Metals Results (Unfiltered)
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

[e]Validation Qualifiers (If cell is blank, then all quality control samples met 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.
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 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.

[f]U.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.

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	Aluminum	ND	0.010	0.020	NE	U		085758-010	SW846 6020
09-Apr-08	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-MW4	Aluminum	ND	0.010	0.020	NE	U		085770-010	SW846 6020
16-Apr-08	Antimony	ND	0.0005	0.002	0.006	U		085770-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		085770-010	SW846 6020
	Barium	0.110	0.0005	0.002	2.00			085770-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085770-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085770-010	SW846 6020
	Calcium	57.2	0.100	0.500	NE			085770-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085770-010	SW846 6020
	Cobalt	0.000536	0.0001	0.001	NE	J		085770-010	SW846 6020
	Copper	0.000778	0.0003	0.001	NE	J		085770-010	SW846 6020
	Iron	0.390	0.010	0.025	NE			085770-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085770-010	SW846 6020
	Magnesium	18.8	0.005	0.015	NE			085770-010	SW846 6020
	Manganese	0.0552	0.001	0.005	NE			085770-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085770-010	SW846 7470
	Molybdenum	0.00866	0.0001	0.0005	NE			085770-010	SW846 6020
	Nickel	0.00498	0.0005	0.002	NE			085770-010	SW846 6020
	Potassium	4.60	0.080	0.300	NE			085770-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		085770-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		085770-010	SW846 6020
	Sodium	45.5	0.080	0.250	NE			085770-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085770-010	SW846 6020
	Uranium-235	0.000057	0.00001	0.00007	0.030	J		085770-010	SW846 6020
	Uranium-238	0.00785	0.00005	0.0002	0.030			085770-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085770-010	SW846 6020
	Zinc	0.00794	0.0026	0.010	NE	J		085770-010	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-MW5	Aluminum	ND	0.010	0.020	NE	U		085775-010	SW846 6020
10-Apr-08	Antimony	ND	0.0005	0.002	0.006	U		085775-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		085775-010	SW846 6020
	Barium	0.126	0.0005	0.002	2.00			085775-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085775-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085775-010	SW846 6020
	Calcium	93.0	0.100	0.500	NE	B		085775-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085775-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	U		085775-010	SW846 6020
	Copper	0.00233	0.0003	0.001	NE	B	0.0032U	085775-010	SW846 6020
	Iron	0.110	0.010	0.025	NE	B		085775-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085775-010	SW846 6020
	Magnesium	28.4	0.005	0.015	NE			085775-010	SW846 6020
	Manganese	0.00801	0.001	0.005	NE			085775-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085775-010	SW846 7470
	Molybdenum	0.00327	0.0001	0.0005	NE			085775-010	SW846 6020
	Nickel	0.00223	0.0005	0.002	NE			085775-010	SW846 6020
	Potassium	5.51	0.080	0.300	NE			085775-010	SW846 6020
	Selenium	0.00108	0.001	0.005	0.050	J		085775-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		085775-010	SW846 6020
	Sodium	63.7	0.400	1.25	NE			085775-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085775-010	SW846 6020
	Uranium-235	0.000063	0.00001	0.00007	0.030	J	J+	085775-010	SW846 6020
	Uranium-238	0.00869	0.00005	0.0002	0.030			085775-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085775-010	SW846 6020
	Zinc	0.00374	0.0026	0.010	NE	J		085775-010	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-MW5 (Duplicate)	Aluminum	ND	0.010	0.020	NE	U		085776-010	SW846 6020
10-Apr-08	Antimony	ND	0.0005	0.002	0.006	U		085776-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		085776-010	SW846 6020
	Barium	0.129	0.0005	0.002	2.00			085776-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085776-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085776-010	SW846 6020
	Calcium	94.0	0.100	0.500	NE	B		085776-010	SW846 6020
	Chromium	0.0027	0.0025	0.010	0.100	J	0.016U	085776-010	SW846 6020
	Cobalt	ND	0.0001	0.001	NE	U		085776-010	SW846 6020
	Copper	0.00127	0.0003	0.001	NE	B	0.0032U	085776-010	SW846 6020
	Iron	0.115	0.010	0.025	NE	B		085776-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085776-010	SW846 6020
	Magnesium	29.9	0.005	0.015	NE			085776-010	SW846 6020
	Manganese	0.00884	0.001	0.005	NE			085776-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085776-010	SW846 7470
	Molybdenum	0.00329	0.0001	0.0005	NE			085776-010	SW846 6020
	Nickel	0.00208	0.0005	0.002	NE			085776-010	SW846 6020
	Potassium	5.90	0.080	0.300	NE			085776-010	SW846 6020
	Selenium	0.00145	0.001	0.005	0.050	J		085776-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		085776-010	SW846 6020
	Sodium	64.3	0.400	1.25	NE			085776-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085776-010	SW846 6020
	Uranium-235	0.000066	0.00001	0.00007	0.030	J	J+	085776-010	SW846 6020
	Uranium-238	0.00892	0.00005	0.0002	0.030			085776-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085776-010	SW846 6020
	Zinc	0.00333	0.0026	0.010	NE	J		085776-010	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-MW6	Aluminum	ND	0.010	0.020	NE	U		085779-010	SW846 6020
08-Apr-08	Antimony	ND	0.0005	0.002	0.006	B, U		085779-010	SW846 6020
	Arsenic	0.00169	0.0015	0.005	0.010	B, J		085779-010	SW846 6020
	Barium	0.112	0.0025	0.010	2.00			085779-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		085779-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		085779-010	SW846 6020
	Calcium	77.9	0.100	0.500	NE			085779-010	SW846 6020
	Chromium	ND	0.0025	0.010	0.100	U		085779-010	SW846 6020
	Cobalt	0.000329	0.0001	0.001	NE	B, J	0.00094U	085779-010	SW846 6020
	Copper	0.00129	0.0003	0.001	NE			085779-010	SW846 6020
	Iron	0.698	0.010	0.025	NE	B		085779-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		085779-010	SW846 6020
	Magnesium	27.4	0.025	0.075	NE			085779-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	U		085779-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	085779-010	SW846 6020
	Molybdenum	0.00279	0.0001	0.0005	NE			085779-010	SW846 6020
	Nickel	0.00105	0.0005	0.002	NE	J	NJ-	085779-010	SW846 6020
	Potassium	4.52	0.080	0.300	NE			085779-010	SW846 6020
	Selenium	0.0011	0.001	0.005	0.050	J		085779-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U	UJ	085779-010	SW846 6020
	Sodium	61.9	0.400	1.25	NE			085779-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		085779-010	SW846 6020
	Uranium-235	0.000064	0.00001	0.00007	0.030	J		085779-010	SW846 6020
	Uranium-238	0.00895	0.00005	0.0002	0.030			085779-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		085779-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	U		085779-010	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	Aluminum	ND	0.005	0.015	NE	U		086358-010	SW846 6020
17-Jul-08	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-MW7	Aluminum	ND	0.005	0.015	NE	U		086362-010	SW846 6020
16-Jul-08	Antimony	0.000797	0.0005	0.002	0.006	B, J	0.0048U	086362-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086362-010	SW846 6020
	Barium	0.106	0.0005	0.002	2.00			086362-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086362-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086362-010	SW846 6020
	Calcium	51.5	0.200	1.00	NE	B		086362-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	B, U		086362-010	SW846 6020
	Cobalt	0.000114	0.0001	0.001	NE	J	UJ	086362-010	SW846 6020
	Copper	0.00089	0.0003	0.001	NE	J		086362-010	SW846 6020
	Iron	0.127	0.010	0.025	NE	B		086362-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086362-010	SW846 6020
	Magnesium	17.7	0.0052	0.015	NE			086362-010	SW846 6020
	Manganese	0.00914	0.001	0.005	NE			086362-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086362-010	SW846 7470
	Molybdenum	0.0061	0.0001	0.0005	NE			086362-010	SW846 6020
	Nickel	0.00128	0.0005	0.002	NE	J		086362-010	SW846 6020
	Potassium	5.06	0.080	0.300	NE			086362-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086362-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086362-010	SW846 6020
	Sodium	45.2	0.080	0.250	NE			086362-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086362-010	SW846 6020
	Uranium	0.00818	0.00005	0.0002	0.030			086362-010	SW846 6020
	Uranium-235	0.000056	0.00001	0.00007	0.030	J	J+	086362-010	SW846 6020
	Uranium-238	0.00812	0.00005	0.0002	0.030			086362-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086362-010	SW846 6020
	Zinc	0.0134	0.0026	0.010	NE			086362-010	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-MW7 (Duplicate)	Aluminum	ND	0.005	0.015	NE	U		086363-010	SW846 6020
16-Jul-08	Antimony	ND	0.0005	0.002	0.006	B, U		086363-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086363-010	SW846 6020
	Barium	0.104	0.0005	0.002	2.00			086363-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086363-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086363-010	SW846 6020
	Calcium	53.3	0.200	1.00	NE	B		086363-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	B, U		086363-010	SW846 6020
	Cobalt	0.000118	0.0001	0.001	NE	J	UJ	086363-010	SW846 6020
	Copper	0.000778	0.0003	0.001	NE	J		086363-010	SW846 6020
	Iron	0.124	0.010	0.025	NE	B		086363-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086363-010	SW846 6020
	Magnesium	17.3	0.0052	0.015	NE			086363-010	SW846 6020
	Manganese	0.00862	0.001	0.005	NE			086363-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086363-010	SW846 7470
	Molybdenum	0.00592	0.0001	0.0005	NE			086363-010	SW846 6020
	Nickel	0.00132	0.0005	0.002	NE	J		086363-010	SW846 6020
	Potassium	4.79	0.080	0.300	NE			086363-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086363-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086363-010	SW846 6020
	Sodium	42.6	0.080	0.250	NE			086363-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086363-010	SW846 6020
	Uranium	0.00807	0.00005	0.0002	0.030			086363-010	SW846 6020
	Uranium-235	0.000057	0.00001	0.00007	0.030	J	J+	086363-010	SW846 6020
	Uranium-238	0.00801	0.00005	0.0002	0.030			086363-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086363-010	SW846 6020
	Zinc	0.00262	0.0026	0.010	NE	J		086363-010	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-MW8	Aluminum	ND	0.005	0.015	NE	U		086365-010	SW846 6020
14-Jul-08	Antimony	0.000613	0.0005	0.002	0.006	B, J	0.00060U	086365-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086365-010	SW846 6020
	Barium	0.132	0.0005	0.002	2.00			086365-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086365-010	SW846 6020
	Cadmium	0.000171	0.00011	0.001	0.005	J		086365-010	SW846 6020
	Calcium	53.5	0.200	1.00	NE	B		086365-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086365-010	SW846 6020
	Cobalt	0.000133	0.0001	0.001	NE	J		086365-010	SW846 6020
	Copper	0.000858	0.0003	0.001	NE	J		086365-010	SW846 6020
	Iron	0.125	0.010	0.025	NE	B		086365-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086365-010	SW846 6020
	Magnesium	16.8	0.0052	0.015	NE		J	086365-010	SW846 6020
	Manganese	0.218	0.001	0.005	NE			086365-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086365-010	SW846 7470
	Molybdenum	0.0241	0.0001	0.0005	NE	B		086365-010	SW846 6020
	Nickel	0.00207	0.0005	0.002	NE			086365-010	SW846 6020
	Potassium	5.31	0.080	0.300	NE			086365-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	B, U		086365-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086365-010	SW846 6020
	Sodium	47.3	0.080	0.250	NE			086365-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086365-010	SW846 6020
	Uranium	0.00695	0.00005	0.0002	0.030			086365-010	SW846 6020
	Uranium-235	0.000048	0.00001	0.00007	0.030	J	J+	086365-010	SW846 6020
	Uranium-238	0.0069	0.00005	0.0002	0.030			086365-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086365-010	SW846 6020
	Zinc	0.00342	0.0026	0.010	NE	B, J	0.030U	086365-010	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-MW9	Aluminum	ND	0.005	0.015	NE	U		086367-010	SW846 6020
15-Jul-08	Antimony	ND	0.0005	0.002	0.006	B, U		086367-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086367-010	SW846 6020
	Barium	0.096	0.0005	0.002	2.00			086367-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086367-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086367-010	SW846 6020
	Calcium	46.4	0.200	1.00	NE	B		086367-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	B, U		086367-010	SW846 6020
	Cobalt	0.000128	0.0001	0.001	NE	J	UJ	086367-010	SW846 6020
	Copper	0.000973	0.0003	0.001	NE	J		086367-010	SW846 6020
	Iron	0.119	0.010	0.025	NE	B		086367-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086367-010	SW846 6020
	Magnesium	13.9	0.0052	0.015	NE			086367-010	SW846 6020
	Manganese	0.019	0.001	0.005	NE			086367-010	SW846 6020
	Mercury	ND	0.00003	0.0002	0.002	U	UJ	086367-010	SW846 7470
	Molybdenum	0.0143	0.0001	0.0005	NE			086367-010	SW846 6020
	Nickel	0.00127	0.0005	0.002	NE	J		086367-010	SW846 6020
	Potassium	6.48	0.080	0.300	NE			086367-010	SW846 6020
	Selenium	0.00196	0.001	0.005	0.050	J		086367-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086367-010	SW846 6020
	Sodium	39.0	0.080	0.250	NE			086367-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086367-010	SW846 6020
	Uranium	0.00774	0.00005	0.0002	0.030			086367-010	SW846 6020
	Uranium-235	0.000056	0.00001	0.00007	0.030	J	J+	086367-010	SW846 6020
	Uranium-238	0.00769	0.00005	0.0002	0.030			086367-010	SW846 6020
	Vanadium	ND	0.030	0.100	NE	U		086367-010	SW846 6020
	Zinc	ND	0.0026	0.010	NE	U		086367-010	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	Aluminum	0.0182	0.005	0.015	NE	B	0.042U	086812-010	SW846 6020
01-Oct-08	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	0.00216	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.

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 (Duplicate)	Aluminum	0.0799	0.005	0.015	NE	B		086813-010	SW846 6020
01-Oct-08	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 (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-MW7	Aluminum	0.0163	0.005	0.015	NE	B	0.043U	086815-010	SW846 6020
06-Oct-08	Antimony	0.000612	0.0005	0.002	0.006	J	0.014U	086815-010	SW846 6020
	Arsenic	0.00211	0.0015	0.005	0.010	B, J	0.0087U	086815-010	SW846 6020
	Barium	0.0973	0.0005	0.002	2.00			086815-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086815-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086815-010	SW846 6020
	Calcium	53.8	0.200	1.00	NE			086815-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086815-010	SW846 6020
	Cobalt	0.000123	0.0001	0.001	NE	J		086815-010	SW846 6020
	Copper	0.00095	0.0003	0.001	NE	J		086815-010	SW846 6020
	Iron	0.218	0.010	0.025	NE			086815-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086815-010	SW846 6020
	Magnesium	18.4	0.052	0.150	NE		J	086815-010	SW846 6020
	Manganese	0.00154	0.001	0.005	NE	J		086815-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U	UJ	086815-010	SW846 7470
	Nickel	0.00111	0.0005	0.002	NE	J		086815-010	SW846 6020
	Potassium	5.09	0.080	0.300	NE			086815-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086815-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086815-010	SW846 6020
	Sodium	42.5	0.080	0.250	NE		J	086815-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086815-010	SW846 6020
	Uranium	0.00774	0.00005	0.0002	0.030			086815-010	SW846 6020
	Uranium-235	0.000054	0.00001	0.00007	0.030	J	J+	086815-010	SW846 6020
	Uranium-238	0.00768	0.00005	0.0002	0.030			086815-010	SW846 6020
	Vanadium	0.00462	0.003	0.010	NE	J		086815-010	SW846 6020
	Zinc	0.0133	0.0026	0.010	NE			086815-010	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-MW8	Aluminum	0.00855	0.005	0.015	NE	B, J	0.043U	086817-010	SW846 6020
07-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086817-010	SW846 6020
	Arsenic	ND	0.0015	0.005	0.010	U		086817-010	SW846 6020
	Barium	0.117	0.0005	0.002	2.00			086817-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086817-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086817-010	SW846 6020
	Calcium	54.9	0.200	1.00	NE			086817-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086817-010	SW846 6020
	Cobalt	0.000129	0.0001	0.001	NE	J		086817-010	SW846 6020
	Copper	0.00102	0.0003	0.001	NE			086817-010	SW846 6020
	Iron	0.211	0.010	0.025	NE			086817-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086817-010	SW846 6020
	Magnesium	18.3	0.052	0.150	NE		J	086817-010	SW846 6020
	Manganese	ND	0.001	0.005	NE	U		086817-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U	UJ	086817-010	SW846 7470
	Nickel	0.00112	0.0005	0.002	NE	J		086817-010	SW846 6020
	Potassium	6.28	0.080	0.300	NE			086817-010	SW846 6020
	Selenium	ND	0.001	0.005	0.050	U		086817-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086817-010	SW846 6020
	Sodium	47.6	0.080	0.250	NE		J	086817-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086817-010	SW846 6020
	Uranium	0.00811	0.00005	0.0002	0.030			086817-010	SW846 6020
	Uranium-235	0.000058	0.00001	0.00007	0.030	J	J+	086817-010	SW846 6020
	Uranium-238	0.00805	0.00005	0.0002	0.030			086817-010	SW846 6020
	Vanadium	ND	0.003	0.010	NE	U		086817-010	SW846 6020
	Zinc	0.00388	0.0026	0.010	NE	J		086817-010	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-MW9	Aluminum	0.00786	0.005	0.015	NE	B, J	0.043U	086820-010	SW846 6020
08-Oct-08	Antimony	ND	0.0005	0.002	0.006	U		086820-010	SW846 6020
	Arsenic	0.00355	0.0015	0.005	0.010	B, J	0.0087U	086820-010	SW846 6020
	Barium	0.0872	0.0005	0.002	2.00			086820-010	SW846 6020
	Beryllium	ND	0.0001	0.0005	0.004	U		086820-010	SW846 6020
	Cadmium	ND	0.00011	0.001	0.005	U		086820-010	SW846 6020
	Calcium	65.5	0.200	1.00	NE			086820-010	SW846 6020
	Chromium	ND	0.0015	0.003	0.100	U		086820-010	SW846 6020
	Cobalt	0.000127	0.0001	0.001	NE	J		086820-010	SW846 6020
	Copper	0.000686	0.0003	0.001	NE	J		086820-010	SW846 6020
	Iron	0.206	0.010	0.025	NE			086820-010	SW846 6020
	Lead	ND	0.0005	0.002	NE	U		086820-010	SW846 6020
	Magnesium	22.7	0.052	0.150	NE		J	086820-010	SW846 6020
	Manganese	0.00715	0.001	0.005	NE			086820-010	SW846 6020
	Mercury	ND	0.000067	0.0002	0.002	U	UJ	086820-010	SW846 7470
	Nickel	0.00108	0.0005	0.002	NE	J		086820-010	SW846 6020
	Potassium	4.77	0.080	0.30	NE			086820-010	SW846 6020
	Selenium	0.00157	0.001	0.005	0.050	J		086820-010	SW846 6020
	Silver	ND	0.0002	0.001	NE	U		086820-010	SW846 6020
	Sodium	42.2	0.080	0.250	NE		J	086820-010	SW846 6020
	Thallium	ND	0.0003	0.001	0.002	U		086820-010	SW846 6020
	Uranium	0.00868	0.00005	0.0002	0.030			086820-010	SW846 6020
	Uranium-235	0.000061	0.00001	0.00007	0.030	J	J+	086820-010	SW846 6020
	Uranium-238	0.00862	0.00005	0.0002	0.030			086820-010	SW846 6020
	Vanadium	0.00854	0.003	0.010	NE	J		086820-010	SW846 6020
	Zinc	0.0033	0.0026	0.010	NE	J		086820-010	SW846 6020

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

[b]PQL 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.

[c]MCL 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.

[d]Laboratory 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.

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

[e]Validation 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.

[f]U.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.

Table A-7
Summary of Detected Volatile and Semivolatile Organic Compounds
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Result (μg/L)	MDL[a] (μg/L)	PQL[b] (μg/L)	MCL[c] (μg/L)	Laboratory Qualifier[d]	Validation Qualifier[e]	Sample No.	Analytical Method[f]
MWL-MW4 16-Apr-08	Acetone	3.82	1.25	5.00	NE	J	J-	085770-001	SW846 8260
MWL-MW6 08-Apr-08	Acetone	2.31	1.25	5.00	NE	J	J+	085779-001	SW846 8260
MWL-MW9 15-Jul-08	Toluene	0.510	0.250	1.00	1000	J		086367-001	SW846 8260

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

[b]PQL 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.

[c]MCL 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.

[d]Laboratory Qualifiers:
J = Amount detected is below the PQL.

[e]Validation 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.
J- = The associated numerical value is an estimated quantity with suspected negative bias.

[f]U.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.

CFR = Code of Federal Regulations.
ID = Identification.
MCL = Maximum contaminant level.
MDL = Method detection limit.
μg/L = Microgram(s) per liter.
MW = Monitoring well.
MWL = Mixed Waste Landfill.
NE = Not established.
NMAC = New Mexico Administrative Code.
PQL = Practical quantitation limit.

Table A-8
Method Detection Limits for Volatile and Semivolatile Organic Compounds
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Analyte	MDL[a] (µg/L)	Analytical Method[b]
Acetone	1.25–5.00	SW846-8260
Benzene	0.300–1.00	SW846-8260
Bromodichloromethane	0.250	SW846-8260
Bromoform	0.250	SW846-8260
Bromomethane	0.500	SW846-8260
2-Butanone	1.25	SW846-8260
Carbon disulfide	1.25	SW846-8260
Carbon tetrachloride	0.250–0.260	SW846-8260
Chlorobenzene	0.250	SW846-8260
Chloroethane	0.300–0.500	SW846-8260
Chloroform	0.250	SW846-8260
Chloromethane	0.300–0.500	SW846-8260
Dibromochloromethane	0.250–0.260	SW846-8260
1,1-Dichloroethane	0.300	SW846-8260
1,2-Dichloroethane	0.250	SW846-8260
1,1-Dichloroethene	0.300	SW846-8260
cis-1,2-Dichloroethene	0.300	SW846-8260
trans-1,2-Dichloroethene	0.300	SW846-8260
1,2-Dichloropropane	0.250	SW846-8260
cis-1,3-Dichloropropene	0.250	SW846-8260
trans-1,3-Dichloropropene	0.250	SW846-8260
Ethyl benzene	0.250	SW846-8260
2-Hexanone	1.25	SW846-8260
Methylene chloride	2.00–5.00	SW846-8260
4-Methyl-2-pentanone	1.25	SW846-8260
Styrene	0.250	SW846-8260
1,1,2,2-Tetrachloroethane	0.250	SW846-8260
Tetrachloroethene	0.250–0.450	SW846-8260
Toluene	0.250–1.00	SW846-8260
1,1,1-Trichloroethane	0.300–0.325	SW846-8260
1,1,2-Trichloroethane	0.250	SW846-8260
Trichloroethene	0.250	SW846-8260
Vinyl acetate	1.50–5.00	SW846-8260
Vinyl chloride	0.500	SW846-8260
Xylene	0.250–0.600	SW846-8260
Acenaphthene	0.310–0.373	SW846-8270
Acenaphthylene	0.200–0.241	SW846-8270
Anthracene	0.200–0.241	SW846-8270
Benzo(a)anthracene	0.200–0.241	SW846-8270
Benzo(a)pyrene	0.200–0.241	SW846-8270
Benzo(b)fluoranthene	0.200–0.241	SW846-8270
Benzo(ghi)perylene	0.200–0.241	SW846-8270
Benzo(k)fluoranthene	0.200–0.241	SW846-8270
4-Bromophenyl phenyl ether	2.00–2.41	SW846-8270
Butylbenzyl phthalate	2.00–2.41	SW846-8270
Carbazole	0.200–0.241	SW846-8270
4-Chlorobenzenamine	2.00–2.41	SW846-8270
bis(2-Chloroethoxy)methane	3.00–3.61	SW846-8270
bis(2-Chloroethyl)ether	2.00–2.41	SW846-8270

Refer to footnotes at end of table.

Table A-8 (Continued)
Method Detection Limits for Volatile and Semivolatile Organic Compounds
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Analyte	MDL[a] (μg/L)	Analytical Method[b]
bis-Chloroisopropyl ether	2.00–2.41	SW846-8270
4-Chloro-3-methylphenol	2.00–2.41	SW846-8270
2-Chloronaphthalene	0.350–0.422	SW846-8270
2-Chlorophenol	2.00–2.41	SW846-8270
4-Chlorophenyl phenyl ether	2.00–2.41	SW846-8270
Chrysene	0.200–0.241	SW846-8270
m,p-Cresol	3.00–3.61	SW846-8270
o-Cresol	2.00–2.41	SW846-8270
Dibenz[a,h]anthracene	0.200–0.241	SW846-8270
Dibenzofuran	2.00–2.41	SW846-8270
1,2-Dichlorobenzene	2.00–2.41	SW846-8270
1,3-Dichlorobenzene	2.00–2.41	SW846-8270
1,4-Dichlorobenzene	2.00–2.41	SW846-8270
3,3'-Dichlorobenzidine	1.00–1.20	SW846-8270
2,4-Dichlorophenol	2.00–2.41	SW846-8270
Diethylphthalate	2.00–2.41	SW846-8270
2,4-Dimethylphenol	2.00–2.41	SW846-8270
Dimethylphthalate	2.00–2.41	SW846-8270
Di-n-butyl phthalate	2.00–2.41	SW846-8270
2,4-Dinitrophenol	10.0–12.0	SW846-8270
Dinitro-o-cresol	3.00–3.61	SW846-8270
2,4-Dinitrotoluene	2.00–2.41	SW846-8270
2,6-Dinitrotoluene	2.00–2.41	SW846-8270
Di-n-octyl phthalate	3.00–3.61	SW846-8270
Diphenyl amine	3.00–3.61	SW846-8270
bis(2-Ethylhexyl)phthalate	2.00–2.41	SW846-8270
Fluoranthene	0.200–0.241	SW846-8270
Fluorene	0.200–0.241	SW846-8270
Hexachlorobenzene	2.00–2.41	SW846-8270
Hexachlorobutadiene	2.00–2.41	SW846-8270
Hexachlorocyclopentadiene	2.00–2.41	SW846-8270
Hexachloroethane	2.00–2.41	SW846-8270
Indeno(1,2,3-c,d)pyrene	0.200–0.241	SW846-8270
Isophorone	2.00–2.41	SW846-8270
2-Methylnaphthalene	0.300–0.361	SW846-8270
Naphthalene	0.300–0.361	SW846-8270
2-Nitroaniline	2.00–2.41	SW846-8270
3-Nitroaniline	2.00–2.41	SW846-8270
4-Nitroaniline	3.00–3.61	SW846-8270
Nitrobenzene	3.00–3.61	SW846-8270
2-Nitrophenol	2.00–2.41	SW846-8270
4-Nitrophenol	2.00–2.41	SW846-8270
n-Nitrosodipropylamine	2.00–2.41	SW846-8270
Pentachlorophenol	2.00–2.41	SW846-8270
Phenanthrene	0.200–0.241	SW846-8270
Phenol	1.00–1.20	SW846-8270
Pyrene	0.300–0.361	SW846-8270

Refer to footnotes at end of table.

Table A-8 (Concluded)
Method Detection Limits for Volatile and Semivolatile Organic Compounds
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Analyte	MDL[a] (μg/L)	Analytical Method[b]
1,2,4-Trichlorobenzene	2.00–2.41	SW846-8270
2,4,5-Trichlorophenol	1.00–1.20	SW846-8270
2,4,6-Trichlorophenol	2.00–2.41	SW846-8270

[a]MDL is the minimum concentration that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix-specific.
[b]U.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.
MDL = Method detection limit.
μg/L = Microgram(s) per liter.

Table A-9
Summary of Perchlorate Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Perchlorate 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	ND	0.004	0.012	NE	U		085758-020	EPA 314.0
MWL-BW2 17-Jul-08	ND	0.004	0.012	NE	U		086358-020	EPA 314.0
MWL-MW7 16-Jul-08	ND	0.004	0.012	NE	U		086362-020	EPA 314.0
MWL-MW7 (Duplicate) 16-Jul-08	ND	0.004	0.012	NE	U		086363-020	EPA 314.0
MWL-MW8 14-Jul-08	ND	0.004	0.012	NE	U		086365-020	EPA 314.0
MWL-MW9 15-Jul-08	ND	0.004	0.012	NE	U		086367-020	EPA 314.0
MWL-BW2 01-Oct-08	ND	0.004	0.012	NE	U		086812-020	EPA 314.0
MWL-BW2 (Duplicate) 01-Oct-08	ND	0.004	0.012	NE	U		086813-020	EPA 314.0
MWL-MW7 06-Oct-08	ND	0.004	0.012	NE	U		086815-020	EPA 314.0
MWL-MW8 07-Oct-08	ND	0.004	0.012	NE	U		086817-020	EPA 314.0
MWL-MW9 08-Oct-08	ND	0.004	0.012	NE	U		086820-020	EPA 314.0

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

[b]PQL 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.

[c]MCL 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.

[d]Laboratory Qualifiers:
U = Analyte is absent or below the MDL.

Table A-9 (Concluded)
Summary of Perchlorate Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

[e]Validation Qualifiers (If cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.)

[f]U.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.
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.
ND = Not detected (at method detection limit).
NE = Not established.
NMAC = New Mexico Administrative Code.
PQL = Practical quantitation limit.

Table A-10
Summary of Gamma Spectroscopy, Gross Alpha/Beta Activity, and Tritium Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
MWL-BW2	Americium-241	-1.85 ± 14.3	18.9	9.47	NE	U	BD	085758-033	EPA 901.1
09-Apr-08	Cesium-137	0.821 ± 2.20	3.78	1.89	NE	U	BD	085758-033	EPA 901.1
	Cobalt-60	-0.507 ± 2.39	3.39	1.70	NE	U	BD	085758-033	EPA 901.1
	Potassium-40	34.5 ± 52.4	35.7	17.9	NE	U	BD	085758-033	EPA 901.1
	Gross Alpha	11.2 ± 2.92	1.16	0.478	15			085758-034	EPA 900.0
	Gross Beta	5.95 ± 1.61	1.81	0.871	4 mrem/yr			085758-034	EPA 900.0
	Tritium	77.8 ± 79.5	131	63.7	NE	U	BD	085758-036	EPA 906.0 M
MWL-MW4	Americium-241	2.05 ± 15.1	23.3	11.6	NE	U	BD	085770-033	EPA 901.1
16-Apr-08	Cesium-137	-1.7 ± 3.66	3.24	1.62	NE	U	BD	085770-033	EPA 901.1
	Cobalt-60	2.52 ± 2.17	3.73	1.87	NE	U	BD	085770-033	EPA 901.1
	Potassium-40	12.1 ± 58.2	32.4	16.2	NE	U	BD	085770-033	EPA 901.1
	Gross Alpha	15.5 ± 3.72	1.02	0.425	15			085770-034	EPA 900.0
	Gross Alpha (reanalysis)	15.9 ± 7.32	4.91	1.47	15			085770-R34	EPA 900.0
	Gross Beta	5.84 ± 1.89	1.78	0.769	4 mrem/yr			085770-034	EPA 900.0
	Tritium	-65.1 ± 76.3	136	66.0	NE	U	BD	085770-036	EPA 906.0 M
MWL-MW5	Americium-241	-1.97 ± 11.3	16.8	8.38	NE	U	BD	085775-033	EPA 901.1
10-Apr-08	Cesium-137	0.671 ± 2.01	3.21	1.61	NE	U	BD	085775-033	EPA 901.1
	Cobalt-60	0.812 ± 2.20	3.75	1.88	NE	U	BD	085775-033	EPA 901.1
	Potassium-40	9.64 ± 36.0	47.6	23.8	NE	U	BD	085775-033	EPA 901.1
	Gross Alpha	20.7 ± 5.07	1.65	0.692	15			085775-034	EPA 900.0
	Gross Alpha (reanalysis)	16.4 ± 9.19	8.87	2.92	15		J	085775-R34	EPA 900.0
	Gross Beta	12.1 ± 4.75	5.23	2.26	4 mrem/yr		J	085775-034	EPA 900.0
	Tritium	-5.05 ± 77.0	133	64.8	NE	U	BD	085775-036	EPA 906.0 M
MWL-MW5 (Duplicate)	Americium-241	1.23 ± 5.60	8.99	4.50	NE	U	BD	085776-033	EPA 901.1
10-Apr-08	Cesium-137	0.364 ± 1.55	2.60	1.30	NE	U	BD	085776-033	EPA 901.1
	Cobalt-60	0.227 ± 1.58	2.65	1.33	NE	U	BD	085776-033	EPA 901.1
	Potassium-40	30.4 ± 36.8	23.9	12.0	NE	X	R	085776-033	EPA 901.1
	Gross Alpha	17.0 ± 4.46	2.54	1.14	15			085776-034	EPA 900.0
	Gross Alpha (reanalysis)	15.7 ± 8.29	7.93	2.74	15		J	085776-R34	EPA 900.0
	Gross Beta	8.41 ± 3.75	4.08	1.70	4 mrem/yr		J	085776-034	EPA 900.0
	Tritium	-100 ± 73.7	132	64.2	NE	U	BD	085776-036	EPA 906.0 M

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Gamma Spectroscopy, Gross Alpha/Beta Activity, and Tritium Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
MWL-MW6	Americium-241	5.17 ± 5.87	8.92	4.46	NE	U	BD	085779-033	EPA 901.1
08-Apr-08	Cesium-137	-0.33 ± 1.49	2.44	1.22	NE	U	BD	085779-033	EPA 901.1
	Cobalt-60	0.546 ± 1.87	2.75	1.38	NE	U	BD	085779-033	EPA 901.1
	Potassium-40	45.2 ± 40.8	21.2	10.6	NE	X	R	085779-033	EPA 901.1
	Gross Alpha	17.9 ± 4.42	1.42	0.588	15			085779-034	EPA 900.0
	Gross Alpha (reanalysis)	17.8 ± 10.5	15.5	7.14	15		J	085779-R34	EPA 900.0
	Gross Beta	6.62 ± 3.67	4.76	2.03	4 mrem/yr		J	085779-034	EPA 900.0
	Tritium	-5.01 ± 76.3	132	64.2	NE	U	BD	085779-036	EPA 906.0 M
MWL-BW2	Americium-241	0.510 ± 11.8	17.3	8.66	NE	U	BD	086358-033	EPA 901.1
17-Jul-08	Cesium-137	0.622 ± 2.00	3.46	1.73	NE	U	BD	086358-033	EPA 901.1
	Cobalt-60	-1.13 ± 2.09	3.29	1.65	NE	U	BD	086358-033	EPA 901.1
	Potassium-40	11.3 ± 47.2	33.3	16.7	NE	U	BD	086358-033	EPA 901.1
	Gross Alpha	10.8 ± 2.86	1.60	0.711	15			086358-034	EPA 900.0
	Gross Beta	3.25 ± 1.84	2.88	1.40	4 mrem/yr		J	086358-034	EPA 900.0
	Tritium	14.4 ± 90.6	176	73.5	NE	U	BD	086358-036	EPA 906.0 M
MWL-MW7	Americium-241	0.584 ± 6.17	9.07	4.54	NE	U	BD	086362-033	EPA 901.1
16-Jul-08	Cesium-137	-0.492 ± 1.65	2.69	1.35	NE	U	BD	086362-033	EPA 901.1
	Cobalt-60	2.09 ± 1.63	2.96	1.48	NE	U	BD	086362-033	EPA 901.1
	Potassium-40	3.87 ± 36.7	41.2	20.6	NE	U	BD	086362-033	EPA 901.1
	Gross Alpha	11.7 ± 2.65	1.11	0.483	15			086362-034	EPA 900.0
	Gross Beta	10.6 ± 2.13	1.52	0.733	4 mrem/yr			086362-034	EPA 900.0
	Tritium	-23.3 ± 80.2	171	71.6	NE	U	BD	086362-036	EPA 906.0 M
MWL-MW7 (Duplicate)	Americium-241	2.02 ± 8.92	13.4	6.72	NE	U	BD	086363-033	EPA 901.1
16-Jul-08	Cesium-137	1.09 ± 1.99	3.14	1.57	NE	U	BD	086363-033	EPA 901.1
	Cobalt-60	1.15 ± 1.76	3.08	1.54	NE	U	BD	086363-033	EPA 901.1
	Potassium-40	-25.1 ± 37.4	41.6	20.8	NE	U	BD	086363-033	EPA 901.1
	Gross Alpha	10.3 ± 2.56	1.43	0.646	15			086363-034	EPA 900.0
	Gross Beta	7.59 ± 1.74	1.72	0.833	4 mrem/yr			086363-034	EPA 900.0
	Tritium	102 ± 107	173	72.4	NE	U	BD	086363-036	EPA 906.0 M

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Gamma Spectroscopy, Gross Alpha/Beta Activity, and Tritium Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
MWL-MW8	Americium-241	-7.78 ± 7.66	11.9	5.97	NE	U	BD	086365-033	EPA 901.1
14-Jul-08	Cesium-137	-0.748 ± 2.97	2.84	1.42	NE	U	BD	086365-033	EPA 901.1
	Cobalt-60	-0.0617 ± 1.79	3.01	1.50	NE	U	BD	086365-033	EPA 901.1
	Potassium-40	26.5 ± 37.1	30.1	15.1	NE	U	BD	086365-033	EPA 901.1
	Gross Alpha	9.43 ± 2.29	1.25	0.553	15			086365-034	EPA 900.0
	Gross Beta	6.53 ± 1.43	1.16	0.556	4 mrem/yr			086365-034	EPA 900.0
	Tritium	61.8 ± 99.7	174	72.9	NE	U	BD	086365-036	EPA 906.0 M
MWL-MW9	Americium-241	1.40 ± 4.60	7.86	3.93	NE	U	BD	086367-033	EPA 901.1
15-Jul-08	Cesium-137	-1.15 ± 3.44	2.88	1.44	NE	U	BD	086367-033	EPA 901.1
	Cobalt-60	-5.38 ± 4.89	3.13	1.57	NE	U	BD	086367-033	EPA 901.1
	Potassium-40	19.8 ± 43.4	27.4	13.7	NE	U	BD	086367-033	EPA 901.1
	Gross Alpha	11.6 ± 2.53	1.10	0.484	15			086367-034	EPA 900.0
	Gross Beta	6.50 ± 1.53	1.50	0.727	4 mrem/yr			086367-034	EPA 900.0
	Tritium	71.8 ± 99.6	170	71.1	NE	U	BD	086367-036	EPA 906.0 M
MWL-BW2	Americium-241	8.10 ± 9.18	14.1	7.05	NE	U	BD	086812-033	EPA 901.1
01-Oct-08	Cesium-137	1.11 ± 2.23	3.17	1.59	NE	U	BD	086812-033	EPA 901.1
	Cobalt-60	0.620 ± 1.93	3.29	1.65	NE	U	BD	086812-033	EPA 901.1
	Potassium-40	-5.87 ± 36.3	43.0	21.5	NE	U	BD	086812-033	EPA 901.1
	Gross Alpha	13.3 ± 5.99	5.13	1.80	15		J	086812-034	EPA 900.0
	Gross Beta	9.48 ± 4.15	5.28	2.38	4 mrem/yr		J	086812-034	EPA 900.0
	Tritium	21.9 ± 100	171	83.4	NE	U	BD	086812-036	EPA 906.0 M
MWL-BW2 (Duplicate)	Americium-241	7.52 ± 8.28	12.3	6.16	NE	U	BD	086813-033	EPA 901.1
01-Oct-08	Cesium-137	0.574 ± 1.63	2.78	1.39	NE	U	BD	086813-033	EPA 901.1
	Cobalt-60	-0.354 ± 1.94	3.22	1.61	NE	U	BD	086813-033	EPA 901.1
	Potassium-40	-19.0 ± 36.5	39.6	19.8	NE	U	BD	086813-033	EPA 901.1
	Gross Alpha	4.24 ± 3.21	3.93	1.28	15		J	086813-034	EPA 900.0
	Gross Beta	4.80 ± 2.79	3.83	1.66	4 mrem/yr		J	086813-034	EPA 900.0
	Tritium	107 ± 104	171	83.2	NE	U	BD	086813-036	EPA 906.0 M

Refer to footnotes at end of table.

Table A-10 (Continued)
Summary of Gamma Spectroscopy, Gross Alpha/Beta Activity, and Tritium Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Analyte	Activity[a] (pCi/L)	MDA[b] (pCi/L)	Critical Level[c] (pCi/L)	MCL[d] (pCi/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Sample No.	Analytical Method[g]
MWL-MW7	Americium-241	0.864 ± 11.4	12.3	6.13	NE	U	BD	086815-033	EPA 901.1
06-Oct-08	Cesium-137	0.514 ± 1.82	3.04	1.52	NE	U	BD	086815-033	EPA 901.1
	Cobalt-60	1.37 ± 1.90	3.33	1.67	NE	U	BD	086815-033	EPA 901.1
	Potassium-40	-11.9 ± 39.6	39.2	19.6	NE	U	BD	086815-033	EPA 901.1
	Gross Alpha	4.06 ± 2.08	1.59	0.466	15		J	086815-034	EPA 900.0
	Gross Beta	5.44 ± 1.66	2.15	1.04	4 mrem/yr		J	086815-034	EPA 900.0
	Tritium	85.1 ± 103	170	82.9	NE	U	BD	086815-036	EPA 906.0 M
MWL-MW8	Americium-241	-3.41 ± 7.91	12.6	6.30	NE	U	BD	086817-033	EPA 901.1
07-Oct-08	Cesium-137	1.33 ± 1.65	2.87	1.44	NE	U	BD	086817-033	EPA 901.1
	Cobalt-60	0.721 ± 1.84	3.18	1.59	NE	U	BD	086817-033	EPA 901.1
	Potassium-40	42.5 ± 41.3	29.1	14.6	NE	X	R	086817-033	EPA 901.1
	Gross Alpha	7.39 ± 1.96	0.969	0.389	15			086817-034	EPA 900.0
	Gross Beta	8.35 ± 2.10	2.36	1.15	4 mrem/yr			086817-034	EPA 900.0
	Tritium	56.2 ± 101	171	83.0	NE	U	BD	086817-036	EPA 906.0 M
MWL-MW9	Americium-241	-0.877 ± 3.84	5.01	2.51	NE	U	BD	086820-033	EPA 901.1
08-Oct-08	Cesium-137	0.820 ± 2.24	3.85	1.93	NE	U	BD	086820-033	EPA 901.1
	Cobalt-60	1.72 ± 2.38	4.18	2.09	NE	U	BD	086820-033	EPA 901.1
	Potassium-40	59.6 ± 28.4	59.7	27.3	NE	U	BD	086820-033	EPA 901.1
	Gross Alpha	10.5 ± 2.35	0.954	0.421	15			086820-034	EPA 900.0
	Gross Beta	8.57 ± 2.25	2.68	1.31	4 mrem/yr			086820-034	EPA 900.0
	Tritium	41.9 ± 101	172	83.5	NE	U	BD	086820-036	EPA 906.0 M

[a]Activity levels of zero or less are considered to be not detected.

[b]MDA is the minimal detectable activity or minimum measured activity in a sample required to ensure a 95% probability that the measured activity is accurately quantified above the critical level.

[c]Critical level is the minimum activity that can be measured and reported with 99% confidence that the analyte is greater than zero, analyte is matrix specific.

[d]MCL 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.

[e]Laboratory Qualifiers:

U = Analyte is absent or below the method detection limit.

X = Used in radiochemistry to identify data rejected due to interference, low abundance, peak not meeting identification criteria, or uncertain identification for gamma spectroscopy.

Table A-10 (Concluded)
Summary of Gamma Spectroscopy, Gross Alpha/Beta Activity, and Tritium Results
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

[f]Validation Qualifiers (If cell is blank, then all quality control samples met acceptance criteria with respect to submitted samples.):
BD = Used in radiochemistry to identify results that are not statistically different from zero.
J = The associated value is an estimated quantity.
R = The data are unusable for their intended purpose. The analyte may or may not be present.

[g]U.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.
EPA = U.S. Environmental Protection Agency.
ID = Identification.
MCL = Maximum contaminant level.
MDA = Minimal detectable activity.
mrem/yr = Millirem per year.
MW = Monitoring well.
MWL = Mixed Waste Landfill.
NE = Not established.
NMAC = New Mexico Administrative Code.
pCi/L = Picocurie(s) per liter.

Table A-11
Corrected Gross Alpha Activity (only uranium subtracted)
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Well ID	Sample Date	Gross Alpha (pCi/L)	Method 1 Total Uranium[a] (pCi/L)	Gross Alpha Corrected (pCi/L)	Method 2 Total Uranium[b] (pCi/L)	Gross Alpha Corrected (pCi/L)
MWL-MW4	04-16-08	15.5	5.12	10.38	5.23	10.27
MWL-MW4 (reanalysis)	04-16-08	15.9	5.12	10.78	5.23	10.67
MWL-MW5	04-10-08	20.7	5.86	14.84	5.98	14.72
MWL-MW5 (reanalysis)	04-10-08	16.4	5.86	10.54	5.98	10.42
MWL-MW5 (duplicate)	04-10-08	17.0	5.86	11.14	5.98	11.02
MWL-MW5 (duplicate reanalysis)	04-10-08	15.7	5.86	9.84	5.98	9.72
MWL-MW6	04-08-08	17.9	5.77	12.13	5.89	12.01
MWL-MW6 (reanalysis)	04-08-08	17.8	5.77	12.03	5.89	11.91

Note: The MCL for gross alpha activity is 15 pCi/L; however, total uranium is not intended in the standard and can be subtracted as needed.
[a]Method 1: Used conversion factor of 670 pCi/mg natural uranium as listed in CFR, Vol. 65, No. 236, and in NMED, May 2003, "Recommendations for a Uranium Health-Based Ground Water Standard," New Mexico Environment Department, Santa Fe, New Mexico.
[b]Method 2: Used radiological unit converter at web link http://www.antenna.nl/wise/uranium/cunit.html.
CFR = Code of Federal Regulations.
ID = Identification.
MCL = Maximum contaminant level.
MW = Monitoring well.
MWL = Mixed Waste Landfill.
NMED = New Mexico Environment Department.
pCi/L = Picocurie(s) per liter.
pCi/mg = Picocurie(s) per milligram.

Table A-12
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Sample No. Sample Location	085775 MWL-MW5 Environmental	085776 MWL-MW5 Duplicate	
	Result (R_1)	Result (R_2)	
Parameter[a]	All results in mg/L		RPD[b]
Bromide	0.496	0.509	3
Chloride	84.2	85.6	2
Fluoride	0.697	0.709	2
Sulfate	53	53.9	2
Nitrate plus Nitrite, as N	1.37	1.36	1
Alkalinity, Total	317	316	< 1
Aluminum	0.0135 J	0.0114 J	NC
Barium	0.128	0.127	1
Calcium	94.5	90.2	5
Iron	0.129	0.121	6
Magnesium	28.1	29.0	3
Manganese	0.0124	0.0107	15
Molybdenum	0.00336	0.00325	3
Nickel	0.00199 J	0.00185 J	NC
Potassium	5.57	5.42	3
Selenium	0.00115 J	0.00181 J	NC
Sodium	70.1	64.1	9
Uranium-235	0.000063 J	0.000065 J	NC
Uranium-238	0.009	0.00876	3
Zinc	0.00435 J	0.00318 J	NC
Barium (filtered)	0.126	0.129	2
Calcium (filtered)	93.0	94.0	1
Iron (filtered)	0.110	0.115	4
Magnesium (filtered)	28.4	29.9	5
Manganese (filtered)	0.00801	0.00884	10
Molybdenum (filtered)	0.00327	0.00329	1
Nickel (filtered)	0.00223	0.00208	7
Potassium (filtered)	5.51	5.90	7
Selenium (filtered)	0.00108 J	0.00145 J	NC
Sodium (filtered)	63.7	64.3	1
Uranium-235 (filtered)	0.000063 J	0.000066 J	NC
Uranium-238 (filtered)	0.00869	0.00892	3
Zinc (filtered)	0.00374 J	0.00333 J	NC

Refer to footnotes at end of table.

Table A-12 (Continued)
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Sample No. Sample Location	086362 MWL-MW7 Environmental	086363 MWL-MW7 Duplicate	
	Result (R_1)	Result (R_2)	
Parameter[a]	All results in mg/L		RPD[b]
Bromide	0.276	0.650	81
Chloride	42.0	41.9	< 1
Fluoride	0.995	0.986	1
Sulfate	38.8	38.9	0
Nitrate plus Nitrite, as N	3.13	3.21	3
Alkalinity, Total	212	213	< 1
Aluminum	0.00694 J	0.0275	NC
Barium	0.104	0.105	1
Calcium	54.2	54.5	1
Copper	0.000792 J	0.000876 J	NC
Iron	0.187	0.194	4
Magnesium	17.4	16.8	4
Manganese	0.00926	0.010	8
Nickel	0.0014 J	0.00129 J	NC
Potassium	4.83	4.97	3
Sodium	46.0	42.9	7
Uranium	0.00781	0.00808	3
Uranium-235	0.000056 J	0.000057 J	NC
Uranium-238	0.00775	0.00803	4
Zinc	0.00261 J	0.00268 J	NC
Barium (filtered)	0.106	0.104	2
Calcium (filtered)	51.5	53.3	3
Copper (filtered)	0.00089 J	0.000778 J	NC
Iron (filtered)	0.127	0.124	2
Magnesium (filtered)	17.7	17.3	2
Manganese (filtered)	0.00914	0.00862	6
Molybdenum (filtered)	0.0061	0.00592	3
Nickel (filtered)	0.00128 J	0.00132 J	NC
Potassium (filtered)	5.06	4.79	5
Sodium (filtered)	45.2	42.6	6
Uranium (filtered)	0.00818	0.00807	1
Uranium-235 (filtered)	0.000056 J	0.000057 J	NC
Uranium-238 (filtered)	0.00812	0.00801	1
Zinc (filtered)	0.0134	0.00262 J	NC

Refer to footnotes at end of table.

Table A-12 (Concluded)
Duplicate Sample Analytical Results for Chemical Analyses
Mixed Waste Landfill, Sandia National Laboratories/New Mexico
Groundwater Monitoring, 2008

Sample No. Sample Location	086812 MWL-BW2 Environmental	086813 MWL-BW2 Duplicate	
	Result (R_1)	Result (R_2)	
Parameter[a]	All results in mg/L		RPD[b]
Bromide	0.328	0.331	1
Chloride	62.6	62.3	< 1
Fluoride	0.712	0.719	1
Sulfate	44.5	45.4	2
Nitrate plus Nitrite, as N	2.34	1.98	17
Alkalinity, Total	241	241	< 1
Barium	0.0984	0.0962	2
Calcium	67.3	68.1	1
Cobalt	0.0001 J	0.000113 J	NC
Copper	0.000713 J	0.0005 J	NC
Iron	0.243	0.240	1
Magnesium	21.6	21.9	1
Manganese	0.00267 J	0.00262 J	NC
Nickel	0.000983 J	0.00104 J	NC
Potassium	4.15	3.98	4
Sodium	56.2	56.2	< 1
Uranium	0.00697	0.00696	< 1
Uranium-235	0.000047 J	0.000047 J	NC
Uranium-238	0.00692 J	0.00692 J	NC
Barium (filtered)	0.0948	0.100	5
Calcium (filtered)	65.3	70.1	7
Copper (filtered)	0.000792 J	0.00053 J	NC
Iron (filtered)	0.232	0.234	1
Magnesium (filtered)	21.5	22.7	5
Manganese (filtered)	0.00216 J	0.00211 J	NC
Nickel (filtered)	0.00112 J	0.00109 J	NC
Potassium (filtered)	4.21	3.95	6
Selenium (filtered)	0.00188	0.00199 J	NC
Sodium (filtered)	53.4 J	58.2	9
Uranium (filtered)	0.00705	0.00724	3
Uranium-235 (filtered)	0.000051 J	0.000050 J	NC
Uranium-238 (filtered)	0.00700	0.00719	3
Zinc (filtered)	0.0029 J	0.00285 J	NC

[a]Parameters not detected in both samples are not listed.

[b]RPD is not calculated for estimated values.

BW = Background well.
J = Analyte detected below practical quantitation limit or reported as an estimated concentration.
mg/L = Milligram(s) per liter.
MW = Monitoring well.
MWL = Mixed Waste Landfill.
N = Nitrogen.
NC = Not calculated.
RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number:

$$RPD = \frac{|R_1 - R_2|}{[(R_1 + R_2)/2]} \times 100$$

where:

R_1 = analysis result
R_2 = duplicate analysis result