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Sandia National Laboratories, New Mexico (SNL/NM)

Environmental Restoration Project

A Department of Energy Environmental Cleanup Program

CONSOLIDATED
Quarterly Report

August-September-October

December 2008

United States Department of Energy
Sandia Site Office

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

CONSOLIDATED
QUARTERLY REPORT

December 2008

SANDIA NATIONAL LABORATORIES/NEW MEXICO (SNL/NM)

ENVIRONMENTAL RESTORATION PROJECT

DOE: SANDIA SITE OFFICE
CONTRACTOR: SANDIA CORPORATION
PROJECT MANAGER: John Cochran

NUMBER OF POTENTIAL RELEASE SITES SUBJECT TO THIS PERMIT**:** 36
SUSPECT WASTE: radionuclides, metals, organics, and explosives.

OVERVIEW

This Consolidated Quarterly Report for the Sandia National Laboratories Environmental Project addresses all quarterly reporting requirements pertaining to the Hazardous and Solid Waste Amendments (HSWA) Module of the Resource Conservation and Recovery Act (RCRA) Permit, the Compliance Order on Consent (Consent Order), and the Chemical Waste Landfill (CWL) Closure Plan. The following entities and reporting periods are addressed in these Sections:

SECTION I

Environmental Restoration Quarterly Report, reporting period: August-October 2008.

SECTION II

Chemical Waste Landfill Quarterly Closure Progress Report, reporting period: August-October 2008.

SECTION III

Perchlorate Screening Quarterly Report, reporting period: July-September 2008.

SECTION I: ENVIRONMENTAL RESTORATION QUARTERLY REPORT

1.0 Introduction

This report discusses ongoing corrective actions for the Sandia National Laboratories (SNL) Environmental Restoration (ER) Project. The status of regulatory closure activities, specifically permit modifications for final corrective action complete approval, and status of documents pending regulatory approval are included.

2.0 Work Completed in This Quarter (August through October 2008)

2.1 Mixed Waste Landfill (MWL)

- On August 25, 2008, the New Mexico Environment Department (NMED) issued a Notice of Disapproval (NOD) on the "Summary Report for MWL Monitoring Well Plug and Abandonment and Installation – Decommissioning of Groundwater Monitoring Well MWL-BW1 Installation of Groundwater Monitoring Well MWL-BW2". The NOD had five comments that required further information or clarification.
- On August 26, 2008, the Department of Energy/National Nuclear Security Administration (DOE/NNSA) and Sandia submitted the investigation report on the Mixed Waste Landfill Soil-Vapor Sampling and Analysis, "Investigation Report on the Soil-Vapor Volatile Organic Compounds, Tritium, and Radon," to the NMED.
- On August 28, 2008, routine neutron moisture logging of the MWL vadose zone was conducted to obtain baseline data regarding moisture content profiles with depth beneath the landfill.
- On September 23, 2008 DOE/NNSA and Sandia submitted a "Summary Report for Mixed Waste Landfill Monitoring Well Plug and Abandonment and Installation Decommissioning of Groundwater Monitoring Wells MWL-MW1, MWL-MW2, and MWL-MW3 and Installation of Groundwater Monitoring Wells MWL-MW7, MWL-MW8, MWL-MW9".
- On September 26, 2008 NMED issued an approval of the investigation report on the Mixed Waste Landfill Soil-Vapor Sampling and Analysis that was submitted in August 2008 (listed above).
- On October 3, 2008, DOE/NNSA and Sandia submitted responses to the NOD on the Summary Report for MWL Monitoring Well Plug and Abandonment and Installation – Decommissioning of Groundwater Monitoring Well MWL-BW1 Installation of Groundwater Monitoring Well MWL-BW2.
- On October 10, 2008, NMED issued a NOD on the MWL Corrective Measures Implementation Plan (originally submitted November 2005). This is the second NOD (the first one had 2 parts with 2 response documents). The NOD listed nine items that required clarification, further information, or revisions. NMED required DOE/NNSA and Sandia to revise proposed trigger levels and add constituents to the sampling program. The response is due December 10, 2008.
- On October 31, 2008, the NMED issued a Notice of Approval on the "Summary Report for Mixed Waste Landfill Monitoring Well Plug and Abandonment and Installation – Decommissioning of Groundwater Monitoring Well MWL-BW1 Installation of Groundwater Monitoring Well MWL-BW2".
- In October, quarterly groundwater sampling took place at the four monitoring wells installed earlier in 2008 at MWL. Four groundwater monitoring wells (MWL-BW2, -MW7, -MW8, and -MW9) were sampled for volatile organic constituents (VOCs), semivolatile organic constituents

(SVOCs), metals, nitrate plus nitrite, major anions, total alkalinity, total dissolved solids, perchlorate, radionuclides by gamma spectroscopy, gross alpha and beta, and tritium. This sampling event represents the third consecutive quarterly sampling for MWL-BW2 and the second quarterly sampling for MWL-MW7, -MW8, and -MW9. The results will be reported in the SNL Groundwater Protection Program (GWPP) Groundwater Monitoring Annual Report (Spring 2009) and the MWL Annual Groundwater Monitoring Report (Spring 2009).

MWL Documents submitted to NMED pending regulatory review and approval:

- Summary Report for Mixed Waste Landfill Monitoring Well Plug and Abandonment and Installation Decommissioning of Groundwater Monitoring Wells MWL-MW1, MWL-MW2, and MWL-MW3 and Installation of Groundwater Monitoring Wells MWL-MW7, MWL-MW8, MWL-MW9, submitted September 23, 2008.

2.2 Project Management Site Closure

- Operable units with only regulatory and administrative closure activities remaining will be managed under project management. Two permit modification requests are currently in progress with the New Mexico Environment Department (NMED).

Permit Modification Request submitted in March 2006

- Twenty-six sites were submitted for final regulatory approval of Corrective Action Complete (CAC) in March 2006, including nineteen SWMUs, and seven AOCs. The NMED issued a Notice of Public Comment Period and Intent to Approve a Class 3 Permit Modification of the RCRA Permit for Sandia National Laboratories for these 26 sites on December 10, 2007. The NMED public review and comment period ended on February 8, 2008. The SWMUs and AOCs included in this permit modification request are listed below.

  SWMUs – 4, 5, 46, 49, 52, 68, 91, 101, 116, 138, 140, 147, 149, 150, 154, 161, 196, 233, 234

  AOCs – 1090, 1094, 1095, 1114, 1115, 1116, and 1117.

Permit Modification Request submitted in January 2008

- Five sites were submitted for final regulatory approval of CAC in a permit modification request in January 2008. The Sandia/DOE public review and comment period ended on March 14, 2008; Sandia/DOE received no public comments. This permit modification included all remaining SNL ER sites with the exception of the three active sites (SWMUs 83, 84, and 240), three Groundwater Investigation sites (Tijeras Arroyo, Technical Area V, and Burn Site), and the Mixed Waste Landfill (SWMU 76), which is pending Corrective Measure Implementation. The MWL is addressed separately in section 2.1 of this Section of this ER Quarterly report. The four SWMUs and one AOC included in the January 2008 permit modification request are listed below.

  SWMUs – 8, 28-2, 58, and 105

  AOC – 1101

2.3 Site-Wide Hydrogeologic Characterization

TA-3/5 Groundwater

- Groundwater sampling was completed in August and September. Results will be reported in the SNL GWPP Annual Groundwater Monitoring Report.
- On July 28, 2008, NMED issued a Notice of Deficiency (NOD) on the TAV Corrective Measures Evaluation Report (submitted in July 2005). DOE/NNSA and Sandia continue to assess the NOD and meet with the NMED to resolve outstanding issues with the TAV investigation.
- On October 3, 2008, DOE/NNSA and Sandia submitted a response to the NOD on the "Summary Report for the Technical Area V Monitoring Well Plug and Abandonment and Installation—Decommissioning of Groundwater Monitoring Well TAV-MW1 Installation of Groundwater Monitoring Well TAV-MW10, June 2008" to the NMED.

Burn Site Groundwater

- Groundwater sampling was performed in September. Results will be reported in the SNL GWPP Annual Groundwater Monitoring Report. Perchlorate results are reported in the Perchlorate Screening Quarterly Monitoring Report in Section III of this report.

Tijeras Arroyo Groundwater

- Groundwater sampling was performed in August. Results will be reported in the SNL GWPP Annual Groundwater Monitoring Report.
- On August 1, 2008, NMED issued an NOD on the TAG Continuing Investigation Report (submitted in November 2005). DOE/NNSA and Sandia continue to address the NOD comments.

Mixed Waste Landfill Groundwater

- Groundwater sampling was performed in October. Results from the 2008 MWL sampling events will be reported in the next MWL Annual Groundwater Monitoring Report. Perchlorate results are reported in the Perchlorate Screening Quarterly Monitoring Report in Section III of this report. MWL Groundwater documents submitted to NMED are listed in section 2.1 of this Section.

Chemical Waste Landfill Groundwater

- Groundwater sampling is currently in progress. Sampling results will be presented in the March 2009 ER Consolidated Quarterly Report. In addition, groundwater data collected from October 1, 2007 through December 31, 2008 will be summarized in the SNL/NM Annual Groundwater Monitoring Report.

Groundwater Documents submitted to the NMED pending regulatory review and approval:

- Technical Area V Groundwater (GW) Corrective Measure Evaluation (CME) Work Plan, submitted April 2004.

- CME Report for Tijeras Arroyo Groundwater, submitted August 2005.

- Burn Site GW (BSGW) Interim Measures Work Plan, submitted May 2005.

- Well Plug and Abandonment Plan, Decommissioning of Environmental Restoration Project Soil-Vapor Monitoring Wells, submitted December 2007.

- BSGW Current Conceptual Model of Groundwater Flow and Contaminant Transport, submitted April 2008.

- BSGW CME Work Plan, submitted April 2008.

2.4 Corrective Action Management Unit (CAMU)

CAMU Post-Closure Care Operations

- Vadose-zone monitoring, leachate removal, and post-closure inspections continued as required in the permit. Activities included the following:

  - Weekly pumping of leachate from the leachate collection and removal system.

  - Weekly inspection of the less-than-90-day area.

  - Quarterly inspection of the site (September 2008), including containment cell cover, storm water diversion structures, security fences, gates, signs, and benchmarks. Approximately 30 four-wing saltbush plants were identified growing on the cover. These plants can develop extensive root systems that could damage the high-density polyethylene cover. They were removed on September 26, 2008. Protective casings for all CSS monitoring locations were repainted on September 29, 2008.

  - Quarterly monitoring of the VZMS was conducted in September 2008. Results will be posted in the annual CAMU report.

  - Waste management associated with the leachate collection was conducted (see below).

  - Composite leachate sampling for waste characterization was conducted on September 30, 2008.

CAMU Waste Management Activities

For this Quarter (August through October, 2008)

- Waste stored on site at the beginning of this period:
  - 12 gallons of leachate.
  - 0.25 lb PPE.
- Waste generated on-site during the period:
  - 166 gallons of leachate.
  - 2 gallons of rinsate.

    - 6.75 lbs PPE, paper wipes, plastic drum pump.
- Waste removed from site by the Hazardous Waste Management Facility:
    - 126 gallons of leachate on October 9, 2008.
    - 2 gallons of rinsate on October 9, 2008.
    - 5 lbs PPE, paper wipes, plastic drum pump on October 9, 2008.
- Waste remaining on site at the end of this period:
    - 52 gallons of leachate.
    - 2 1bs PPE.

CAMU Regulatory Activities

- There were no regulatory activities during this quarter.

2.5 Suspected Solid Waste Management Unit

Long Term Environmental Stewardship (LTES) Site 1, Cable Debris Site

- Voluntary Corrective Action field work began on August 11, 2008. Debris was processed, and segregated into staging areas based on recycle and disposal pathways.

- On August 25, 2008, NMED issued an approval of the Voluntary Corrective Action Plan for LTES Site 1, Cable Debris Site, May 2008.

SECTION II. CHEMICAL WASTE LANDFILL QUARTERLY PROGRESS REPORT

This Sandia National Laboratories/New Mexico (SNL/NM) Chemical Waste Landfill (CWL) Quarterly Closure Progress Report has been prepared pursuant to the CWL Final Closure Plan and Post-closure Permit Application (Closure Plan) (SNL/NM December 1992). This section documents activities at the CWL for the time period of August through October 2008.

1.0 Introduction

All voluntary corrective measures (VCMs) activities for the CWL have been completed. The CWL Landfill Excavation (LE) VCM Final Report was submitted to the NMED in April 2003 (SNL/NM April 2003) and approved by the NMED in December 2003 (Moats December 2003). The Site Operational Boundary Closure Addendum to the LE VCM Final Report was submitted to the NMED in August 2005 (SNL/NM August 2005) and approved by the NMED on October 25, 2005 (Bearzi October 2005). With the submittal of the Waste Management Addendum to the LE VCM Final Report in the February 22, 2006 CWL Quarterly Closure Progress Report (SNL/NM February 2006), as Appendix B, all LE VCM regulatory deliverables have been submitted. With the completion of the VCMs, technical meetings will be held on an as-needed basis. The public will continue to be informed of significant events through the Environmental Restoration (ER) Project public meeting process.

Installation of the cover as an interim measure was requested in April 2004 (SNL/NM April 2004) and approved with conditions in September 2004 (Kieling September 2004); the cover was completed in September 2005 in accordance with the conditions of approval. All field activities, with the exception of long-term monitoring, have been completed at the CWL.

2.0 Status of Closure

The Final Toxic Substances Control Act (TSCA) Closure Report documents the completion of all closure activities specified in the "Risk-Based Approval Request, 40 CFR 761.61(c) Risk-Based Method for Management of PCB [Polychlorinated Biphenyl] Materials" (SNL/NM October 2001), approved by the U.S. Environmental Protection Agency (EPA) in June 2002 (Cooke June 2002). The Final TSCA Closure Report was submitted to the EPA and NMED on November 2, 2006 (SNL/NM November 2006).

Upcoming CWL Closure Plan reporting activities include revising and submitting the Final Resource Conservation and Recovery Act (RCRA) Closure Report, to be submitted after NMED approval of the Corrective Measures Study (CMS) Report has been received. The Final RCRA Closure Report will document both the backfilling of the former CWL and installation of the cover.

On May 21, 2007, the NMED issued, for public comment, the draft post-closure care permit for the CWL. Also included in the public notices were the CMS Report and the Closure Plan amendment (changes to Chapter 12 revising the closure process). On July 19, 2007, DOE and Sandia responded in opposition to the issuance of the CWL post-closure care permit as drafted and offered a number of comments, the most important of which were related to groundwater and vadose zone monitoring. In addition, DOE and Sandia requested that a public hearing be scheduled to address these outstanding issues.

For this reporting period, DOE and Sandia are continuing to support NMED on post-closure care plan amendments that address the replacement of wells MW-4 and BW-4A. Several meetings have been held this quarter between NMED, DOE and Sandia to work out details of the plan.

3.0 Water Monitoring Assessment

CWL semi-annual groundwater monitoring activities are currently in progress. The activities associated with the groundwater monitoring task will be summarized in the next (March 2009) ER Quarterly Report. In addition, data collected through December 31, 2008 will be summarized in the SNL/NM Annual Groundwater Monitoring Report.

No soil-gas sampling was performed at the CWL during this reporting period. Soil-gas sampling is not required under the Closure Plan but is expected to be a requirement for post-closure care (Kieling, December 2003).

4.0 Projected Activities for the Upcoming Quarter

Efforts to finalize Revision 2 to the draft permit are a high priority this quarter. DOE and Sandia continue to review the draft permit and provide comments to NMED. The possibility exists of the final revised draft version of the permit to be submitted for internal review by the end of this reporting quarter.

5.0 References

Bearzi, J.P. (New Mexico Environment Department), October 2005. Letter to P. Wagner (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Notice of Approval: Chemical Waste Landfill Site Operational Boundary Closure Addendum to the Landfill Excavation Corrective Measure Final Report; August 2005, Sandia National Laboratories, NM5890110518, HWB-SNL-05-021." October 25, 2005.

Cooke, G. (U.S. Environmental Protection Agency Region 6), June 2002. Letter to M.J. Zamorski (U.S. Department of Energy), "Approval of the TSCA Risk-Based Approach Request for the CWL." June 26, 2002.

Kieling, J.E. (New Mexico Environment Department), December 2003. Letter to K.L. Boardman (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Chemical Waste Landfill Corrective Measures Study, May 2003, Sandia National Laboratories, NM5890110518, HWB-SNL-03-013 " December 12, 2003.

Kieling, J.E. (New Mexico Environment Department), September 2004. Letter to P. Wagner (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Approval With Conditions of the Landfill Cover Interim Measure at the Chemical Waste Landfill, Sandia National Laboratories, NM5890110518, HWB-SNL-03-013." September 22, 2004.

Moats, W.P. (New Mexico Environment Department), December 2003. Letter to K.L. Boardman (U.S. Department of Energy) and P.B. Davies (Sandia Corporation), "Final Approval, Landfill Excavation Voluntary Corrective Measures, Final Report, April 2003, Sandia National Laboratories, NM5890110518 HWB-SNL-03-012." December 16, 2003.

Sandia National Laboratories/New Mexico (SNL/NM), December 1992. "The Chemical Waste Landfill Final Closure Plan and Postclosure Permit Application," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), October 2001. "Risk-Based Approval Request, 40 CFR 761.61 (c) Risk-Based Method For Management of PCB Materials," Chemical Waste Landfill Remediation and Corrective Action Management Unit, Sandia National Laboratories, Albuquerque, New Mexico. October 24, 2001.

Sandia National Laboratories/New Mexico (SNL/NM), April 2003. "Chemical Waste Landfill – Landfill Excavation Voluntary Corrective Measure – Final Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), April 2004. "Request for Approval to Install the Vegetative Soil Cover Presented in the RAP as an Interim Measure," Sandia National Laboratories, Albuquerque, New Mexico. April 19, 2004.

Sandia National Laboratories/New Mexico (SNL/NM), August 2005. "Chemical Waste Landfill Site Operational Boundary Closure Addendum to the Landfill Excavation Voluntary Corrective Measure Final Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), February 2006. "Chemical Waste Landfill Quarterly Closure Progress Report," Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2006. "Chemical Waste Landfill Toxic Substances Control Act Final Report." Sandia National Laboratories, Albuquerque, New Mexico. November 2, 2006.

Section III:
Perchlorate Screening Quarterly Monitoring Report Third Quarter of Calendar Year 2008 (July, August, and September 2008)

Executive Summary

Section IV.B of the Compliance Order on Consent (the Order), between the New Mexico Environment Department (NMED), the U.S. Department of Energy (DOE), and Sandia Corporation (Sandia) for Sandia National Laboratories/New Mexico (SNL/NM), effective on April 29, 2004, stipulates that a select group of groundwater monitoring wells be sampled for perchlorate at SNL/NM (NMED April 2004). This report summarizes the perchlorate screening monitoring completed during the third quarter of Calendar Year 2008 (CY2008) in response to the requirements of the Order.

During the third quarter of CY2008, groundwater samples were collected from the five wells currently in the perchlorate-screening monitoring-well network: CYN-MW6, MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9. CYN-MW6 is one of the seven wells in the Burn Site Groundwater monitoring well network. MWL-BW2 is the recently installed (January 2008) background well; and MWL-MW7, MWL-MW8, and MWL-MW9 are the recently installed (May 2008) downgradient wells at the Mixed Waste Landfill. The Order requires that new wells be sampled for perchlorate for a minimum of four quarters. During this event MWL-MW7, MWL-MW8, and MWL-MW9 were sampled for the first time; MWL-BW2 was sampled for the second time; and CYN-MW6 was sampled for the eleventh time. All samples were submitted to General Engineering Laboratories (GEL) for perchlorate analysis using U.S. Environmental Protection Agency (EPA) Method 314.0 (EPA November 1999).

No perchlorate was detected in the environmental samples from MWL-MW7, MWL-MW8, MWL-MW9, and MWL-BW2 at a method detection limit of 4 micrograms per liter (μg/L). The environmental sample from CYN-MW6 revealed perchlorate at a concentration of 6.85 μg/L. The source for the perchlorate in the groundwater at CYN-MW6 is unknown although a natural source may be present (SNL/NM March 2008). Because perchlorate concentrations in monitoring well CYN-MW6 have exceeded the screening level, DOE/Sandia initiated a negotiation process with the NMED (SNL/NM March 2007) to determine the frequency of continued monitoring. DOE/Sandia recently received approval from NMED to discontinue quarterly monitoring of perchlorate in CYN-MW6 and proceed with semiannual sampling at this well beginning in March 2009 (NMED November 2008). DOE/Sandia also received approval from NMED to discontinue quarterly reporting of perchlorate data and proceed to semiannual reporting (NMED November 2008).

Table of Contents

Tables

Figures

Appendices

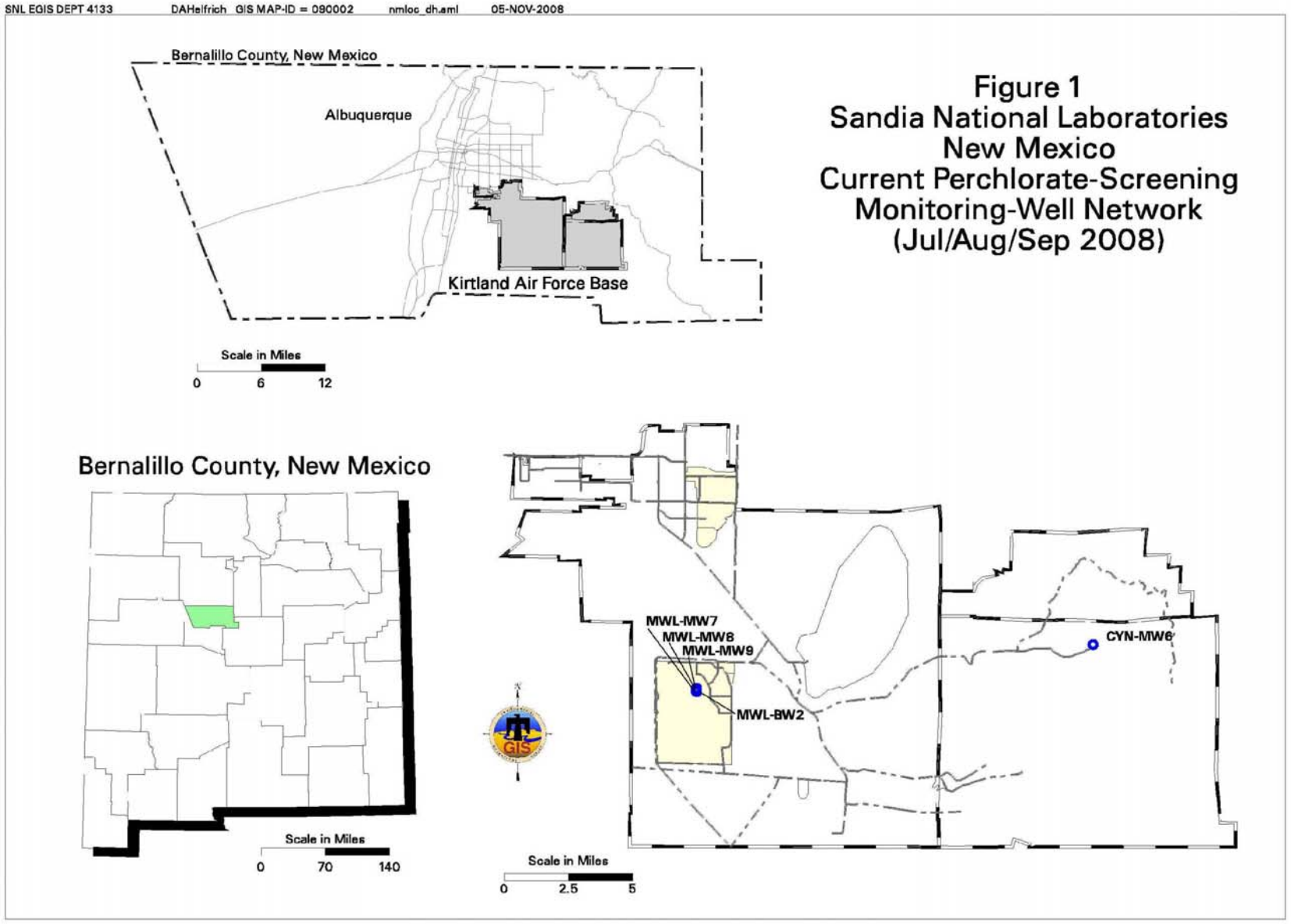
Perchlorate Screening Quarterly Monitoring Report
Third Quarter of Calendar Year 2008
(July, August, and September 2008)

1.0 Introduction

Section IV.B of the Compliance Order on Consent (the Order), between the New Mexico Environment Department (NMED), the U.S. Department of Energy (DOE), and Sandia Corporation (Sandia) for Sandia National Laboratories/New Mexico (SNL/NM), effective on April 29, 2004, stipulates that a select group of groundwater monitoring wells be sampled for perchlorate at SNL/NM (NMED April 2004). This report summarizes the perchlorate screening monitoring completed during the third quarter of Calendar Year 2008 (CY2008) in response to the requirements of the Order. The outline of this report is based on the required elements of a "Periodic Monitoring Report" described in Section X.D. of the Order (NMED April 2004).

In November 2005 DOE/Sandia submitted a letter report on the status of perchlorate screening in groundwater at SNL/NM monitoring wells (SNL/NM November 2005). The purpose of that letter report was to summarize previous correspondence and sampling results, and to outline proposed future work to comply with NMED requirements for perchlorate screening in groundwater. Per the letter report, quarterly reports will be submitted for wells actively in the perchlorate-screening monitoring-well network. Based on NMED response (NMED January 2006), DOE/Sandia will submit each quarterly report within 90 days following the quarter that the data represent. This quarterly report is the eleventh to be submitted since the November 2005 letter report; the previous quarterly reports were submitted Fourth Quarter of Calendar Year 2005 through the Second Quarter of Calendar Year 2008 (SNL/NM February 2006, SNL/NM June 2006, SNL/NM September 2006, SNL/NM December 2006, SNL/NM March 2007, SNL/NM June 2007, SNL/NM September 2007, SNL/NM December 2007, SNL/NM March 2008, SNL/NM June 2008a, and SNL/NM September 2008).

Because perchlorate concentrations in monitoring well CYN-MW6 (in the Burn Site Groundwater study area) have exceeded the screening level, and because this well had completed the required minimum four quarters of sampling, DOE/Sandia initiated a negotiation process with the NMED to determine the frequency of continued perchlorate monitoring (SNL/NM March 2007). DOE/Sandia recently received approval from NMED to discontinue quarterly monitoring of perchlorate in CYN-MW6 and proceed with semiannual sampling at this well beginning in March 2009 (NMED November 2008). Recently installed (May 2008) groundwater monitoring wells MWL-MW7, MWL-MW8, and MWL-MW9 (in the Mixed Waste Landfill study area) were added to the perchlorate screening monitoring well network during this quarterly sampling event. The Order requires that new wells be sampled for perchlorate for a minimum of four quarters (NMED April 2004). Reporting will continue as long as a groundwater monitoring well remains in the perchlorate-screening monitoring well network unless negotiated otherwise with NMED.


SNL EGIS DEPT 4133 DAHelfrich GIS MAP-ID = 090002 nmloc_dh.aml 05-NOV-2008
Bernalillo County, New Mexico
Albuquerque
Kirtland Air Force Base
Scale in Miles
0 6 12
Figure 1
Sandia National Laboratories
New Mexico
Current Perchlorate-Screening
Monitoring-Well Network
(Jul/Aug/Sep 2008)
Bernalillo County, New Mexico
Scale in Miles
0 70 140
MWL-MW7
MWL-MW8
MWL-MW9
MWL-BW2
CYN-MW6
Scale in Miles
0 2.5 5

2.0 Scope of Activities

This report provides perchlorate screening results from the third quarter of CY2008 (July, August, and September 2008) for the five wells currently active in the perchlorate screening program as shown on Figure 1 and listed in Table 1. Per the requirements of Table XI-1 of the Order, a well with four consecutive quarters of non-detect results at the screening level/method detection limit (MDL) of 4 micrograms per liter (μg/L) is removed from the requirement of continued monitoring for perchlorate. Data from several wells identified in the Order have satisfied this requirement and, therefore, these wells have been removed from the perchlorate screening program. Data for these wells were provided in previous reports, and are not discussed in this current report. Wells discussed in previous perchlorate screening reports include: CYN-MW1D, CYN-MW5, CYN-MW7, CYN-MW8, MRN-2, MRN-3D, MWL-BW1, MWL-MW1, NWTA3-MW2, and SWTA3-MW4.

Table 1
Current Perchlorate-Screening Monitoring-Well Network
Third Quarter of CY2008 (July, August, and September)

Well	Date Sampled	Number of Consecutive Sampling Events[a]	Remaining Number of Sampling Events[b]	Sampling Method
CYN-MW6	17-SEP-2008	11	TBD[c]	Bennett™ Pump
MWL-BW2	17-JUL-2008	2	2	Bennett™ Pump
MWL-MW7	16-JUL-2008	1	3	Bennett™ Pump
MWL-MW8	14-JUL-2008	1	3	Bennett™ Pump
MWL-MW9	15-JUL-2008	1	3	Bennett™ Pump

Notes:
[a] Includes this sampling event.
[b] Per the requirements of Table XI-1 of the Order (NMED April 2004) a well will be removed from the perchlorate-screening monitoring-well network after four quarters unless perchlorate is detected above the screening level/MDL of 4 μg/L. If perchlorate is detected above the screening level/MDL in a specific well, monitoring will continue at that well at a frequency negotiated with the NMED.
[c] TBD = To be determined. This well has been sampled for the required initial four quarters. Because perchlorate concentrations in this well have exceeded the screening level, DOE/Sandia initiated the negotiation process with the NMED to determine further characterization requirements.

DOE/Sandia performed groundwater sampling at five wells on the dates listed in Table 1. These wells were installed after the Order was finalized and are required to be sampled for perchlorate as "new" wells. Groundwater sampling activities were conducted in conformance with procedures outlined in the investigation-specific sampling and analysis plans (SAP) entitled, "Mixed Waste Landfill Groundwater Monitoring Mini-SAP for Fiscal Year 2008 Annual Sampling " (SNL/NM June 2008b) and "Burn Site Groundwater Monitoring, Mini-SAP for Fourth Quarter Fiscal Year 2008" (SNL/NM August 2008).

As described in the Mini-SAPs, groundwater sampling was performed in conformance with current Sandia Environmental Management, Long Term Environmental Stewardship (LTES) Project field operating procedures (FOPs). A portable Bennett™ groundwater sampling system was used to collect the groundwater samples. The sampling pump and tubing bundle were decontaminated prior to installation into monitoring wells in accordance with procedures described in FOP 05-03, "LTES Groundwater Sampling Equipment Decontamination" (SNL/NM October 2005a). Wells CYN-MW6 and MWL-BW2 were purged a minimum of one saturated screen volume before sampling in conformance with FOP 05-01, "LTES Groundwater Monitoring Well Sampling and Field Analytical Measurements" (SNL/NM October 2005b). 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.

Field water-quality measurements for turbidity, potential of hydrogen (pH), temperature, specific conductance (SC), oxidation-reduction potential (ORP), and dissolved oxygen (DO) were obtained from the well prior to collecting groundwater samples. Ground-water temperature, SC, ORP, DO, and pH were measured with a YSI™ Model 620 Water Quality Meter. Turbidity was measured with a HACH™ Model 2100P turbidity meter. Purging at CYN-MW6 and MWL-MW2 continued until four stable measurements for turbidity, pH, temperature, and SC were obtained. Groundwater stability was considered acceptable when measurements were within 10 percent or less than 5 nephelometric turbidity units for turbidity, 0.1 pH units, 1.0 degree Celsius, and SC within 5 percent. Field Measurement Logs documenting details of well purging and water quality measurements were submitted to the Sandia Customer-Funded Records Center.

The groundwater samples were submitted to General Engineering Laboratories (GEL) for chemical analysis for perchlorate using U.S. Environmental Protection Agency (EPA) Method 314.0 (EPA November 1999). The sample identification, Analysis Request/ Chain-of-Custody (AR/COC) form number, and the sample shipment date are provided in Table 2. The analytical report from GEL, including certificates of analyses (COA) (Appendix A), analytical methods, MDLs, practical quantitation limits (PQLs), dates of analyses, results of QC analyses, and data validation findings have been submitted to the Sandia Customer-Funded Records Center.

Table 2
Sample Details for Third Quarter of CY2008 Perchlorate Sampling

Well	Sample Identification	AR/COC Number	Date Shipped
CYN-MW6	086782-020	612004	17-SEP-08
MWL-BW2	086358-020	611952	17-JUL-08
MWL-MW7	086362-020 086363-020	611954	16-JUL-08
MWL-MW8	086365-020	611955	14-JUL-08
MWL-MW9	086367-020	611956	16-JUL-08

Notes:
ARCOC = Analysis request and chain of custody.

3.0 Regulatory Criteria

In a given monitoring well, four consecutive non-detects (NDs) using the screening level/MDL 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 is not required. If perchlorate is detected above the screening level/MDL in a specific well, monitoring will continue at that well at a frequency negotiated with the NMED. The Order (NMED April 2004) also requires that the DOE/Sandia evaluate the nature and extent of perchlorate contamination based on a screening level/MDL of 4 μg/L, and requires that the results of this evaluation be incorporated into a Corrective Measures Evaluation (CME). Section VII.C of the Order clarifies that the CME process will be initiated where there was a release to the environment and where corrective measures are necessary to protect human health or the environment.

In March 2007, DOE/Sandia received a letter from the NMED stating the requirement that DOE/Sandia "determine the nature and extent of the contamination and complete a Corrective Measures Evaluation for the perchlorate-impacted groundwater in the vicinity of CYN-MW6" (NMED March 2007). As this was based solely on the four quarters of monitoring results, DOE/Sandia submitted a letter to the NMED in April 2007 (SNL/NM April 2007) which recommended further characterization through continued quarterly monitoring of CYN-MW6 for four additional quarters, ending in December 2007, to assure appropriate characterization of this well. In January 2008, DOE/Sandia requested a

meeting with NMED to discuss the need for continued monitoring or additional characterization work, and potentially, a CME.

To show that the requirement "to determine the nature and extent of contamination" (NMED March 2007) has been met, DOE/Sandia provided supporting information to the NMED (SNL/NM March 2008). Perchlorate in surface soils has been characterized at Solid Waste Management Units (SWMUs) in the study area (SNL/NM June 2006; SNL/NM March 2008--Appendix C). In addition, the nature and extent of perchlorate in groundwater at the Burn Site has been sufficiently characterized. Since 2004, four other monitoring wells in the vicinity of the Burn Site have been sampled and analyzed for perchlorate, including CYN-MW1D, CYN-MW5, CYN-MW7, and CYN-MW8. All of these wells were sampled for four quarters and all results were non-detect for perchlorate (SNL/NM March 2008--Appendix D).

Per the requirements of Section VI.K.1.b of the Order (NMED April 2004), a human health risk assessment has been performed to evaluate the potential for adverse health effects from the concentrations of perchlorate detected in CYN-MW6 groundwater. The maximum concentration of perchlorate in CYN-MW6 to date (8.93 μg/L) was used in the assessment. The calculated hazard quotient (HQ) of 0.35 is less than the NMED target level of a Hazard Index (the sum of all HQs) of 1.0 (NMED June 2006) (SNL/NM March 2008--Appendix E).

Because perchlorate concentrations in monitoring well CYN-MW6 have exceeded the screening level, DOE/Sandia initiated a negotiation process with the NMED (SNL/NM March 2007) to determine the frequency of continued monitoring. DOE/Sandia recently received approval from NMED to discontinue quarterly monitoring of perchlorate in CYN-MW6 and proceed with semiannual sampling at this well beginning in March 2009 (NMED November 2008). DOE/Sandia also received approval from NMED to discontinue quarterly reporting of perchlorate data and proceed to semiannual reporting (NMED November 2008). NMED is aware that DOE/Sandia would like to discuss the need for continued monitoring or additional characterization work and (potentially) a CME at CYN-MW6. Current NMED priorities preclude discussing these issues until a later date.

4.0 Monitoring Results

Table 3 summarizes current perchlorate results for MWL-MW7, MWL-MW8, MWL-MW9; and the current and historical perchlorate results for CYN-MW6 and MWL-BW2. The analytical laboratory COA for the third quarter CY2008 perchlorate data is included as Appendix A. Perchlorate was not detected above the screening level in MWL-MW7, MWL-MW8, MWL-MW9, or MWL-BW2. Consistent with historical analytical results, perchlorate was detected above the screening level/MDL in the third quarter of CY2008 in CYN-MW6.

As shown in Figure 2, the concentration of perchlorate found in CYN-MW6 in September 2008 (6.85 μg/L) is consistent with concentrations from previous quarters (SNL/NM May 2006, SNL/NM June 2006, SNL/NM September 2006, SNL/NM December 2006, SNL/NM March 2007, SNL/NM June 2007, SNL/NM September 2007, SNL/NM December 2007, SNL/NM March 2008, SNL/NM June 2008a, and SNL/NM September 2008).

Table 4 summarizes field water quality measurements collected immediately before the analytical sample was collected. Field water quality measurements include turbidity, pH, temperature, SC, ORP, and DO.

The analytical data were reviewed and qualified in accordance with AOP 00-03 Revision 2, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM July 2007). No problems were identified with the analytical data that resulted in the qualification of the data as unusable. The data are acceptable and reported quality control measures are adequate. The data validation sample findings summary sheets for the perchlorate data are included as Appendix B. No variances or nonconformances in field activities or field conditions from requirements in the groundwater monitoring mini-SAPs (SNL/NM June 2008b and SNL/NM August 2008) were identified during the third quarter CY2008 sampling activities.

5.0 Summary and Conclusions

Based on the analytical data presented in Table 3 and in previous reports, the following statements can be made:

- No perchlorate was detected in the environmental sample from the new groundwater monitoring wells MWL-MW7, MWL-MW8, MWL-MW9, and MWL-BW2 at a screening level/MDL of 4 μg/L.
- Since June 2004 (the start of sampling required by the Order), perchlorate has only been detected above the screening level/MDL in one of the wells (CYN-MW6) in the perchlorate-screening monitoring-well network. Due to the detection of perchlorate in the samples from CYN-MW6 in March 2006, DOE/Sandia submitted the "Notification of Release, Perchlorate at Well CYN-MW6, May 2006" (SNL/NM May 2006) to the NMED. DOE and Sandia were required to notify the NMED of the discovery of a previously unknown release under Section V of the Order (NMED April 2004).
- The result from this sampling event (6.85 μg/L) is consistent with the concentrations reported since the inception of sampling for perchlorate at CYN-MW6 in March 2006 (Figure 2) (SNL/NM May 2006, SNL/NM June 2006, SNL/NM September 2006, SNL/NM December 2006, SNL/NM March 2007, SNL/NM June 2007, SNL/NM September 2007, SNL/NM December 2007, SNL/NM March 2008, SNL/NM June 2008a, and SNL/NM September 2008).
- As discussed in the previous quarterly reports (SNL/NM June 2006, SNL/NM September 2006), the source for the perchlorate in the groundwater at CYN-MW6 is unknown. Soil sampling completed in 2001 at SWMU 65—Lurance Canyon Explosives Test Site, or SWMU 94—Lurance Canyon Burn Site did not reveal detectable concentrations of perchlorate in site soils (NMED January 2001; Skelly and Griffith January 2003; and SNL/NM June 2006).

Table 3
Summary of Perchlorate Screening Analytical Results for the Current Monitoring-Well Network, as of Third Quarter CY2008.

Well ID	Sample Date	ARCOC No.	Sample No.	Perchlorate Result[a] (µg/L)	MDL[b] (µg/L)	PQL[c] (µg/L)	MCL[d] (µg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Analytical Method[g]	Comments
CYN-MW6	23-Mar-06	609578	075985-020	**6.92**	4.0	12	NE	J		EPA 314.0	
			075986-020	**7.44**	4.0	12	NE	J		EPA 314.0	Duplicate sample
			075985-R20	**6.39**	0.50	2.0	NE	Hh	HT, J	EPA 6850M	Verification/Re-analysis
			075986-R20	**6.48**	0.50	2.0	NE	Hh	HT, J	EPA 6850M	Verification/Re-analysis
	22-Jun-06	609929	078687-020	**6.63**	4.0	12	NE	J		EPA 314.0	
			078688-020	**6.45**	4.0	12	NE	J		EPA 314.0	Duplicate sample
			078687-021	**6.99**	1.0	4.0	NE			EPA 6850M	Verification
			078688-021	**6.92**	1.0	4.0	NE			EPA 6850M	Verification/Duplicate Sample
	20-Sep-06	610652	081626-020	**7.52**	4.0	12	NE	J		EPA 314.0	
			081626-R20	**6.96**	1.0	4.0	NE		P2	EPA 6850M	Verification/Re-analysis
	15-Dec-06	611057	083858-020	**8.46**	4.0	12	NE	J		EPA 314.0	
			083859-020	**8.93**	4.0	12	NE	J		EPA 314.0	Duplicate sample
	14-Mar-07	611200	084237-020	**8.12**	4.0	12	NE	J		EPA 314.0	
	27-Jun-07	611399	084833-020	**6.57**	4.0	12	NE	J	J-, X1	EPA 314.0	
	27-Jun-07	611399	084833-R20	**5.94**	0.5	2.0	NE			EPA 6850M	Verification/Re-analysis
	12-Sep-07	611581	085249-020	**7.74**	4.0	12	NE	J		EPA 314.0	
	12-Sep-07	611581	085249-R20	**6.46**	0.5	2.0	NE	Hh	J	EPA 6850M	Verification/Re-analysis
	18-Dec-07	611668	085446-020	**6.20**	4.0	12	NE	J		EPA 314.0	
	18-Dec-07	611668	085447-020	**6.56**	4.0	12	NE	J		EPA 314.0	Duplicate sample
	10-Mar-08	611749	085661-020	**7.25**	4.0	12	NE	J		EPA 314.0	
	23-Jun-08	611912	086280-020	**6.67**	4.0	12	NE	J		EPA 314.0	
	17-Sep-08	612004	086782-020	**6.85**	4.0	12	NE	J		EPA 314.0	

Refer to notes on next page.

Table 3 (concluded)
Summary of Perchlorate Screening Analytical Results for the Current Monitoring-Well Network, as of Third Quarter CY2008.

Well ID	Sample Date	ARCOC No.	Sample No.	Perchlorate Result[a] (µg/L)	MDL[b] (µg/L)	PQL[c] (µg/L)	MCL[d] (µg/L)	Laboratory Qualifier[e]	Validation Qualifier[f]	Analytical Method[g]	Comments
MWL-BW2	09-Apr-08	611794	085758-020	ND	4.0	12	NE	U		EPA 314.0	
	17-Jul-08	611952	086358-020	ND	4.0	12	NE	U		EPA 314.0	
MWL-MW7	16-Jul-08	611954	086362-020	ND	4.0	12	NE	U		EPA 314.0	
			086363-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
MWL-MW8	14-Jul-08	611955	086365-020	ND	4.0	12	NE	U		EPA 314.0	
MWL-MW9	15-Jul-08	611956	086367-020	ND	4.0	12	NE	U		EPA 314.0	

Notes—

CYN-MW6 was installed in January 2006; MWL-BW2 was installed in March 2008; and MWL-MW7, MWL-MW8, MWL-M9 were installed in May 2008. This table presents all quarterly data collected at these wells.

[a]**Result**
Values in **bold** exceed the screening level/MDL.
ND = not detected (at method detection limit).
µg/L = micrograms per liter.

[b]**MDL**
Method detection limit. The minimum concentration that can be measured and reported with 99% confidence that the analyte is greater than zero, analyte is matrix specific.

[c]**PQL**
Practical quantitation limit. 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.

[d]**MCL**
Maximum contaminant level. 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 Title 20, Chapter 7, Part 1 of the New Mexico Administrative Code (20MAC 7.1).
NE = not established.

[e]**Lab Qualifier**
H = Analytical holding time was exceeded.
h = Prep holding time was exceeded.
J = Amount detected is below the practical quantitation limit.
U = Analyte is absent or below the method detection limit.

[f]**Validation Qualifier**
If cell is blank, then all quality control samples meet acceptance criteria with respect to submitted samples and no qualifier was assigned.
HT = The holding time was exceeded for the associated sample analysis.
J = The associated value is an estimated quantity.
J- = The associated value is an estimated quantity with a suspected negative bias.
P2 = Insufficient quality control data to determine laboratory precision.
X1 = General data quality is suspect.

[g]**Analytical Method**
EPA 314.0: U.S. Environmental Protection Agency, November 1999, "Perchlorate in Drinking Water Using Ion Chromatography," EPA 815/R-00-014 (EPA November 1999).
EPA 6850M: U.S. Environmental Protection Agency, April 2005, "Perchlorate in Water, Soils, and Solids Using High Performance Liquid Chromatography/Electrospray Ionization/Mass Spectrometry (HPLC/ESI/MS)," draft, Method 6850 (EPA April 2005).

Figure 2
Perchlorate Concentrations (µg/L) over Time in CYN-MW6

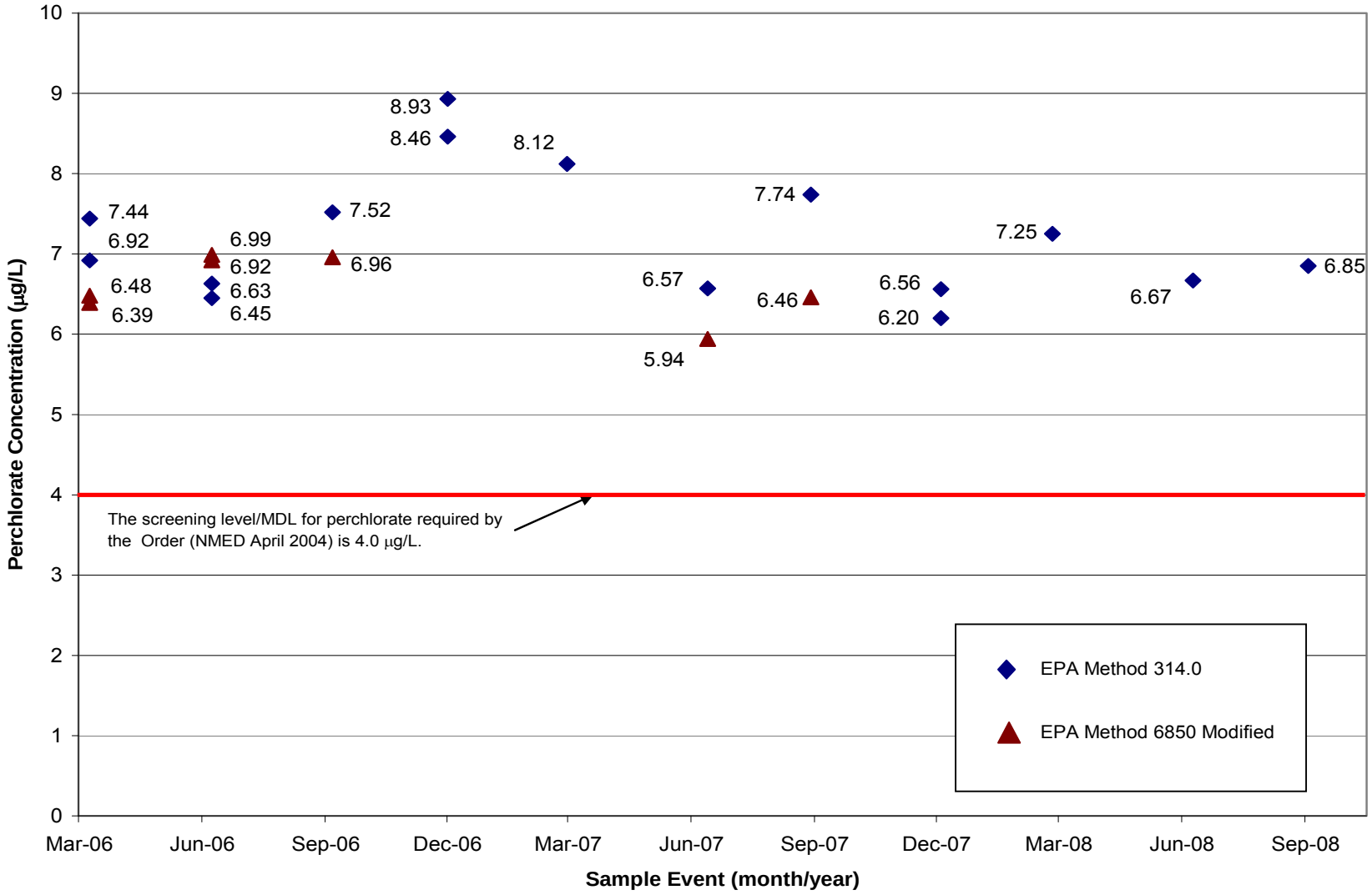


Table 4
Perchlorate Screening Groundwater Monitoring
Field Water Quality Measurements[a], Third Quarter of CY2008

Well ID	Sample Date	Temperature (^{0}C)	Specific Conductivity (μmho/cm)	Oxidation Reduction Potential (mV)	pH	Turbidity (NTU)	Dissolved Oxygen (% Sat)	Dissolved Oxygen (mg/L)
CYN-MW6	17-Sep-08	18.59	1122	151.7	6.92	1.12	22.8	2.12
MWL-BW2	17-Jul-08	23.04	702	-31.7	7.31	0.92	29.6	2.64
MWL-MW7	16-Jul-08	22.39	590	159.8	7.47	14.1	54.7	4.74
MWL-MW8	14-Jul-08	23.05	607	138.9	7.35	7.25	69.8	5.99
MWL-MW9	15-Jul-08	23.55	556	77.9	7.58	0.82	55.0	3.94

Notes:
[a]Field measurements made immediately before the groundwater sample was collected.
^{O}C = degrees Celsius.
% Sat = percent saturation.
μmho/cm = micromhos per centimeter.
mg/L = milligrams per liter.
mV = millivolts.
NTU = nephelometric turbidity units.
pH = potential of hydrogen (negative logarithm of the hydrogen ion concentration).

- The nature and extent of perchlorate in groundwater at the Burn Site has been sufficiently characterized. Since 2004, four other monitoring wells in the vicinity of the Burn Site have been sampled and analyzed for perchlorate, including CYN-MW1D, CYN-MW5, CYN-MW7, and CYN-MW8. All of these wells were sampled for four quarters and all results were non-detect for perchlorate (SNL/NM March 2008).
- A human health risk assessment has been performed to evaluate the potential for adverse health effects from the concentrations of perchlorate detected in CYN-MW6 groundwater. The maximum concentration of perchlorate in CYN-MW6 to date (8.93 µg/L) was used in the assessment. The calculated HQ of 0.35 is less than the NMED target level of a Hazard Index (the sum of all HQs) of 1.0 (NMED June 2006 and SNL/NM March 2008).

DOE/Sandia will continue quarterly monitoring of perchlorate in MWL-BW2 for at least two more quarters, and MWL-MW7, MWL-MW-8, and MWL-MW9 for at least three more quarters to verify the results presented in this report.

DOE/Sandia recently received approval from NMED to discontinue quarterly monitoring of perchlorate in CYN-MW6 and proceed with semiannual sampling at this well beginning in March 2009 (NMED November 2008). DOE/Sandia has also received approval to discontinue quarterly reporting of perchlorate data and proceed to semiannual reporting (NMED November 2008). NMED is aware that DOE/Sandia would like to discuss the need for continued monitoring or additional characterization work and (potentially) a CME at CYN-MW6. Current NMED priorities preclude discussing these issues until a later date.

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Appendix A

Analytical Laboratory Certificate of Analysis for the Perchlorate Data

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 2

Internal Lab

Batch No. N/A

SMO Use

AR/COC 611952

Dept. No./Mail Stop:	6765/MS 0719	Date Samples Shipped:	7-17-08	Project/Task NO. 98026 .01.08	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	911905	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	MWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract # 691436	
Record Center Code:	ER/076/DAT	Lab Destination:	GEL	SEE BOULT ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 032	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 001-08	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
086358-001	MWL-BW2	497	76	071708/1030	GW	G	3x40ml	HCL	G	SA	VOC (SW846-8260)	055 .21
086358-002	MWL-BW2	497	76	071708/1031	GW	AG	3x1 L	4C	G	SA	SVOC (SW846-8270)	056 .22
086358-009	MWL-BW2	497	76	071708/1033	GW	P	500 ml	HNO3	G	SA	Total TAL Metals+Tot U,U-235,U-238	057 .23
086358-010	MWL-BW2	497	76	071708/1034	FGW	P	500 ml	HNO3	G	SA	TAL Metals+Mo,Tot-U,U-235,U-238 bieng filtered	058 .24
086358-016	MWL-BW2	497	76	071708/1035	GW	P	500 ml	4C	G	SA	Major Anions(SW846-9056)+ Alkalin(SM2320B)	059 .25
086358-018	MWL-BW2	497	76	071708/1036	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	060 .26
086358-020	MWL-BW2	497	76	071708/1037	GW	AG	250 ml	4C	G	SA	Perchlorate (314.0)	061 .27
086358-033	MWL-BW2	497	76	071708/1038	GW	P	1 Liter	HNO3	G	SA	Gamma Spec (short list 901.1)	062 .28
086358-034	MWL-BW2	497	76	071708/1039	GW	P	1 Liter	HNO3	G	SA	Gross Alpha/Beta (900.0)	063 .29
086358-036	MWL-BW2	497	76	071708/1040	GW	AG	250 ml	4C	G	SA	Tritium (906.0)	064 .30

RMMA	☐ Yes ☑ No No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC Initials	

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Tim Jackson/Org 4133/MS 1089/505-284-2547

Total TAL&TAL Metals EPA Method (SW 846-6020/7470)

Major Anions/Br,Cl,Fl,SO4

FGW (filtered in field w/ 40 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch		RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes			Weston/4133/844-5130/228-0710
	William J Gibson			Weston/4133/284-5232/239-7367

1.Relinquished by		Org. 4133	Date 7-17-08	Time 1105	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 7-17-08	Time 1105	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 4133	Date 7-17-08	Time 1230	5.Relinquished by	Org.	Date	Time
2. Received by		Org. GEL	Date 7-18-08	Time 0730	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- **611952**

Project Name:	MWL GWM	Project/Task Manger: John Cochran	Project/Task No.: 98026 .01.08
Location	Tech Area		
Building	Room	**Reference LOV (available at SMO)**	

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
086359-001	MWL-TB1	NA	NA	071708/1030	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) field QC	005 .21

LAB USE

Abnormal Conditions on Receipt

Recipient Initials MK

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: August 12, 2008

Client Sample ID:	086358-020	Project:	SNLSGWater
Sample ID:	212021061	Client ID:	SNLS003
Matrix:	AQUEOUS		
Collect Date:	17-JUL-08 10:37		
Receive Date:	18-JUL-08	Client Desc.:	MWL-BW2
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 07/23/08	1452	776145	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. | SMO Use | AR/COC 611954

Dept. No./Mail Stop:	6765/MS 0719	Date Samples Shipped:	7-11-08	Project/Task NO. 98026.01.08	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	91932	SMO Authorization: SMO	-Send preliminary/copy report to:
Project Name:	MWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract # 691436	☐ Released by COC No.:
Record Center Code:	ER/076/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☑ Validation Required
Logbook Ref. No.:	ER 032	SMO Contact/Phone:	Pam Puissant/505-844-3185		Bill To: Sandia National Labs (Accounts Payable)
Service Order No.	CF 001-08	Send Report to SMO:	Lorraine Herrera/505-844-3199		P.O. Box 5800 MS 0154
Location	Tech Area				Albuquerque, NM 87185-0154
Building	Room				2120219

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
086362-001	MWL-MW7	493	76	071608/0945	GW	G	3x40ml	HCL	G	SA	VOC (SW846-8260)	012 .11
086362-002	MWL-MW7	493	76	071608/0947	GW	AG	3x1 L	4C	G	SA	SVOC (SW846-8270)	013 .12
086362-009	MWL-MW7	493	76	071608/0952	GW	P	500 ml	HNO3	G	SA	Total TAL Metals+Tot U,U-235,U-238	014 .13
086362-010	MWL-MW7	493	76	071608/0954	FGW	P	500 ml	HNO3	G	SA	TAL Metals+Mo,Tot-U,U-235,U-238 field filtered	015 .14
086362-016	MWL-MW7	493	76	071608/0956	GW	P	500 ml	4C	G	SA	Major Anions(SW846-9056)+ Alkalin(SM2320B)	016 .15
086362-018	MWL-MW7	493	76	071608/0957	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	017 .16
086362-020	MWL-MW7	493	76	071608/0958	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	018 .17
086362-033	MWL-MW7	493	76	071608/0959	GW	P	1 Liter	HNO3	G	SA	Gamma Spec (short list 901.1)	019 .18
086362-034	MWL-MW7	493	76	071608/1000	GW	P	1 Liter	HNO3	G	SA	Gross Alpha/Beta (900.0)	020 .19
086362-036	MWL-MW7	493	76	071608/1001	GW	AG	250 ml	4C	G	SA	Tritium (906.0)	021 .20

RMMA	☐ Yes ☑ No	No.	Sample Tracking Smo Use
Sample Disposal	☐ Return to Client	☑ Disposal by lat	Date Entered(mm/dd/yy)
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day		Entered by:
Return Samples By:		☐ Negotiated TAT	QC Inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Tim Jackson/Org 4133/MS 1089/505-284-2547

Total TAL&TAL Metals EPA Method (SW 846-6020/7470)

Major Anions/Br,Cl,Fl,SO4

FGW (filtered in field w/ 40 micron filter)

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch		RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes			Weston/4133/844-5130/228-0710
	William J Gibson			Weston/4133/284-5232/239-7367

1.Relinquished by		Org. 4133	Date 7/16/08	Time 10:25	4.Relinquished by		Org.	Date	Time
1. Received by		Org. 4137	Date 7-16-08	Time 10:25	4. Received by		Org.	Date	Time
2.Relinquished by		Org. 4137	Date 7-16-08	Time 2:00	5.Relinquished by		Org.	Date	Time
2. Received by		Org. GEL	Date 7-17-08	Time 0735	5. Received by		Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by		Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by		Org.	Date	Time

9

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 611954

Project Name:	MWL GWM	Project/Task Manger:	John Cochran	Project/Task No.:	98026 .01.08
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)			

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID	
086363-001	MWL-MW7	493	76	071608/0945	GW	G	3x40ml	HCL	G	DU	VOC (SW846-8260) field QC	022	.11
086363-002	MWL-MW7	493	76	071608/0947	GW	AG	3x1 L	4C	G	DU	SVOC (SW846-8270) field QC	023	.12
086363-009	MWL-MW7	493	76	071608/0952	GW	P	500 ml	HNO3	G	DU	Total TAL Metals+Tot U,U-235,U-238 field QC	024	.13
086363-010	MWL-MW7	493	76	071608/0954	FGW	P	500 ml	HNO3	G	DU	TAL Metals+Mo,Tot-U,U-235,U-238 field QC field filtered	025	.14
086363-016	MWL-MW7	493	76	071608/0956	GW	P	500 ml	4C	G	DU	Major Anions(SW846-9056)+ Alkalin(SM2320B) field QC	026	.15
086363-018	MWL-MW7	493	76	071608/0957	GW	P	250 ml	H2SO4	G	DU	NPN (353.2) field QC	027	.16
086363-020	MWL-MW7	493	76	071608/0958	GW	P	250 ml	4C	G	DU	Perchlorate (314.0) field QC	028	.17
086363-033	MWL-MW7	493	76	071608/0959	GW	P	1 Liter	HNO3	G	DU	Gamma Spec (short list 901.1) field QC	029	.18
086363-034	MWL-MW7	493	76	071608/1000	GW	P	1 Liter	HNO3	G	DU	Gross Alpha/Beta (900.0) field QC	030	.19
086363-036	MWL-MW7	493	76	071608/1001	GW	AG	250 ml	4C	G	DU	Tritium (906.0) field QC	031	.20
086364-001	MWL-TB3	NA	NA	071608/0945	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) field QC	032	.11

Abnormal Conditions on Receipt — LAB USE

Recipient Initials MK

10

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: August 12, 2008

Client Sample ID: 086362-020
Sample ID: 212021018
Matrix: AQUEOUS
Collect Date: 16-JUL-08 09:58
Receive Date: 17-JUL-08
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: MWL-MW7

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 07/21/08	1706	775617	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: August 12, 2008

Client Sample ID: 086363-020
Sample ID: 212021028
Matrix: AQUEOUS
Collect Date: 16-JUL-08 09:58
Receive Date: 17-JUL-08
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: MWL-MW7

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 07/21/08	1724	775617	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 2

Internal Lab

Batch No. N/A

SMO Use

AR/COC 611955

Dept. No./Mail Stop:	6765/MS 0719	Date Samples Shipped:	7-14-08	Project/Task NO.	98026.01.08
Project/Task Manager:	John Cochran	Carrier/Waybill No.	91725	SMO Authorization:	
Project Name:	MWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #	691436
Record Center Code:	ER/076/DAT	Lab Destination:	GEL		
Logbook Ref. No.:	ER 032	SMO Contact/Phone:	Pam Puissant/505-844-3185		
Service Order No.	CF 001-08	Send Report to SMO:	Lorraine Herrera/505-844-3199		
Location	Tech Area				
Building	Room				

5 08 BOTTLE ORDER

☐ Waste Characterization
-Send preliminary/copy report to:

☐ Released by COC No.:_____
☑ Validation Required

Bill To: Sandia National Labs (Accounts Payable)
P.O. Box 5800 MS 0154
Albuquerque, NM 87185-0154

2120211.

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
086365-001	MWL-MW8	497	76	071408/1103	GW	G	3x40ml	HCL	G	SA	VOC (SW846-8260)	001 .1
086365-002	MWL-MW8	497	76	071408/1105	GW	AG	3x1 L	4C	G	SA	SVOC (SW846-8270)	002 .2
086365-009	MWL-MW8	497	76	071408/1106	GW	P	500 ml	HNO3	G	SA	Total TAL Metals+Tot U,U-235,U-238	003 .3
086365-010	MWL-MW8	497	76	071408/1107	FGW	P	500 ml	HNO3	G	SA	TAL Metals+Mo,Tot-U,U-235,U-238 (field filtered)	004 .4
086365-016	MWL-MW8	497	76	071408/1108	GW	P	500 ml	4C	G	SA	Major Anions(SW846-9056)+ Alkalin(SM2320B)	005 .5
086365-018	MWL-MW8	497	76	071408/1109	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	006 .6
086365-020	MWL-MW8	497	76	071408/1110	GW	AG	250 ml	4C	G	SA	Perchlorate (314.0)	007 .7
086365-033	MWL-MW8	497	76	071408/1111	GW	P	1 Liter	HNO3	G	SA	Gamma Spec (short list 901.1)	008 .8
086365-034	MWL-MW8	497	76	071408/1113	GW	P	1 Liter	HNO3	G	SA	Gross Alpha/Beta (900.0)	009 .9
086365-036	MWL-MW8	497	76	071408/1114	GW	AG	250 ml	4C	G	SA	Tritium (906.0)	010 .10

RMMA ☐ Yes ☑ No No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Sample Tracking Smo Use
Date Entered(mm/dd/yy)
Entered by:

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No

Abnormal Conditions on Receipt

Lab Use

Return Samples By: ☐ Negotiated TAT QC inits

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch		RL	Weston/4133/844-4013/250-7090
	Alfred Santillanes		AS	Weston/4133/844-5130/228-0710
	William J Gibson		WG	Weston/4133/284-5232/239-7367

*Send report to:
Tim Jackson/Org 4133/MS 1089/505-284-2547

Total TAL&TAL Metals EPA Method (SW 846-6020/7470)
Major Anions/Br,Cl,Fl,SO4
FGW (filtered in field w/ 40 micron filter)
*Please list as separate report.

1.Relinquished by		Org. 4133	Date 7/14/08	Time 1640	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 7/14/08	Time 1640	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 4133	Date 7/14/08	Time 1230	5.Relinquished by	Org.	Date	Time
2. Received by		Org. GEL	Date 7-15-08	Time 0730	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 611955

Project Name:	MWL GWM	Project/Task Manger:	John Cochran	Project/Task No.:	98026 .01.08
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)			

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
086366-001	MWL-TB4	NA	NA	071408/1103	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) field QC	D1L

Abnormal Conditions on Receipt — LAB USE

Recipient Initials MK

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: August 12, 2008

Client Sample ID: 086365-020
Sample ID: 212021007
Matrix: AQUEOUS
Collect Date: 14-JUL-08 11:10
Receive Date: 15-JUL-08
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: MWL-MW8

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 07/21/08	1612	775617	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. | SMO Use | AR/COC 611956

Dept. No./Mail Stop:	6765/MS 0719	Date Samples Shipped:	7-16-08	Project/Task NO. 98026 .01.08	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	John Cochran	Carrier/Waybill No.	71832	SMO Authorization: MB SMO	
Project Name:	MWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract # 691436	☐ Released by COC No.: ☑ Validation Required
Record Center Code:	ER/076/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	
Logbook Ref. No.:	ER 032	SMO Contact/Phone:	Pam Puissant/505-844-3185		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Service Order No.	CF 001-08	Send Report to SMO:	Lorraine Herrera/505-844-3199		
Location	Tech Area				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
086367-001	MWL-MW9	497	76	071508/1303	GW	G	3x40ml	HCL	G	SA	VOC (SW846-8260)	044 .11
086367-002	MWL-MW9	497	76	071508/1305	GW	AG	3x1 L	4C	G	SA	SVOC (SW846-8270)	045 .12
086367-009	MWL-MW9	497	76	071508/1306	GW	P	500 ml	HNO3	G	SA	Total TAL Metals+Tot U,U-235,U-238	046 .13
086367-010	MWL-MW9	497	76	071508/1307	FGW	P	500 ml	HNO3	G	SA	TAL Metals+Mo,Tot-U,U-235,U-238 field filtered	047 .14
086367-016	MWL-MW9	497	76	071508/1308	GW	P	500 ml	4C	G	SA	Major Anions(SW846-9056)+ Alkalin(SM2320B)	048 .15
086367-018	MWL-MW9	497	76	071508/1309	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	049 .16
086367-020	MWL-MW9	497	76	071508/1310	GW	AG	250 ml	4C	G	SA	Perchlorate (314.0)	050 .17
086367-033	MWL-MW9	497	76	071508/1311	GW	P	1 Liter	HNO3	G	SA	Gamma Spec (short list 901.1)	051 .18
086367-034	MWL-MW9	497	76	071508/1313	GW	P	1 Liter	HNO3	G	SA	Gross Alpha/Beta (900.0)	052 .19
086367-036	MWL-MW9	497	76	071508/1314	GW	AG	250 ml	4C	G	SA	Tritium (906.0)	053 .20

RMMA	☐ Yes ☑ No No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy):	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC Inits.	

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
*Send report to:
Tim Jackson/Org 4133/MS 1089/505-284-2547
Total TAL&TAL Metals EPA Method (SW 846-6020/7470)
Major Anions/Br,Cl,Fl,SO4
FGW (filtered in field w/ 40 micron filter)
*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	Robert Lynch			Weston/4133/844-4013/250-7090
	Alfred Santillanes			Weston/4133/844-5130/228-0710
	William J Gibson			Weston/4133/284-5232/239-7367

1.Relinquished by		Org. 4133	Date 7/16/08	Time 0835	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4139	Date 7-16-08	Time 0835	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 4139	Date 7-16-08	Time 1:800	5.Relinquished by	Org.	Date	Time
2. Received by		Org. GEL	Date 7-17-08	Time 0735	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- **611956**

Project Name: MWL GWM | Project/Task Manger: John Cochran | Project/Task No.: 98026 .01.08

Location: Tech Area

Building | Room

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use: Lab Sample ID
086368-001	MWL-TB5	NA	NA	071508/1303	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) field QC	004

LAB USE

Abnormal Conditions on Receipt

Recipient Initials MK

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: August 12, 2008

Client Sample ID: 086367-020
Sample ID: 212021050
Matrix: AQUEOUS
Collect Date: 15-JUL-08 13:10
Receive Date: 17-JUL-08
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: MWL-MW9

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1 07/21/08	1801	775617	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

20080940515

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 2

Batch No. N/A

SMO Use

125778.10.11.01 AR/COC

612004

Dept. No./Mail Stop:	4133/1089	Date Samples Shipped:	9-17-08	Project/Task No. 121515.02.01	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	94008	SMO Authorization:	
Project Name:	Burn Site GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO ~~21071~~ 691436	
Record Center Code:	ER/1333/DAT	Lab Destination:	GEL	5 DAY BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 058	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF#058-08 09	Send Report to SMO:	Lorraine Herrera/505-844-3199		Bill To: Sandia National Labs (Accounts Payable) P.O. Box 5800 MS 0154 Albuquerque, NM 87185-0154
Location	Tech Area	Reference LOV(available at SMO)			
Building	Room				

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
086782-001	CYN-MW6	163	N/A	091708/1028	GW	G	3x40 ml	HCL	G	SA	VOC (SW846-8260)	025 .17
086782-002	CYN-MW6	163		091708/1029	GW	AG	3x1 L	4C	G	SA	SVOC (SW846-8270)	026 .18
086782-005	CYN-MW6	163		091708/1031	GW	AG	4x1 L	4C	G	SA	TPH Diesel (SW846-8015)	027 .19
086782-006	CYN-MW6	163		091708/1033	GW	G	3x40 ml	HCL	G	SA	TPH Gasoline (SW846-8015)	028 .20
086782-010	CYN-MW6	163		091708/1034	GW	P	500 ml	HNO3	G	SA	TAL Metals+Total U (SW846-6020/7470)	029 .21
086782-016	CYN-MW6	163		091708/1035	GW	P	250 ml	4C	G	SA	Major Anions (SW846-9056)	030 .22
086782-017	CYN-MW6	163		091708/1036	FGW	P	500 ml	HNO3	G	SA	Major Cations (SW846-6020) field filtered	031 .23
086782-018	CYN-MW6	163		091708/1037	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	032 .24
086782-020	CYN-MW6	163		091708/1038	GW	P	500 ml	4C	G	SA	Perchlorate (314.0)	033 .25
086782-033	CYN-MW6	163		091708/1039	GW	P	1 L	HNO3	G	SA	Gamma Spec (short list) (901.0)	034 .26

12

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking Smo Use	Special Instructions/QC Requirements
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	EDD ☑ Yes ☐
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	Level D Package ☐ es ☑ No
Return Samples By:	☐ Negotiated TAT	QC Inits.	*Send report to: Tim Jackson/Org.4133/MS 1089/505-284-2547

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	William J Gibson			Weston/4133/284-5232/239-7367
	Robert Lynch			Weston/4133/844-4013/250-7090
	Alfred Santillanes			Weston/4133/844-5130/228-0710

FGW: Filtered in field w/40 micron filter

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

1.Relinquished by		Org. 4133	Date 9/17/08	Time 1120	4.Relinquished by		Org.	Date	Time
1. Received by		Org. 4133	Date 9/17/08	Time 1120	4. Received by		Org.	Date	Time
2.Relinquished by		Org. 4133	Date 9/17/08	Time 1240	5.Relinquished by		Org.	Date	Time
2. Received by		Org. GEL	Date 9-18-08	Time 0715	5. Received by		Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by		Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by		Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

125778.10.11.0 | MS 9/23/08

AR/COC- 612004

Project Name:	Burn Site GWM	Project/Task Manger:	Don Schofield	Project/Task No.:	121515-02.01
Location	Tech Area				
Building	Room				

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Pump Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
086782-034	CYN-MW6	163	NA	091708/1040	GW	P	1 L	HNO3	G	SA	Gross Alpha/Beta (900.0)	035 .27
086782-036	CYN-MW6	163		091708/1041	GW	AG	250 ml	4C	G	SA	Tritium (906.0)	036 .28
086783-001	CYN-TB3	NA		091708/1028	DIW	G	3x40 ml	HCL	G	TB	VOC (SW846-8260) bred QC	037 .17

Abnormal Conditions on Receipt — LAB USE

Recipient Initials MK

13

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Sandia National Laboratories
Address : MS-0756, Org. 06765, Bldg. 823/Rm. 4276
1515 Eubank SE
Albuquerque, New Mexico 87123
Contact: Ms. Pamela M. Puissant
Project: **Level C, Groundwater Monitoring**

Report Date: October 9, 2008

Client Sample ID: 086782-020
Sample ID: 215835033
Matrix: AQUEOUS
Collect Date: 17-SEP-08 10:38
Receive Date: 18-SEP-08
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: CYN-MW6

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography Federal										
EPA 314.0 Perchlorate by IC "As Received"										
Perchlorate	J	0.00685	0.004	0.012	mg/L	1	MAR1 09/23/08	1502	797652	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

Appendix B

Data Validation Sample Findings Summary Sheets for the Perchlorate Data

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

Memorandum

DATE: September 9, 2008

TO: File

FROM: David Schwent

SUBJECT: General Chemistry Data Review and Validation - SNL
Site: MWL GWM
AR/COC: 611952, 611953, 611954, 611955, and 611956
SDG: 212021
Laboratory: GEL
Project/Task No: 98026.01.08

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA314.0 (perchlorate), EPA353.2 (nitrate/nitrite by Cd reduction), EPA9056 (anions), and SM2320B (total alkalinity). Problems were identified with the data package that result in the qualification of data.

Nitrate/nitrite Analysis:

Blanks: Nitrate/nitrite was detected in the equipment blank (EB) (sample 212021-038) at a concentration > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated results of samples -006, -017, and -027 were detects <5X the EB concentration and will be qualified "0.36U,B2" at 5X the value of the EB.

Total Alkalinity Analysis:

Blanks: Total alkalinity was detected in the method blank (MB) at a concentration > the MDL but < the PQL. The associated result of sample 212021-037 was a detect <5X the MB concentration and will be qualified "5.3U,B" at 5X the value of the MB.

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met.

Blanks

Anions Analysis: No target analytes were detected in the blanks, except the following. Chloride and sulfate were detected in the EB (sample 212021-037) at concentrations > the MDL but < the PQL. However, all associated sample results were detects >5X the MB concentration and will not be qualified.

Nitrate/nitrite Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Nitrate/nitrite was detected in the MB at a concentration > the MDL but < the PQL. However, all associated sample results were detects >5X the MB concentration and will not be qualified.

Perchlorate Analysis: No target analytes were detected in the blanks.

Total Alkalinity Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Total alkalinity was detected in the MB at a concentration > the MDL but < the PQL. However, all associated sample results, except the result qualified above in the summary section, were detects >5X the MB concentration and will not be qualified. It should be noted that the total alkalinity detect result of the EB (sample 212021-037) was qualified "U" (non-detect) due to MB contamination and, therefore, cannot affect other field sample results.

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

All detection limits were properly reported. Samples 212021-005, -016, -026, -048, and -059 were diluted 10X for chloride and samples -048 and -059 were diluted 10X sulfate due to high concentrations of the target analytes. Samples -017, -027, -049, and -060 were diluted 10X for nitrate/nitrite due to high concentrations of the target analyte and samples -006 and -038 were diluted 5X for nitrate/nitrite due to matrix interference. All associated batch QC samples were diluted at dilution factors that resulted in relative dilution factors to the samples that were ≤5X. No sample data will be qualified as a result. No other samples required dilution.

Other QC

No field blanks (FBs) were submitted on the AR/COCs. All relative percent differences (RPDs) of the field duplicates (FDs) (samples 212021-026, -027, and -028) were <20%, except for bromide (81%). No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues were identified which affect data quality.

Sample Findings Summary

Site: MWL GWM **AR/COC:** 611952, 611953, 611954, 611955, and 611956 **Organic, Metals, Gen Chem, Rad**

Sample ID	EPA8260B (VOCs):	67-64-1 (acetone)	EPA8270C (SVOCs):	EPA6020 (ICP-MS):	7440-48-4 (Co)	15117-96-1 (U-235)	7440-36-0 (Sb)	7440-66-6 (Zn)	7440-70-2 (Ca)	7440-47-3 (Cr)	7439-95-4 (Mg)	7440-23-5 (Na)	EPA7470A (CVAA):	7439-97-6 (Hg)	EPA314.0 (perchlorate)	EPA9056 (Anions):	EPA353.2 (Nitrate/nitrite):	N599 (nitrate/nitrite)	SM2320B (Alkalinity):	ALK (total alkalinity)
086365-001 MWL-MW8		UJ,C3	All Acceptance criteria met. No sample data will be qualified.												All Acceptance criteria met. No sample data will be qualified.					
086365-009 MWL-MW8						J+,DL2	0.0060U,B,B3	0.030U,B			J,D1			UJ,B4						
086365-010 MWL-MW8						J+,DL2	0.0060U,B,B3	0.030U,B			J,D1			UJ,B4						
086365-018 MWL-MW8																		0.36U,B2		
086366-001 MWL-TB4		UJ,C3																		
086362-001 MWL-MW7		UJ,C3																		
086362-009 MWL-MW7						J+,DL2				0.0086U,B				UJ,B4						
086362-010 MWL-MW7					UJ,C3	J+,DL2	0.0048U,B,B3							UJ,B4						
086362-018 MWL-MW7																		0.36U,B2		
086363-001 MWL-MW7		UJ,C3																		
086363-009 MWL-MW7					UJ,C3	J+,DL2								UJ,B4						
086363-010 MWL-MW7					UJ,C3	J+,DL2								UJ,B4						
086363-018 MWL-MW7																		0.36U,B2		
086364-001 MWL-TB3		UJ,C3																		
086360-001 MWL-EB1		UJ,C3																		
086360-009 MWL-EB1					UJ,C3				0.29U,B					UJ,B4						
086360-010 MWL-EB1					UJ,C3				0.29U,B					UJ,B4						
086360-016 MWL-EB1																				5.3U,B
086361-001 MWL-TB2		UJ,C3																		
086367-001 MWL-MW9		UJ,C3																		
086367-009 MWL-MW9					UJ,C3	J+,DL2								UJ,B4						
086367-010 MWL-MW9					UJ,C3	J+,DL2								UJ,B4						
086368-001 MWL-TB5		UJ,C3																		
086358-001 MWL-BW2		UJ,C3																		
086358-009 MWL-BW2						J+,DL2						J,D1		UJ,B4						
086358-010 MWL-BW2						J+,DL2						J,D1		UJ,B4						
086359-001 MWL-TB1		UJ,C3																		

Validated By: David Schwartz **Date:** 09/09/08

Sample Finding Summary

Site: MWL GWM **AR/COC:** 611952, 611953, 611954, 611955, and 611956 **Organic, Metals, Gen Chem, Rad**

Sample ID	EPA901.1 (Gamma Spec):	86954-36-1 (Am-241)	10045-97-3 (Cs-137)	10198-40-0 (Co-60)	13966-00-2 (K-40)	EPA900.0 (Gross Alpha/Beta):	12587-46-1 (gross alpha)	12587-47-2 (gross beta)	EPA906.0 (Tritium):	10028-17-8 (tritium)								
086365-033 MWL-MW8		BD,FR3	BD,FR3	BD,FR3	BD,FR3													
086365-036 MWL-MW8										BD,FR3								
086362-033 MWL-MW7		BD,FR3	BD,FR3	BD,FR3	BD,FR3													
086362-036 MWL-MW7										BD,FR3								
086363-033 MWL-MW7		BD,FR3	BD,FR3	BD,FR3	BD,FR3													
086363-036 MWL-MW7										BD,FR3								
086360-033 MWL-EB1		BD,FR3	BD,FR3	BD,FR3	BD,FR3													
086360-034 MWL-EB1							BD,FR3	BD,FR3										
086360-036 MWL-EB1										BD,FR3								
086367-033 MWL-MW9		BD,FR3	BD,FR3	BD,FR3	BD,FR3													
086367-036 MWL-MW9										BD,FR3								
086358-033 MWL-BW2		BD,FR3	BD,FR3	BD,FR3	BD,FR3													
086358-034 MWL-BW2								J,FR7										
086358-036 MWL-BW2										BD,FR3								

Validated By: David Schmidt **Date:** 09/09/08

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

Memorandum

DATE: November 17, 2008

TO: File

FROM: David Schwent

SUBJECT: General Chemistry Data Review and Validation - SNL
Site: Burn Site GWM (LTS)
AR/COC: 612001, 612002, 612003, 612004, and 612005
SDG: 215835
Laboratory: GEL
Project/Task No: 125778.10.11.01

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. This validation was performed according to SNL/NM ER Project AOP 00-03 Rev 2.

Summary

The samples were prepared and analyzed with accepted procedures using methods EPA314.0 (perchlorate), EPA353.2 (nitrate/nitrite by Cd reduction), and EPA9056 (anions). Problems were identified with the data package that result in the qualification of data.

Nitrate/nitrite Analysis:

Blanks: Nitrate/nitrite was detected in the continuing calibration blank (CCB) analyzed on 9-25-08 at a negative concentration with an absolute value > the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated results of samples 215835-005 and -024 were non-detects (NDs) and will be qualified "UJ,B4."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All Analyses: All initial and continuing calibration QC acceptance criteria were met.

Blanks

Anions/Perchlorate Analyses: No target analytes were detected in the blanks.

Nitrate/nitrite Analysis: No target analytes were detected in the blanks, except as noted above in the summary section and the following. Nitrate/nitrite was detected in the initial calibration blank (ICB) and CCB analyzed on 9-24-08 at negative concentrations with absolute values > the MDL but < the PQL. However, all associated sample results were detects >5X the MDL and will not be qualified.

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

All Analyses: All LCS QC acceptance criteria were met. No LCSD analyses were performed. The laboratory replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD analyses were performed. No sample data will be qualified as a result.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

All detection limits were properly reported. Sample 215835-030 was diluted 50X for chloride and sulfate due to high concentrations of the target analytes, samples -014, -020, -032, and -042 were diluted 10X, 10X, 50X, and 25X, respectively for nitrate/nitrite due to high concentration of the target analyte, and samples -005, -024, and -042 were diluted 10X, 10X, and 25X, respectively for nitrate/nitrite due to matrix interference. All associated batch QC samples were diluted at dilution factors that resulted in relative dilution factors to the samples that were ≤5X. No sample data will be qualified as a result. No other samples required dilution.

Other QC

No field blanks (FBs) were submitted on the AR/COCs. The relative percent difference (RPD) of the field duplicate (FD) (sample 215835-020) was <20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues were identified which affect data quality.

Sample Findings Summary

Site: Burn Site GWM (LTS) **AR/COC:** 612001, 612002, 612003, 612004, and 612005 **Organic, Metals, Gen Chem, Rad**

Sample ID	EPA8260B (VOCs):	75-09-2 (methylene chloride)	EPA8270C (SVOCs):	100-02-7 (4-nitrophenol)	108-95-2 (Phenol)	EPA8015A/B (DRO):	EPA8015B (GRO):	GRO (GRO)	EPA6020 (ICP-MS):	7440-36-0 (Sb)	7782-49-2 (Se)	7440-66-6 (Zn)	7440-48-4 (Co)	7440-02-0 (Ni)	7440-39-3 (Ba)	EPA7470A/7471A (CVAA):	7439-97-6 (Hg)	EPA314.0 (Perchlorate):	EPA9056 (Anions):	Nitrate/nitrite (EPA353.2):	N599 (nitrate/nitrite)
086776-001 CYN-MW4		5.00U,B				All Acceptance criteria met. No sample data will be qualified.												All Acceptance criteria met. No sample data will be qualified.			
086776-006 CYN-MW4								UJ,S2													
086776-010 CYN-MW4										0.011U,B3	0.069U,B3	J+,CK2	J+,CK2	J+,CK2			UJ,B4				
086776-018 CYN-MW4																					UJ,B4
086777-001 CYN-TB1		5.00U,B																			
086779-001 CYN-MW3		5.27U,B																			
086779-010 CYN-MW3										0.011U,B3	0.069U,B3	J+,CK2	J+,CK2	J+,CK2			UJ,B4				
086781-001 CYN-TB2		5.41U,B																			
086778-018 CYN-EB1																					UJ,B4
086782-001 CYN-MW6		5.00U,B																			
086782-002 CYN-MW6				UJ,MS5	UJ,MS5																
086782-010 CYN-MW6										0.011U,B3	0.069U,B3	J+,CK2	J+,CK2	J+,CK2			UJ,B4				
086783-001 CYN-TB3		5.30U,B																			
086784-001 CYN-MW7		5.88U,B																			
086784-010 CYN-MW7											0.069U,B,B3	J+,CK2	J+,CK2	J+,CK2	J+,CK2		UJ,B4				
086785-001 CYN-TB4		6.30U,B																			

Validated By: David Schmoll **Date:** 11/17/08