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

MAR 31 2010

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

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

Subject: March 2010 Consolidated Quarterly Report for the Environmental Restoration Project

Dear Mr. Bearzi:

On behalf of the Department of Energy/National Nuclear Security Administration (DOE/NNSA) and Sandia Corporation, DOE/NNSA is submitting the March 2010 Consolidated Quarterly Report for the Environmental Restoration Project that addresses all quarterly reporting (from November 2009 through January 2010) required under the *Hazardous and Solid Waste Amendments Module of the Resource Conservation and Recovery Act Permit, the Compliance Order on Consent and the Chemical Waste Landfill (CWL) Closure Plan* for Sandia National Laboratories/New Mexico, Environmental Protection Agency EPA No. 5890110518.

Should you have any questions regarding this correspondence, please feel free to contact me at (505) 845-6036 or Joe Estrada of my staff at (505) 845-5326. For perchlorate or CWL groundwater related items, please contact John Gould of my staff at (505) 854-6089.

Sincerely,

Patty Wagner for
Manager

Enclosure

cc w/enclosure:
W. Moats, NMED-HWB (via Certified Mail)
L. King, EPA, Region 6 (via Certified Mail)
T. Skibitski, NMED-OB, MS-1396
B. Birch, NMED-OB, MS-1396
B. Fleming, NA-56, HQ/FORS
Zimmerman Library, UNM
SNL ES&H Records Center, SNL/NM, Org.6765, MS-0718

cc w/o enclosure:
T. Longo, NA-56, HQ/GTN
A. Blumberg, SNL/NM, Org. 11100, MS-0141
M. Walck, SNL/NM, Org. 6700, MS-0701
S. Saltzstein, SNL/NM, Org. 6702, MS-0701
D. Miller, SNL/NM, Org. 6765, MS-0718
T. Cooper, SNL/NM, Org. 4133, MS-0729
J. Cochran, SNL/NM, Org. 6765, MS-0719
M. Skelly, SNL/NM, Org. 6765, MS-0718
C. Daniel, SNL/NM, Org. 6765, MS-0718
D. Pellegrino, NNSA/SSO, MS-0184

Sandia National Laboratories

Sandia National Laboratories, New Mexico (SNL/NM)

Environmental Restoration Project

A Department of Energy Environmental Cleanup Program

CONSOLIDATED Quarterly Report

November 2009 through January 2010

March 2010

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

March 2010

SANDIA NATIONAL LABORATORIES/NEW MEXICO (SNL/NM)

ENVIRONMENTAL RESTORATION PROJECT

DEPARTMENT OF ENERGY (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 Project Quarterly Report, reporting period:

November 2009 through January 2010

SECTION II

Chemical Waste Landfill Progress Report, reporting period:

November 2009 through January 2010

SECTION III

Perchlorate Screening Semiannual Report, reporting period: October through December 2009

Sandia National Laboratories

Environmental Restoration Project Consolidated Quarterly Report

Section I

Environmental Restoration Project Quarterly Report

March 2010

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

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

BSG	Burn Site Groundwater
BW	background well
CAC	Corrective Action Complete
CFR	Code of Federal Regulations
CME	Corrective Measures Evaluation
COC	Contaminants of Concern
CWL	Chemical Waste Landfill
EB	equipment blank
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration Project
ET	evapotranspirative
FB	field blank
FOP	Field Operating Procedure
FY09	Fiscal Year 2009
LTES	Long Term Environmental Stewardship
MCL	maximum contaminant level
MDL	method detection limit
NOD	Notice of Deficiency
µg/L	microgram per liter
mg/L	milligram per liter
MW	monitoring well
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
pH	potential of hydrogen
QC	quality control
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
Sandia	Sandia Corporation
SC	specific conductance
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
TAG	Tijeras Arroyo Groundwater
TB	trip blank
TCE	trichloroethene
VCM	Voluntary Corrective Measure
VE	Vapor Extraction
VOC	volatile organic compound

1.0 Introduction

This Environmental Restoration Consolidated Quarterly Report (ER Quarterly Report) discusses ongoing corrective actions being implemented by the Sandia National Laboratories (SNL) Environmental Restoration (ER) Project. The status of regulatory closure activities is outlined below. In this Section, the Quarter refers to the November 2009 through January 2010 quarterly reporting period.

2.0 ER Work Completed this Quarter

2.1 Mixed Waste Landfill (MWL)

- Activities completed during this reporting period consisted of final preparation of the MWL Corrective Measures Implementation (CMI) Report, which was submitted to the NMED on January 26, 2010. This report follows completion of the MWL Evapotranspirative (ET) Cover Construction project in September 2009.
- The DOE/Sandia response to the October 29, 2009 NMED Notice of Disapproval for the "MWL Groundwater Monitoring Report Calendar Year 2008"was submitted to the NMED on December 23, 2009.
- Mixed Waste Landfill groundwater monitoring activities for the second quarter of Fiscal Year 2010 were completed in January 2010. Results will be presented in the MWL Annual Groundwater Monitoring Report for Calendar Year 2010 (anticipated delivery to NMED in the spring of 2011).

2.1.1 MWL Documents Submitted to NMED Pending Regulatory Review and Approval

- The MWL CMI Report was submitted for NMED review and approval on January 26, 2010.

2.2 Project Management and Site Closure

ER Sites undergoing regulatory and administrative closure activities are presently addressed under project management. Two permit modification requests are currently in progress with the New Mexico Environment Department (NMED) and are outlined below. The sites, summarized below, were discussed with NMED and public stakeholders in June 2009 as part of comment resolution process for the renewal of the SNL Resource Conservation and Recovery Amendment (RCRA Permit). NMED indicated verbally at the meeting that some of the sites included in the March 2006 and January 2008 permit modification requests may require further groundwater

characterization and/or additional soil characterization; official written communication regarding these requirements is anticipated.

2.2.1 Permit Modification Request Submitted in March 2006

- Twenty-six sites were submitted to NMED for the final determination of Corrective Action Complete (CAC) in March 2006. The sites included 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.

2.2.2 Permit Modification Request Submitted in January 2008

- Five sites were submitted for the final regulatory determination of CAC in a permit modification request in January 2008. 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 MWL (SWMU 76). Final reporting of the Corrective Measure Implementation for the MWL is pending. 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

2.3.1 TA-3/5 Groundwater

- Groundwater sampling was completed in November and December 2009. Results of perchlorate analysis are discussed in Section III of this ER Quarterly Report, and other analytical results will be discussed in the Calendar Year 2009 Groundwater Protection

Program (GWPP) Annual Groundwater Monitoring Report (anticipated delivery to NMED in the summer of 2010).

- In August 2009, DOE/Sandia received a second Notice of Deficiency (NOD) from the NMED on the Technical Area V Corrective Measures Evaluation (CME) Report (submitted July 2005). A response to the second NOD was submitted in November 2009, and a third NOD was received in December 2009. DOE/Sandia will submit a response to the third NOD in February 2010.

2.3.2 Burn Site Groundwater (BSG)

- No groundwater sampling was performed during this reporting period.
- On April 30 2009, DOE/Sandia received a letter from NMED entitled "Perchlorate Contamination in Groundwater," requiring, among other items, characterization of the nature and extent of perchlorate contamination at or near the Burn Site. A work plan to fulfill NMED's characterization requirements was submitted to NMED in November 2009.

2.3.3 Tijeras Arroyo Groundwater (TAG)

- Groundwater sampling was completed in October and November 2009. Results of perchlorate analysis are discussed in Section III of this ER Quarterly Report, and other analytical results will be discussed in the Calendar Year 2009 GWPP Annual Groundwater Monitoring Report (anticipated delivery to NMED in the summer of 2010).
- On August 12, 2009, DOE/Sandia received a second NOD from the NMED on the TAG Continuing Investigation Report (submitted in November 2005). A response from DOE/Sandia was delivered in January 2010.

2.3.4 Mixed Waste Landfill Groundwater (MWL)

- Groundwater sampling was performed in October 2009. Results from these MWL sampling events will be discussed in the upcoming MWL Annual Groundwater Monitoring Report for Calendar Year 2009 (anticipated delivery to NMED in the spring of 2010).
- Groundwater sampling was performed in January 2010. Groundwater samples were collected from MWL groundwater monitoring wells MWL-BW2, MWL-MW7, MWL-MW8, and MWL-9. Results will be presented in the MWL Annual Groundwater Monitoring Report for Calendar Year 2010 (anticipated delivery to NMED in the spring of 2011).

2.3.5 Chemical Waste Landfill Groundwater (CWL)

- CWL semi-annual groundwater monitoring activities were performed in October 2009. Analytical results associated with the October 2009 sampling were not completed in time to be included in the December 2009 ER Quarterly Report and are summarized in Section II of this ER Quarterly Report.

2.3.5.1 Groundwater Documents Submitted to the NMED Pending Regulatory Review and Approval

- Technical Area V Groundwater Corrective Measure Evaluation (CME) Work Plan, submitted April 2004.
- CME Report for Tijeras Arroyo Groundwater, submitted August 2005.
- Burn Site Groundwater (BSG) Interim Measures Work Plan, submitted May 2005.
- BSG Current Conceptual Model of Groundwater Flow and Contaminant Transport, submitted April 2008.
- BSG CME Work Plan, submitted April 2008.
- BSG Characterization Work Plan, November 2009.

2.4 Corrective Action Management Unit (CAMU)

CAMU Post-closure Care operations consist of vadose-zone monitoring, leachate removal, and post-closure inspections, as required in the permit. Activities for this reporting period include 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 (December 2009), including containment cell cover, storm water diversion structures, security fences, gates, signs, and benchmarks:
    - Approximately 10 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, January 8, 2010.
- Quarterly monitoring of the Vadose Zone Monitoring System (VZMS) was conducted in December 2009. 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 November 24, 2009.

2.4.1 CAMU Waste Management Activities

- Waste stored on site at the beginning of this period:
  - 60 gallons of leachate.
  - 2 lbs PPE.
- Waste generated on-site during the period:
  - 163 gallons of leachate.
  - 0 gallons of rinsate.
  - 5 lbs PPE, paper wipes, plastic drum pump.
- Waste removed from site by the Hazardous Waste Management Facility:
  - 100 gallons of leachate on December 12, 2009.
  - 0 gallons of rinsate.
  - 5 lbs PPE, paper wipes, plastic drum pump on December 12, 2009.
- Waste remaining on site at the end of this period:
  - 123 gallons of leachate.
  - 2 1bs PPE.

2.4.1.1 CAMU Regulatory Activities

- There were no regulatory activities during this quarter.

2.5 Solid Waste Management Unit: Long Term Environmental Stewardship (LTES) Site 1, Cable Debris Site

- Activities during this reporting period include preparation of responses to "Notice of Disapproval: Investigation Report and Proposal for LTES Site 1 –Cable Debris Site" dated September 21, 2009. The Responses will be submitted to NMED in February 2010.

2.5.1 LTES Documents Submitted to NMED Pending Regulatory Review and Approval

- Investigation Report and Proposal for Corrective Action Complete for LTES Site 1/Cable Debris Site, delivered to NMED in March 2009.

Sandia National Laboratories

Environmental Restoration Project Consolidated Quarterly Report

Section II

Chemical Waste Landfill Quarterly Closure Progress Report

March 2010

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

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 reporting period of November 2009 through January 2010. No sampling event occurred at the CWL during this reporting period. Because the analytical results associated with the October 2009 semi-annual groundwater sampling event were not received in time to be included in the December 2009 Environmental Restoration (ER) Consolidated Quarterly Report, they are presented in this quarterly progress report.

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 (Wagner 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 have been completed at the CWL, with the exception of installation of new groundwater monitoring wells CWL-BW5 and CWL-MW9 through MW11 and decommissioning of groundwater monitoring wells CWL-BW4A, CWL-MW4, MW5U/L, and MW6U/L. Long-term monitoring under the NMED-approved CWL Post-Closure Care Permit (NMED October 2009) will commence after NMED approval of final closure.

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.

The post-closure care permit negotiations that included a CWL Closure Plan amendment addressing the replacement of four groundwater monitoring wells, the CWL Post-Closure Care Permit, and the CWL Final Remedy were completed on October 15, 2009 and documented in the settlement agreement and Final Order In the Matter of Application for a Post-Closure Care Hazardous Waste Permit for the Chemical Waste Landfill, Sandia National Laboratories No. NM5890110518 (Final Order) (NMED October 2009). NMED issued a "Notice of Approval Final Remedy and Closure Plan Amendment Chemical Waste Landfill" on October 16, 2009.

For this reporting period Sandia proceeded with the planning and contracting activities associated with the installation of the four new groundwater monitoring wells (CWL-BW5 and CWL-MW9 through MW11) and decommissioning of groundwater monitoring wells CWL-BW4A, CWL-MW4, MW5U/L, and MW6U/L according to the approved Closure Plan Amendment.

3.0 Water Monitoring Assessment

CWL semi-annual groundwater monitoring activities were performed in October 2009. Analytical results associated with this groundwater sampling event are presented in Appendix A of this Section of the Environmental Restoration (ER) Consolidated Quarterly 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

Activities associated with the replacement of four groundwater monitoring wells at the CWL according to the approved Closure Plan Amendment will continue during the next quarter. Activities will include coordinating with NMED to verify the locations for the new wells in the field, completion of contracting for drilling services, and completion of related field plans. The anticipated start of drilling field work is late March or early April 2010. After installation of the four groundwater monitoring wells, Sandia and DOE will prepare and submit the CWL Final RCRA Closure Report.

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 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.

Wagner, P. (U.S. Department of Energy), April 2004. Letter to J. Kieling (New Mexico Environment Department) requesting approval of “an interim measure (cover) at the Chemical Waste Landfill.” April 19, 2004.

Appendix A

CHEMICAL WASTE LANDFILL
SEMI-ANNUAL GROUNDWATER MONITORING
ASSESSMENT REPORT

November 2009 – January 2010

Sandia National Laboratories/New Mexico
Environmental Programs and Assurance
Department 4133
Albuquerque, New Mexico 87185

March 2010

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF PLOTS

ABBREVIATIONS AND ACRONYMS

BW	background well
CFR	Code of Federal Regulations
CWL	Chemical Waste Landfill
DOE	Department of Energy
EB	equipment blank
EPA	U.S. Environmental Protection Agency
FB	field blank
FOP	Field Operating Procedure
FY10	Fiscal Year 2010
MCL	maximum contaminant level
MDL	method detection limit
µg/L	microgram per liter
mg/L	milligram per liter
MW	monitoring well
NMED	New Mexico Environment Department
OB	Oversight Bureau
PCB	polychlorinated biphenyls
pH	potential of hydrogen
PQL	practical quantitation limit
QC	quality control
RPD	relative percent difference
Sandia	Sandia Corporation
SC	specific conductance
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semi-volatile organic compound
TB	trip blank
TCE	trichloroethene
VCM	Voluntary Corrective Measure
VE	Vapor Extraction
VOC	volatile organic compound

1.0 Introduction

This report was prepared pursuant to Sections 1.2.1.6 and 1.3 of the *Chemical Waste Landfill [CWL] Final Closure Plan and Postclosure Permit Application* (CWL Closure Plan) (SNL/NM December 1992). In compliance with a recent request by the New Mexico Environment Department (NMED) dated January 2009, this and all future quarterly reports will graphically present groundwater data for CWL contaminants of concern (COC) detected above minimum detection limits along with corresponding measured groundwater elevations (Bearzi January 2009). These graphs will be in addition to the tabular form of results. The activities associated with the groundwater monitoring task are summarized as follows.

Sandia Corporation (Sandia) performed Fiscal Year 2010 (FY10) semi-annual groundwater sampling at the CWL, Sandia National Laboratories/New Mexico (SNL/NM) (Figure A-1) from October 12 to 23, 2009. CWL groundwater sampling is required by the interim status standards of the Resource Conservation and Recovery Act contained in Title 40 of the Code of Federal Regulations (CFR), Part 265, Subpart F, and the State of New Mexico Hazardous Waste Management Regulations. This groundwater sampling event was conducted in conformance with procedures outlined in the *Sampling and Analysis Plan for Groundwater Assessment Monitoring at the Chemical Waste Landfill*, Appendix G, Revision 4 of the CWL Closure Plan (Appendix G of the CWL Closure Plan) (SNL/NM December 1992).

In March 1998, the NMED approved eliminating chlorinated dioxins, furans, and pesticides from the Appendix IX list of constituents for CWL groundwater monitoring (Dinwiddie March 1998). In May 2000, the NMED approved the following changes to Appendix G of the CWL Closure Plan (Bearzi May 2000):

- Biannual frequency (every other year) for agreed upon Appendix IX constituents including volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), chlorinated herbicides, polychlorinated biphenyls (PCB), total cyanide, sulfides, dissolved chromium, and total metals plus iron.
- Semi-annual frequency (twice a year) for Appendix IX VOC and Appendix IX metals.

This report describes groundwater sampling activities and presents analytical results from the first FY10 semi-annual groundwater assessment monitoring period. In October 2009, groundwater samples were collected from monitoring wells (MW) (CWL-MW2BL, CWL-MW4,

CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U) (Figure A-2). These samples were analyzed for the required 40 CFR 264 (Appendix IX) constituents: VOCs, SVOCs, chlorinated herbicides, PCBs, total cyanide, sulfides, dissolved chromium, and total metals plus iron. The NMED Department of Energy (DOE) Oversight Bureau (OB) participated in the October 2009 sampling event and received split samples from four CWL monitoring wells (CWL-MW2BL, CWL-MW4, CWL-MW5L, and CWL-MW6L). The split samples were sent to a different laboratory for analysis of various Appendix IX constituents as determined by the NMED DOE OB. Additional samples for total uranium and PCB congeners were requested by the NMED DOE OB at the four CWL wells. To ensure a consistent level of quality assurance for these analyses, SNL/NM also collected samples for total uranium and PCB congeners at these four CWL monitoring wells. These additional analyses are not required by Appendix G of the CWL Closure Plan (SNL/NM December 1992). The NMED DOE OB split sampling results are presented in a separate report and are not included in this report.

During October 2009, groundwater samples were not collected from background monitoring (BW) wells CWL-BW3 and CWL-BW4A, and monitoring wells CWL-MW1A, CWL-MW2BU, and CWL-MW3A. CWL-BW3, CWL-BW4A, and CWL-MW2BU could not be sampled due to insufficient volume of groundwater within the well screen interval. These three wells were purged to dryness prior to obtaining water quality measurements and appropriate representative sample volume. CWL-MW1A and CWL-MW3A were not sampled because these wells are dry and were partially filled with sediment during the Vapor Extraction (VE) Voluntary Corrective Measure (VCM) while being used as VE wells, and cannot be restored for the purpose of compliance groundwater monitoring.

Three of the monitoring wells (CWL-MW2B, CWL-MW5, and CWL-MW6) are multi-completion wells with two separate polyvinyl chloride casing and screen intervals. One is screened across the water table, and the other is screened at an interval approximately 30 feet below the water table. The wells screened across the water table are designated as CWL-MW2BU, CWL-MW5U, and CWL-MW6U to indicate the upper (“U”) screened well completions. The wells screened below the first water-bearing zone are designated CWL-MW2BL, CWL-MW5L, and CWL-MW6L to indicate the lower (“L”) screened well completions. Further discussion of the completion of these wells is presented in the CWL Groundwater Assessment Report (SNL/NM October 1995). The following sections provide descriptions of the field methods used and a discussion of the analytical and quality control (QC) results.

2.0 Field Methods and Measurements

The semi-annual groundwater sampling field measurements were collected in conformance with Appendix G of the CWL Closure Plan (SNL/NM December 1992). Groundwater monitoring was performed according to Appendix G of the Closure Plan and updated SNL/NM Environmental Restoration Project field operating procedures (FOP) (SNL/NM November 1995, September 1996, and February 1997).

2.1 Groundwater Elevation Determinations

Groundwater elevations at the CWL wells were determined using a Solinst® water level indicator prior to purging activities. Measurements were taken in accordance with FOP 95-02, *A Technical Procedure for the Measurement of Static Water Levels* (SNL/NM November 1995) until three replicate measurements agreed to within 0.05 foot of each other. The portion of the well sounder in contact with the groundwater was decontaminated between measurements at different wells (SNL/NM February 1997). During October 2009, SNL/NM verified that monitoring wells CWL-MW1A and CWL-MW3A are dry. Table A-1 summarizes the depth-to-water measurements for all CWL wells, and Attachment A provides complete field measurement information. Plots A-1 to A-9, graphically display water level measurements obtained from CWL monitoring wells between October 2004 and October 2009.

2.2 Well Evacuation

A Bennett Company groundwater sampling system was used to collect groundwater samples from all wells, except small-diameter wells (less than 2 inches). Because CWL-MW5L and CWL-MW6L are small-diameter wells (less than 2 inches), dedicated sampling systems manufactured by QED Environmental Systems, Inc. are used to collect samples. Prior to sample collection, each monitoring well was purged to remove stagnant well casing water. More than one day was required to complete purging and sampling at CWL-MW5U and CWL-MW6U, due to the slow recharge rate of the monitoring wells. Monitoring wells purged to dryness were allowed to recover before sampling to ensure the most representative groundwater sample possible given the low yield of these wells. CWL-MW2BL and CWL-MW4 were purged a minimum of three well-bore volumes prior to sampling. CWL-MW5L and CWL-MW6L were purged a minimum of two tubing water volumes prior to sampling.

Collection of field analytical measurements and groundwater samples was performed in accordance with procedures described in FOP 94-48, *Sampling Groundwater Monitoring Wells* (SNL/NM September 1996), consistent with the requirements of Appendix G of the CWL Closure Plan (SNL/NM December 1992). Groundwater temperature, specific conductance (SC), and potential of hydrogen (pH) were measured using a YSI™ Model 620 Water Quality Meter. Turbidity was measured with a Hach™ Model 2100P portable turbidity meter. Groundwater stability is considered acceptable when measurements are within 5 nephelometric turbidity units, 0.2 pH units, and 0.2 degrees Celsius, and SC is within 1 percent or 10 micromhos per centimeter (whichever is greater). Monitoring wells CWL-MW2BL, CWL-MW4, CWL-MW5L, and CWL-MW6L were purged until three stable measurements of turbidity, temperature, SC, and pH were obtained. All purged water was placed into 55-gallon containers and stored at the Building 9925 waste accumulation area pending the results of the analyses. Table A-2 summarizes average pumping rates, pumping duration, and well discharge volumes for each well sampled. Table A-3 summarizes temperature, pH, SC, and turbidity measurements. Field Measurement Logs in Attachment A document well purging and water quality measurements.

2.3 Groundwater Sample Collection

All groundwater samples were collected directly from the sample discharge tube into laboratory-prepared sample containers. Chemical preservatives for samples intended for chemical analyses were added to the sample containers at the laboratory prior to shipment to SNL/NM.

Table A-4 presents the sample number assigned to each sample. Table A-5 summarizes the analyses performed, analytical methods, sample containers, preservatives, and holding time requirements. Section 3.0 of this report summarizes the analytical results. Analysis Request/Chain-of-Custody documentation for all samples submitted for analyses are presented in Attachment B and filed in the SNL/NM Customer Funded Records Center.

2.4 Pump Decontamination

A Bennett Company groundwater sampling system was used to collect groundwater samples from all wells, except for CWL-MW5L and CWL-MW6L. The sampling pump and tubing bundle were decontaminated prior to installation in monitoring wells according to procedures described in FOP 94-26, *General Equipment Decontamination* (SNL/NM February 1997). Two equipment blank (EB) or rinsate samples were collected to verify the effectiveness of the

equipment decontamination process. These samples were collected and analyzed prior to sampling CWL-MW2BL and CWL-MW5U, and results are discussed in section 4.1.1 of this report.

3.0 Analytical Results

Groundwater samples collected for analysis of VOCs, SVOCs, chlorinated herbicides, PCBs, total cyanide, sulfides, dissolved chromium, and metals were submitted to General Engineering Laboratories, Inc. in Charleston, South Carolina. Samples for PCB Congeners were submitted to Cape Fear Analytical located in Wilmington, North Carolina. Tables A-6 to A-11 summarize the chemical parameters, laboratory method detection limits (MDL), and U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCL) for drinking water supplies. Tables A-12 to A-14 summarize all analytes detected in samples collected from CWL groundwater monitoring wells during the first FY10 semi-annual sampling event. All chemical analytical results are compared to EPA MCLs for drinking water supplies. Analytical reports, including the results of the analyses, analytical methods, quantitation limits, dates of analysis, and results of QC analyses, are filed in the SNL/NM Customer Funded Records Center.

No VOCs, SVOCs, chlorinated herbicides, PCBs, or PCB congeners were detected at concentrations exceeding the associated MCL. No VOCs were detected in any sample except for acetone, chloroform, toluene, and trichloroethene (TCE). Acetone and chloroform were detected below the laboratory practical quantitation limits (PQL) in CWL-MW5L at concentrations of 3.68 micrograms per liter (μg/L) and 0.449 μg/L, respectively. Toluene was detected below the MCL of 1,000 μg/L in the samples from CWL-MW5U (sample and duplicate sample) at concentrations 1.06 μg/L and 1.12 μg/L. TCE was detected below the MCL of 5.0 μg/L in the groundwater samples from CWL-MW5L, CWL-MW5U, CWL-MW5U duplicate sample, CWL-MW6L, and CWL-MW6U at concentrations of 0.945 μg/L, 0.910 μg/L, 0.930 μg/L, 0.270 μg/L, and 0.305 μg/L, respectively. TCE in all samples were detected below the laboratory PQL. No SVOCs were detected above associated laboratory MDLs, except bis(2-Ethylhexyl) phthalate. This compound was detected below the MCL of 6.0 μg/L in CWL-MW6L at 2.46 μg/L, and in CWL-MW6U at 2.05 μg/L. Chlorinated herbicides or PCB were not detected above associated laboratory MDLs in any groundwater sample. Additional samples were collected for PCB congeners at CWL-MW2BL, CWL-MW4, CWL-MW5L, and CWL-MW6L to duplicate the analyses performed by the NMED DOE OB. No PCB congeners were detected above laboratory PQLs from groundwater samples collected at these four CWL

monitoring wells. Table A-12 summarizes the detected VOCs, SVOCs, chlorinated herbicides, PCBs, and PCB congeners. Plots A-10 to A-13 display TCE results.

No total metal parameters were detected above established regulatory limits in any groundwater sample. Chromium was detected below the MCL of 0.10 milligrams per liter (mg/L) in CWL-MW4 at a concentration of 0.0131 mg/L. Nickel was detected above the laboratory MDL in all environmental groundwater samples. Detected nickel concentrations ranged from 0.00147 mg/L at CWL-MW6L to 0.456 mg/L at CWL-MW4. There in not an established MCL for nickel. In general, chromium and nickel results from CWL-MW4 groundwater sample correlate to increased field turbidity measurements. CWL-MW4 is also constructed with a stainless steel well screen. Additional samples were collected for total uranium at CWL-MW2BL, CWL-MW4, CWL-MW5L, and CWL-MW6L to duplicate the analyses performed by the NMED DOE OB. Uranium was reported below the MCL of 0.03 mg/L, at concentrations ranging from 0.0131 mg/L at CWL-MW4 to 0.0163 mg/L at CWL-MW2BL. Table A-13 summarizes the total metal concentrations for all groundwater samples collected during the first FY10 semi-annual sampling event at the CWL. Plots A-14 to A-20 display detected chromium and nickel results.

Table A-14 presents dissolved chromium, total cyanide, and sulfide results from all groundwater samples collected during the first FY10 semi-annual sampling event. No parameters were detected above EPA MCLs from any CWL groundwater sample.

4.0 Quality Control

Field and laboratory QC samples were prepared to determine the accuracy of the methods used and to detect inadvertent sample contamination that may have occurred during the sampling and analysis process. The following sections discuss each sample type.

4.1 Field QC Samples

Field QC samples included EB, environmental duplicate, field blank (FB), and trip blank (TB) samples. The field QC samples were submitted for analysis along with the groundwater samples in accordance with QC procedures specified in Appendix G of the CWL Closure Plan (SNL/NM December 1992).

4.1.1 EB Samples

Two EB or rinsate samples were collected to verify the effectiveness of the equipment decontamination process. These samples were collected and analyzed prior to sampling CWL-MW2BL and CWL-MW5U. Table A-15 summarizes detected parameters from both EB samples. The EB samples were analyzed for all parameters. Detected analytes included 2-butanone, bromodichloromethane, chloroform, dibromochloromethane, bis (2-Ethylhexyl) phthalate, and copper. If any parameters were detected in associated environmental samples at concentrations less than five times the EB result, then the environmental sample was qualified as not detected during data validation. Chloroform was qualified as not detected in CWL-MW2BL groundwater samples. Copper was qualified as not detected in CWL-MW2BL and CWL-MW5U samples.

4.1.2 Duplicate Environmental Samples

Two duplicate environmental samples were collected and analyzed for all parameters in order to determine the overall reproducibility of the sampling and analysis process. The duplicate sample was collected at CWL-MW2BL and CWL-MW5U immediately after the original environmental samples in order to reduce variability caused by time and/or sampling mechanics.

Relative percent difference (RPD) calculations between duplicate samples were performed for all analytes. Table A-16 summarizes the results of the duplicate sample analyses and calculated RPD values. The results show that sampling and analysis precision was in conformance with Appendix G of the CWL Closure Plan requirements for all measured parameters.

4.1.3 Field Blank Samples

Two FB samples were collected for VOCs to assess whether contamination of the samples resulted from ambient field conditions. The FB samples were prepared by pouring deionized water into sample containers at the CWL-MW2BL and CWL-MW5U sample collection point to simulate the transfer of environmental samples from the sampling system to the sample container. No VOCs were detected above laboratory MDLs in either FB sample, except acetone, bromodichloromethane, chloroform, and dibromochloromethane. No corrective action was necessary for acetone, bromodichloromethane, and dibromochloromethane, since these compounds were not detected in the associated environmental samples. Chloroform was

qualified as not detected in CWL-MW2BL samples during data validation since this compound was detected at concentrations less than five times the blank concentration.

4.1.4 Trip Blanks

TB samples are submitted whenever samples are collected for VOC analysis to assess whether contamination of the samples has occurred during shipment and storage. TB samples consist of laboratory reagent grade water with hydrochloric acid preservative contained in 40-milliliter VOC vials prepared by the analytical laboratory, which accompany the empty sample containers supplied by the laboratory. TBs were brought to the field and accompanied each VOC sample shipment. A total of eight TBs were submitted with the samples discussed in this report. No VOCs were detected above laboratory MDLs in any TB sample.

4.2 Laboratory QC

Internal laboratory QC analyses performed included method blank, laboratory control sample, matrix spike, matrix spike duplicate, and surrogate spike analyses. All laboratory data were reviewed and qualified in accordance with AOP [Administrative Operating Procedure] 00-03, Revision 2, *Data Validation Procedure for Chemical and Radiochemical Data* (SNL/NM July 2007). 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 CWL groundwater sample. Data validation reports associated with the first FY10 semi-annual groundwater sampling event are provided in Attachment C.

4.3 Variances and Nonconformances

Variances and nonconformances from requirements in Appendix G of the CWL Closure Plan (SNL/NM December 1992) are identified as follows:

- CWL-MW1A and CWL-MW3A are no longer sampled, since 1998 these wells do not contain water. The wells partially filled with sediment during the VE VCM and have not recovered. SNL/NM personnel lowered a water level meter to verify that these wells are dry.

- No samples were collected from CWL-BW3, CWL-BW4A, or CWL-MW2BU. In October 2009, these wells did not produce enough water to collect a representative sample. NMED was notified by SNL/NM personnel.

- CWL-MW5U and CWL-MW6U were purged to dryness, allowed to recover, and then sampled to collect the most representative groundwater sample possible given the low yield of these wells.

- CWL-MW5L and CWL-MW6L were sampled using dedicated sampling systems manufactured by QED Environmental Systems, Inc.

- COCs detected above minimum detection limits, and water levels are presented in graphical form as requested by NMED (Bearzi January 2009).

- The NMED DOE OB was on-site and collected sample splits for VOCs, SVOCs, total metals, dissolved chromium, and total cyanide at monitoring wells CWL-MW2BL, CWL-MW4, CWL-MW5L, and CWL-MW6L. The NMED DOE OB also collected additional samples for total uranium and PCB congeners at these four locations. Results from NMED DOE OB samples are not included in this report.

5.0 Summary

In October 2009, samples were collected from CWL monitoring wells (CWL-MW2BL, CWL-MW4, CWL-MW5L, CWL-MW5U, CWL-MW6L, and CWL-MW6U) and were analyzed for 40 CFR 264 (Appendix IX) VOCs, SVOCs, chlorinated herbicides, PCBs, total metals plus iron, total cyanide, sulfides, and dissolved chromium analyses. Additional samples were collected for total uranium and PCB congeners at selected well locations to duplicate NMED DOE OB analyses. No analytes were detected at concentrations exceeding the associated EPA MCLs from any CWL groundwater samples.

6.0 References

Bearzi, J.P. (New Mexico Environment Department), January 2009, Letter to K.A. Davis (U.S. Department of Energy) and F.B. Nimick (Sandia Corporation), *Environmental Restoration Project Consolidated Quarterly Report, August – September – October, December 2008*, Sandia National Laboratories, EPA ID# NM5890110518 HWB-SNL-09-003. January 30, 2009.

Bearzi, J.P. (New Mexico Environment Department), May 2000, Letter to M.J. Zamorski (U.S. Department of Energy) and R.J. Eagan (Sandia Corporation), *Class 1 Permit Modification Approval and Notice of Administrative Completeness: Request for Chemical Waste Landfill Ground-Water Monitoring Schedule Change*, Sandia National Laboratories, NM58901210518, Task HWB-SNL-02-008. May 5, 2000.

Dinwiddie, R.S. (New Mexico Environment Department), March 1998, Letter to M. Zamorski (U.S. Department of Energy), *Request for Supplemental Information: Appendix G, Sampling and Analysis Plan for Ground Water Assessment at the Chemical Waste Landfill, Revision 5.0, April 1997*. March 31, 1998.

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

Sandia National Laboratories/New Mexico (SNL/NM), October 1995, *Chemical Waste Landfill Groundwater Assessment Report,* Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 1995, *A Technical Procedure for the Measurement of Static Water Levels,* FOP 95-02, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 1996, *Sampling Groundwater Monitoring Wells,* FOP 94-48, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), February 1997, *General Equipment Decontamination,* FOP 94-26, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), July 2007, *Data Validation Procedure for Chemical and Radiochemical Data,* AOP 00-03, Revision 2, Sandia National Laboratories, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico.

FIGURES

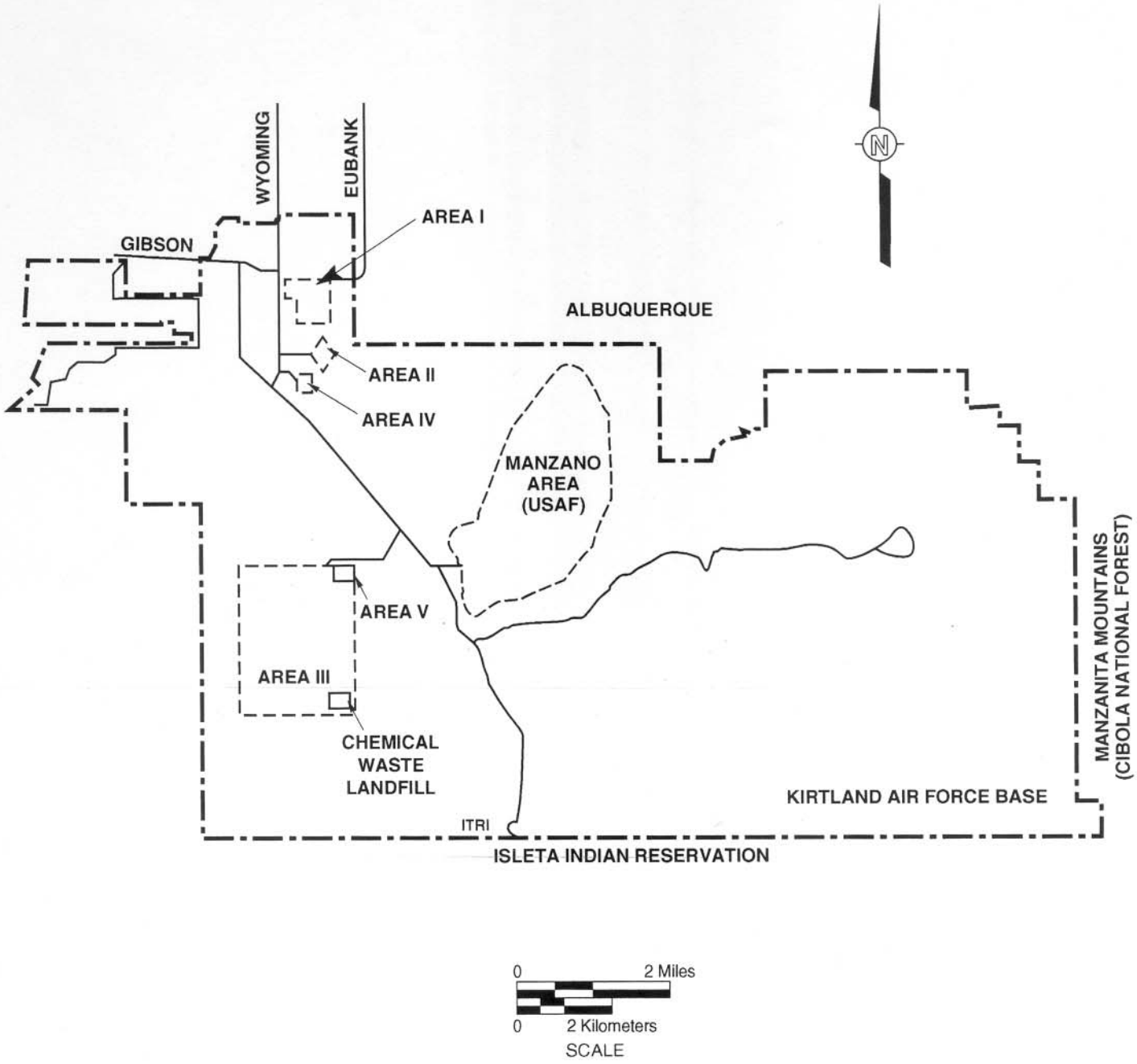


Figure A -1
Location of the Chemical Waste Landfill
Sandia National Laboratories/New Mexico

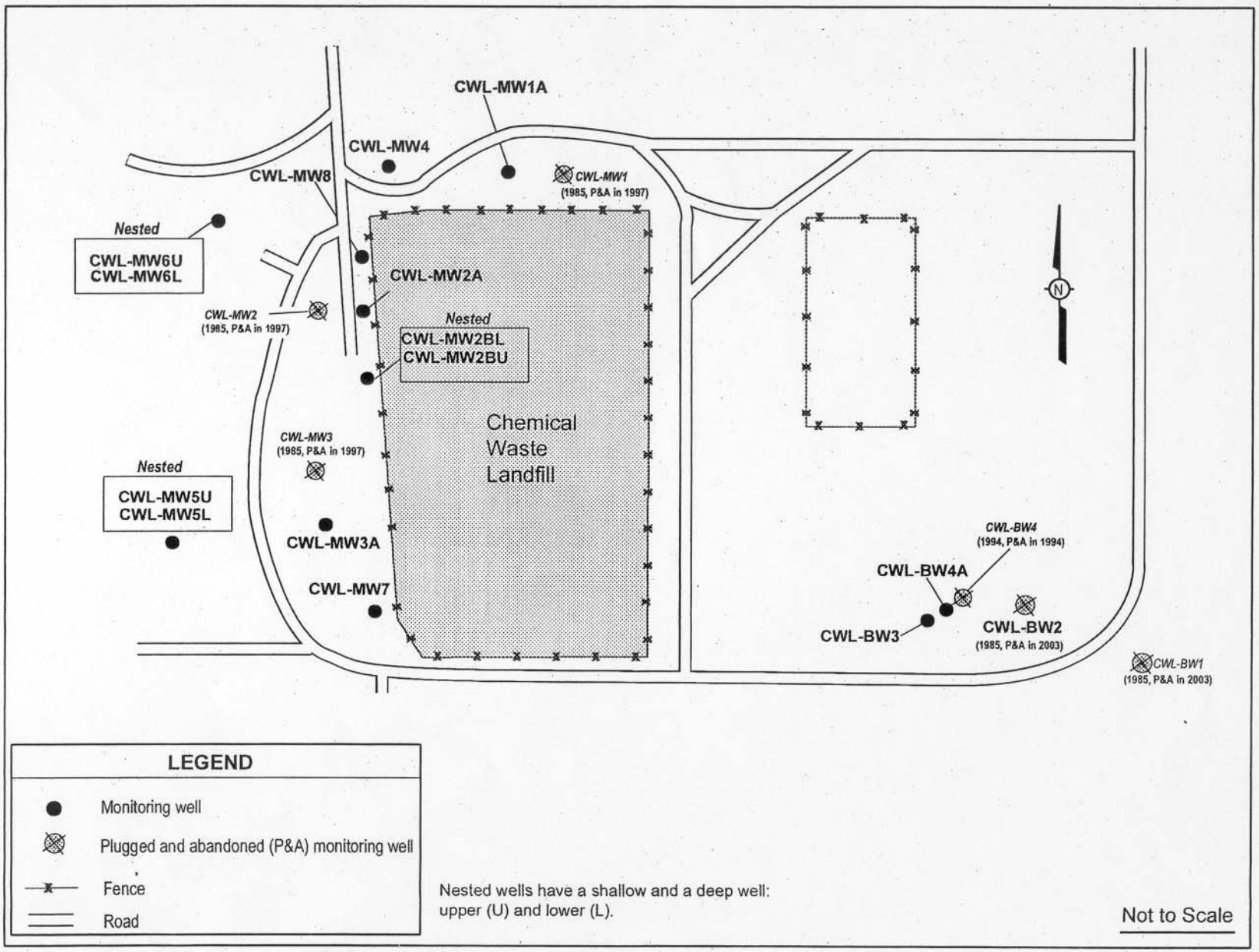


Figure A-2

Monitoring Well Locations at the Chemical Waste Landfill, Sandia National Laboratories/ New Mexico

TABLES

Table A-1

Monitoring Well Groundwater Elevations
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Well Number	Measuring Point Elevation (famsl)	Depth to Water[a] (fbmp)	Groundwater Elevation (famsl)	Total Well Depth[b] (fbgs)	Bottom of Well Elevation (famsl)	Static Water Height[c] (feet)
CWL-BW3	5430.23	504.10	4926.13	507.48	4921.05	5.08
CWL-BW4A	5431.36	504.68	4926.68	510.00	4919.24	7.44
CWL-MW1A	5421.49	NA	NA	495.00	4925.41	Dry
CWL-MW2BL	5419.39	498.60	4920.79	557.50	4859.87	60.92
CWL-MW2BU	5419.42	494.08	4925.34	501.00	4916.37	8.97
CWL-MW3A	5417.78	NA	NA	492.00	4924.39	Dry
CWL-MW4	5420.33	497.03	4923.30	503.00	4915.38	7.92
CWL-MW5L	5415.80	495.35	4920.45	558.00	4856.02	64.43
CWL-MW5U	5416.01	490.24	4925.77	502.00	4912.02	13.75
CWL-MW6L	5417.13	497.15	4919.98	564.00	4850.65	69.33
CWL-MW6U	5416.78	490.45	4926.33	502.00	4912.65	13.68

[a]Measurements collected prior to purging and transcribed from Field Measurement Log for Groundwater Sample.
[b]Derived from well completion logs.
[c]Calculated as difference between depth to water and bottom of well including length of five foot well sump.

BW = Background well.
CWL = Chemical waste landfill.
famsl = Feet above mean sea level. Measured from top of casing.
fbgs = Feet below ground surface.
fbmp = Feet below measuring point.
L = Lower well completion zone.
NA = Not applicable, CWL-MW1A and CWL-MW3A are dry wells.
MW = Monitoring well.
U = Upper well completion zone.

Table A-2

Volumes Purged from Monitoring Wells
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Well Number	Volume Purged[a] (gal)	Time Pumped (minutes)	Average Pump Rate (gal/minute)	Well Pumped to Dryness
CWL-MW2BL	225	245	0.92	No
CWL-MW4	20	100	0.20	No
CWL-MW5L	2.64	51	0.05	No
CWL-MW5U	5.75	21	0.27	Yes
CWL-MW6L	2.64	87	0.03	No
CWL-MW6U	8.75	32	0.27	Yes

[a]Volume of groundwater purged before sampling.
CWL = Chemical waste landfill.
gal = Gallon(s).
L = Lower well completion zone.
MW = Monitoring well.
NA = Not applicable.
U = Upper well completion zone.

Table A-3

Summary of Field Measurements
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Well Number	Measurement Period[a]	pH	Temperature °C	SC (µmhos/cm)	Turbidity (NTU)
CWL-MW2BL	Purge measurements:	6.83 6.83 6.83	20.79 20.78 20.80	1,098 1,098 1,097	0.30 0.35 0.32
CWL-MW4	Purge measurements:	7.02 7.02 7.02	15.17 15.37 15.56	948 947 947	4.67 4.90 4.71
CWL-MW5L	Purge measurements:	6.89 6.89 6.89	18.16 18.19 18.26	1,083 1,083 1,083	0.25 0.28 0.26
CWL-MW5U	Purge measurements:	7.22 7.23 7.50	19.28 19.48 18.00	819 818 924	0.40 0.43 0.71
CWL-MW6L	Purge measurements:	6.96 6.96 6.95	19.32 19.56 19.77	1,027 1,028 1,027	0.67 0.50 0.48
CWL-MW6U	Purge measurements:	7.07 7.06 7.06	18.60 18.49 19.03	920 918 919	0.31 0.26 0.34

[a]Last three water quality measurements prior to sampling. For complete record reference Attachment A.

CWL = Chemical Waste Landfill.
L = Lower well completion zone.
MW = Monitoring well.
NTU = Turbidity measured in nephelometric turbidity units.
pH = Potential of hydrogen (negative logarithm of the hydrogen ion concentration).
SC = Specific conductance, in micromhos per centimeter.
U = Upper well completion zone.
µmhos/cm = micro-mohs per centimeter
°C = Degrees Celsius.

Table A-4
Sample Number Identification
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Sample Identification	ARCOC[a]	Sample Number	Date Sampled	Laboratory	Sample Type
CWL-MW2BL	612446	087825	10-14-09	GEL	Environmental Sample
CWL-MW2BL	612446	087826	10-14-09	GEL	Duplicate Sample
CWL-MW4	612451	087839	10-21-09	GEL	Environmental Sample
CWL-MW5L	612447	087829	10-15-09	GEL	Environmental Sample
CWL-MW5U	612449	087833	10-19-09	GEL	Environmental Sample
CWL-MW5U	612449	087834	10-19-09	GEL	Duplicate Sample
CWL-MW6L	612450	087837	10-20-09	GEL	Environmental Sample
CWL-MW6U	612444	087821	10-13-09	GEL	Environmental Sample
CWL-EB1(prior to CWL-MW2BL)	612445	087823	10-13-09	GEL	Equipment Blank
CWL-EB2(prior to CWL-MW5U)	612448	087831	10-15-09	GEL	Equipment Blank
CWL-FB1	612446	087827	10-14-09	GEL	Field Blank
CWL-FB2	612449	087835	10-19-09	GEL	Field Blank
CWL-TB1	612444	087822	10-13-09	GEL	Trip Blank
CWL-TB2	612445	087824	10-13-09	GEL	Trip Blank
CWL-TB3	612446	087828	10-14-09	GEL	Trip Blank
CWL-TB4	612447	087830	10-15-09	GEL	Trip Blank
CWL-TB5	612448	087832	10-15-09	GEL	Trip Blank
CWL-TB6	612449	087836	10-19-09	GEL	Trip Blank
CWL-TB7	612450	087838	10-20-09	GEL	Trip Blank
CWL-TB8	612451	087840	10-21-09	GEL	Trip Blank

ARCOC[a] = Analysis Request and Chain of Custody Record.
CWL = Chemical Waste Landfill.
EB = Equipment blank sample.
L = Lower well completion zone.
TB = Trip blank.
BW = Background well.
GEL = General Engineering Laboratories.
FB = Field blank sample.
MW = Monitoring well.
U = Upper well completion zone.

Table A-5

Analysis, Methods, Sample Containers, Preservatives, and Holding Times
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Analysis	Method[a]	Container Type/ Volume/Preservative	Holding Time
Appendix IX Volatile Organic Compounds	8260B	Glass; 3 x 40 mL; HCl, 4°C	14 days
Appendix IX Semi-Volatile Organic Compounds	8270C	Amber Glass; 3 x 1L; 4°C	7 days
Appendix IX Chlorinated Herbicides	8151A	Amber Glass; 3 x 1L; 4°C	7 days
Appendix IX Polychlorinated Biphenyls	8082	Amber Glass; 3 x 1L; 4°C	7 days
Total Cyanide	9012A	Polyethylene; 500 mL; NaOH, 4°C	28 days
Sulfides	9034	Nalgene; 1L; NaOH, 4°C	28 days
Appendix IX Total metals	6020/7470A	Polyethylene; 500 mL; HNO_3, 4°C	28 days/180 days[b]
Dissolved Chromium	6020	Nalgene; 250 mL; HNO_3, 4°C	180 days
Polychlorinated Biphenyls Congeners	1668A	Amber Glass; 4 x 1L; 4°C	1 year

[a]U.S. Environmental Protection Agency, November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.
U.S. Environmental Protection Agency, August 2003. "Method 1668, Revision A, Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS," EPA-821-R-07-004, (and updates), Office of Science and Technology Engineering and Analysis Division, U.S. Environmental Protection Agency, Washington, D.C.
[b]Holding time for mercury is 28 days; all other metals are 180 days.
NaOH = Sodium Hydroxide.
HCl = Hydrochloric acid.
HNO_3 = Nitric acid.
L = Liter(s).
mL = Milliliter(s).
°C = Degrees Celsius.

Table A-6

Chemical Parameters, MDL/MCL for Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)	Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)
1,1,1,2-Tetrachloroethane	0.300	NE	Carbon tetrachloride	0.300	5.0
1,1,1-Trichloroethane	0.325	200	Chlorobenzene	0.250	100
1,1,2,2-Tetrachloroethane	0.250	NE	Chloroethane	0.300	NE
1,1,2-Trichloroethane	0.250	5.0	Chloroform	0.250	NE
1,1-Dichloroethane	0.300	NE	Chloromethane	0.300	NE
1,1-Dichloroethene	0.300	7.0	Chloroprene	0.300	NE
1,2,3-Trichloropropane	0.300	NE	Dibromochloromethane	0.300	NE
1,2,4-Trichlorobenzene	0.300	70	Dibromomethane	0.300	NE
1,2-Dibromo-3-chloropropane	0.300	0.2	Dichlorodifluoromethane	0.300	NE
1,2-Dibromoethane	0.250	0.05	Ethyl benzene	0.250	700
1,2-Dichloroethane	0.250	5.0	Ethyl cyanide	1.50	NE
1,2-Dichloropropane	0.250	5.0	Ethyl methacrylate	1.00	NE
2-Butanone	1.25	NE	Iodomethane	1.25	NE
2-Hexanone	1.25	NE	Isobutanol	12.5	NE
4-methyl-, 2-Pentanone	1.25	NE	Methacrylonitrile	1.00	NE
Acetone	3.50	NE	Methyl methacrylate	1.00	NE
Acetonitrile	6.25	NE	Methylene chloride	3.00	5.0
Acrolein	1.25	NE	Pentachloroethane	1.00	NE
Acrylonitrile	1.00	NE	Styrene	0.250	100
Allyl chloride	1.50	NE	Tetrachloroethene	0.300	5.0
Benzene	0.300	5.0	Toluene	0.250	1,000
Bromodichloromethane	0.250	NE	Trichloroethene	0.250	5.0
Bromoform	0.250	NE	Trichlorofluoromethane	0.300	NE
Bromomethane	0.300	NE	Vinyl acetate	1.50	NE
Carbon disulfide	1.25	NE	Vinyl chloride	0.500	2.0

Refer to footnotes at end of table.

Table A-6 *(Concluded)*

Chemical Parameters, MDL/MCL for Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)	Test Method 8260B[a] (Appendix IX List)[b]	MDL (μg/L)	MCL (μg/L)
Xylenes (Total)	0.300	10,000	trans-1,3-Dichloropropene	0.250	NE
Bis(2-Chloroisopropyl)ether	1.50	NE	trans-1,4-Dichloro-2-butene	1.00	NE
cis-1,3-Dichloropropene	0.250	NE	trans-1,2-Dichloroethene	0.300	100

[a]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.
[b]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.
EPA = Environmental Protection Agency.
MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).
MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.
μg/L = Microgram(s) per liter.
NE = Not established.

Table A-7
Chemical Parameter, MDL/MCL for Semi-Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Test Method 8270C[a] (Appendix IX List)[b]	MDL (µg/L)	MCL (µg/L)	Test Method 8270C[a] (Appendix IX List)[b]	MDL (µg/L)	MCL (µg/L)
alpha-alpha Dimethylphenethylamine	2.94 - 3.33	NE	2-Nitroaniline	1.96 - 2.22	NE
1,2,4,5-Tetrachlorobenzene	2.94 - 3.33	NE	2-Nitrophenol	1.96 - 2.22	NE
1,2,4-Trichlorobenzene	1.96 - 2.22	70	3,3'-Dichlorobenzidine	1.96 - 2.22	NE
1,2-Dichlorobenzene	1.96 - 2.22	600	3,3'-Dimethylbenzidine	3.24 - 3.67	NE
1,2-Diphenylhydrazine	1.96 - 2.22	NE	3-Methylcholanthrene	1.96 - 2.22	NE
1,3,5-Trinitrobenzene	2.94 - 3.33	NE	3-Nitroaniline	1.96 - 2.22	NE
1,3-Dichlorobenzene	1.96 - 2.22	NE	3-benzodioxole, 5-(2-Propenyl)-1	1.96 - 2.22	NE
1,3-Dinitrobenzene	1.96 - 2.22	NE	4-Aminobiphenyl	2.94 - 3.33	NE
1,4-Dichlorobenzene	1.96 - 2.22	75	4-Bromophenyl phenyl ether	1.96 - 2.22	NE
1,4-Dioxane	1.96 - 2.22	NE	4-Chloro-3-methylphenol	1.96 - 2.22	NE
1,4-Naphthoquinone	2.94 - 3.33	NE	4-Chlorobenzenamine	1.96 - 2.22	NE
1-Methylnaphthalene	0.294 - 0.333	NE	4-Chlorophenyl phenyl ether	1.96 - 2.22	NE
1-Naphthylamine	2.94 - 3.33	NE	4-Dimethylaminoazobenzene	2.94 - 3.33	NE
2,3,4,6-Tetrachlorophenol	1.96 - 2.22	NE	4-Nitroaniline	2.94 - 3.33	NE
2,4,5-Trichlorophenol	1.96 - 2.22	NE	4-Nitrophenol	1.96 - 2.22	NE
2,4,6-Trichlorophenol	1.96 - 2.22	NE	4-Nitroquinoline-1-oxide	2.94 - 3.33	NE
2,4-Dichlorophenol	1.96 - 2.22	NE	5-Nitro-o-toluidine	2.94 - 3.33	NE
2,4-Dimethylphenol	1.96 - 2.22	NE	7,12-Dimethylbenz(a)anthracene	2.94 - 3.33	NE
2,4-Dinitrophenol	4.9 - 5.56	NE	Acenaphthene	0.304 - 0.344	NE
2,4-Dinitrotoluene	1.96 - 2.22	NE	Acenaphthylene	0.196 - 0.222	NE
2,6-Dichlorophenol	1.96 - 2.22	NE	Acetophenone	1.96 - 2.22	NE
2,6-Dinitrotoluene	1.96 - 2.22	NE	Aniline	2.45 - 2.78	NE
2-Acetylaminofluorene	2.94 - 3.33	NE	Anthracene	0.196 - 0.222	NE
2-Chloronaphthalene	0.294 - 0.333	NE	Aramite	2.94 - 3.33	NE
2-Chlorophenol	1.96 - 2.22	NE	Benzidine	2.94 - 3.33	NE
2-Methylnaphthalene	0.294 - 0.333	NE	Benzo(a)anthracene	0.196 - 0.222	NE
2-Methylpyridine	2.94 - 3.33	NE	Benzo(a)pyrene	0.196 - 0.222	0.2
2-Naphthalenamine	2.94 - 3.33	NE	Benzo(b)fluoranthene	0.196 - 0.222	NE

Refer to footnotes at end of table.

Table A-7 *(Continued)*

Chemical Parameter, MDL/MCL for Semi-Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill, August 2009 - January 2010

Test Method 8270C[a] (Appendix IX List)[b]	MDL (µg/L)	MCL (µg/L)	Test Method 8270C[a] (Appendix IX List)[b]	MDL (µg/L)	MCL (µg/L)
Benzo(ghi)perylene	0.196 - 0.222	NE	Hexachloroethane	1.96 - 2.22	NE
Benzo(k)fluoranthene	0.196 - 0.222	NE	Hexachlorophene	181 - 206	NE
Benzoic acid	5.88 - 6.67	NE	Hexachloropropene	2.94 - 3.33	NE
Benzyl alcohol	1.96 - 2.22	NE	Indeno(1,2,3-c,d)pyrene	0.196 - 0.222	NE
Butylbenzyl phthalate	1.96 - 2.22	NE	Isodrin	2.94 - 3.33	NE
Carbazole	0.196 - 0.222	NE	Isophorone	2.94 - 3.33	NE
Chlorobenzilate	2.94 - 3.33	NE	Isosafrole	1.96 - 2.22	NE
Chrysene	0.196 - 0.222	NE	Kepone	2.94 - 3.33	NE
Di-n-butyl phthalate	1.96 - 2.22	NE	Methapyrilene	2.94 - 3.33	NE
Di-n-octyl phthalate	2.94 - 3.33	NE	Methoxychlor	1.96 - 2.22	40
Diallate	2.94 - 3.33	NE	Methyl methacrylate	1.96 - 2.22	NE
Dibenz[a,h]anthracene	0.196 - 0.222	NE	Methyl methanesulfonate	1.96 - 2.22	NE
Dibenzofuran	1.96 - 2.22	NE	Methyl parathion	1.96 - 2.22	NE
Diethylphthalate	1.96 - 2.22	NE	Naphthalene	0.294 - 0.333	NE
Dimethoate	1.96 - 2.22	NE	Nitro-benzene	2.94 - 3.33	NE
Dimethylphthalate	1.96 - 2.22	NE	O,O,O-Triethylphosphorothioate	1.96 - 2.22	NE
Dinitro-o-cresol	2.94 - 3.33	NE	Parathion	2.94 - 3.33	NE
Dinoseb	1.96 - 2.22	7.0	Pentachlorobenzene	2.94 - 3.33	NE
Diphenyl amine	2.94 - 3.33	NE	Pentachloroethane	2.94 - 3.33	NE
Disulfoton	1.96 - 2.22	NE	Pentachloronitrobenzene	1.96 - 2.22	NE
Ethyl methacrylate	1.96 - 2.22	NE	Pentachlorophenol	1.96 - 2.22	1.0
Ethyl methanesulfonate	1.96 - 2.22	NE	Phenacetin	1.96 - 2.22	NE
Famphur	2.94 - 3.33	NE	Phenanthrene	0.196 - 0.222	NE
Fluoranthene	0.196 - 0.222	NE	Phenol	0.98 - 1.11	NE
Fluorene	0.196 - 0.222	NE	Phorate	1.96 - 2.22	NE
Hexachlorobenzene	1.96 - 2.22	1.0	Pronamide	2.94 - 3.33	NE
Hexachlorobutadiene	1.96 - 2.22	NE	Pyrene	0.294 - 0.333	NE
Hexachlorocyclopentadiene	2.94 - 3.33	50	Pyridine	2.94 - 3.33	NE

Refer to footnotes at end of table.

Table A-7 *(Concluded)*

Chemical Parameter, MDL/MCL for Semi-Volatile Organic Compounds Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Test Method 8270C[a] (Appendix IX List)[b]	MDL (µg/L)	MCL (µg/L)	Test Method 8270C[a] (Appendix IX List)[b]	MDL (µg/L)	MCL (µg/L)
Sulfotepp	1.96 - 2.22	NE	n-Nitrosodimethylamine	1.96 - 2.22	NE
Thionazin	1.96 - 2.22	NE	n-Nitrosodipropylamine	1.96 - 2.22	NE
Tributylphosphate	2.94 - 3.33	NE	n-Nitrosomethylethylamine	1.96 - 2.22	NE
bis(2-Chloroethoxy)methane	2.94 - 3.33	NE	n-Nitrosomorpholine	1.96 - 2.22	NE
bis(2-Chloroethyl)ether	1.96 - 2.22	NE	n-Nitrosopiperidine	1.96 - 2.22	NE
bis(2-Ethylhexyl)phthalate	1.96 - 2.22	6.0	n-Nitrosopyrrolidine	1.96 - 2.22	NE
bis-Chloroisopropyl ether	1.96 - 2.22	NE	o-Cresol	1.96 - 2.22	NE
m,p-Cresol	2.94 - 3.33	NE	o-Toluidine	2.94 - 3.33	NE
n-Nitroso-di-n-butylamine	2.94 - 3.33	NE	para-Phenylenediamine	1.96 - 2.22	NE
n-Nitrosodiethylamine	1.96 - 2.22	NE			

[a]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.
[b]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.
EPA = Environmental Protection Agency.
MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).
MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.
µg/L = Microgram(s) per liter.
NE = Not established.

Table A-8

Chemical Parameters, MDL/MCL for Chlorinated Herbicides and Polychlorinated Biphenyls Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Appendix IX List[a]	Test Method[b]	MDL (µg/L)	MCL (µg/L)
2,4,5-T	8151A	0.0865 - 0.0943	NE
2,4,5-TP	8151A	0.0865 - 0.0943	50
2,4-D	8151A	0.0865 - 0.0943	70
Aroclor 1016	8082	0.0351 - 0.0370	0.5
Aroclor 1221	8082	0.0351 - 0.0370	0.5
Aroclor 1232	8082	0.0351 - 0.0370	0.5
Aroclor 1242	8082	0.0351 - 0.0370	0.5
Aroclor 1248	8082	0.0351 - 0.0370	0.5
Aroclor 1254	8082	0.0351 - 0.0370	0.5
Aroclor 1260	8082	0.0351 - 0.0370	0.5

[a]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

[b]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

EPA = Environmental Protection Agency.

MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).

MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.

µg/L = Microgram(s) per liter.

NE = Not established.

Table A-9

Chemical Parameters, MDL/MCL for Metal Parameters Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Appendix IX List[a]	Test Method[b]	MDL (mg/L)	MCL (mg/L)
Antimony	6020	0.0005	0.006
Arsenic	6020	0.0015	0.01
Barium	6020	0.0005	2.0
Beryllium	6020	0.0001	0.004
Cadmium	6020	0.00011	0.005
Chromium	6020	0.0025	0.1
Cobalt	6020	0.0001	NE
Copper	6020	0.0003	NE
Iron	6020	0.010	NE
Lead	6020	0.0005	NE
Mercury	7470A	0.000066	0.002
Nickel	6020	0.0005	NE
Selenium	6020	0.001	0.05
Silver	6020	0.0002	NE
Thallium	6020	0.0003	0.002
Tin	6020	0.001	NE
Uranium	6020	0.00005	0.03
Vanadium	6020	0.003	NE
Zinc	6020	0.0026	NE

[a]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List. Addition metal parameters includes iron and uranium.

[b]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

EPA = Environmental Protection Agency.

MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).

MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.

mg/L = Milligram(s) per liter.

NE = Not established.

Table A-10

Chemical Parameters, MDL/MCL for Total Cyanide and Sulfides Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Appendix IX List[a]	Test Method[b]	MDL (mg/L)	MCL (mg/L)
Total Cyanide	9012A	0.00166	0.2
Sulfides	9034	0.835	NE

[a]Title 40 Code of Federal Regulations (CFR), Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Appendix IX, Groundwater Monitoring List.

[b]U.S. Environmental Protection Agency November 1986. "Test Methods for Evaluating Solid, Physical/Chemical Methods," 3rd ed., (and updates), *SW-846*, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

EPA = Environmental Protection Agency.

MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).

MDL = The method detection level of an analyte that can be determined, but not quantified, with 99% confidence.

mg/L = Milligram(s) per liter.

NE = Not established.

Table A-11
Chemical Parameter, PQL/MCL for Polychlorinated Biphenyls Congeners Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)	EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)	EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)
PCB-1	21.8 - 22.8	500,000	PCB-130	21.8 - 22.8	500,000	PCB-156/157	43.6 - 45.6	500,000
PCB-10	21.8 - 22.8	500,000	PCB-131	21.8 - 22.8	500,000	PCB-158	21.8 - 22.8	500,000
PCB-102/98	43.6 - 45.6	500,000	PCB-132	21.8 - 22.8	500,000	PCB-159	21.8 - 22.8	500,000
PCB-103	21.8 - 22.8	500,000	PCB-133	21.8 - 22.8	500,000	PCB-16	21.8 - 22.8	500,000
PCB-104	21.8 - 22.8	500,000	PCB-134	21.8 - 22.8	500,000	PCB-160	21.8 - 22.8	500,000
PCB-105	21.8 - 22.8	500,000	PCB-136	21.8 - 22.8	500,000	PCB-161	21.8 - 22.8	500,000
PCB-106	21.8 - 22.8	500,000	PCB-137	21.8 - 22.8	500,000	PCB-162	21.8 - 22.8	500,000
PCB-107	21.8 - 22.8	500,000	PCB-138/163/129	65.5 - 68.4	500,000	PCB-164	21.8 - 22.8	500,000
PCB-108/124	43.6 - 45.6	500,000	PCB-139/140	43.6 - 45.6	500,000	PCB-165	21.8 - 22.8	500,000
PCB-11	134 - 140	500,000	PCB-14	21.8 - 22.8	500,000	PCB-167	21.8 - 22.8	500,000
PCB-110/115	43.6 - 45.6	500,000	PCB-141	21.8 - 22.8	500,000	PCB-169	21.8 - 22.8	500,000
PCB-111	21.8 - 22.8	500,000	PCB-142	21.8 - 22.8	500,000	PCB-17	21.8 - 22.8	500,000
PCB-112	21.8 - 22.8	500,000	PCB-143	21.8 - 22.8	500,000	PCB-170	21.8 - 22.8	500,000
PCB-113/90/101	65.5 - 68.4	500,000	PCB-144	21.8 - 22.8	500,000	PCB-172	21.8 - 22.8	500,000
PCB-114	21.8 - 22.8	500,000	PCB-145	21.8 - 22.8	500,000	PCB-173/171	43.6 - 45.6	500,000
PCB-117/116/85	65.5 - 68.4	500,000	PCB-146	21.8 - 22.8	500,000	PCB-174	21.8 - 22.8	500,000
PCB-118	21.8 - 22.8	500,000	PCB-147/149	43.6 - 45.6	500,000	PCB-175	21.8 - 22.8	500,000
PCB-120	21.8 - 22.8	500,000	PCB-148	21.8 - 22.8	500,000	PCB-176	21.8 - 22.8	500,000
PCB-121	21.8 - 22.8	500,000	PCB-15	21.8 - 22.8	500,000	PCB-177	21.8 - 22.8	500,000
PCB-122	21.8 - 22.8	500,000	PCB-150	21.8 - 22.8	500,000	PCB-178	21.8 - 22.8	500,000
PCB-123	21.8 - 22.8	500,000	PCB-151/135	43.6 - 45.6	500,000	PCB-179	21.8 - 22.8	500,000
PCB-126	21.8 - 22.8	500,000	PCB-152	21.8 - 22.8	500,000	PCB-18/30	43.6 - 45.6	500,000
PCB-127	21.8 - 22.8	500,000	PCB-153/168	43.6 - 45.6	500,000	PCB-181	21.8 - 22.8	500,000
PCB-128/166	43.6 - 45.6	500,000	PCB-154	21.8 - 22.8	500,000	PCB-182	21.8 - 22.8	500,000
PCB-13/12	43.6 - 45.6	500,000	PCB-155	21.8 - 22.8	500,000	PCB-183/185	43.6 - 45.6	500,000

Refer to footnotes at end of table.

Table A-11 *(Continued)*
Chemical Parameter, PQL/MCL for Polychlorinated Biphenyls Congeners Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)	EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)	EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)
PCB-184	21.8 - 22.8	500,000	PCB-209	21.8 - 22.8	500,000	PCB-48	21.8 - 22.8	500,000
PCB-186	21.8 - 22.8	500,000	PCB-21/33	43.6 - 45.6	500,000	PCB-5	21.8 - 22.8	500,000
PCB-187	21.8 - 22.8	500,000	PCB-22	21.8 - 22.8	500,000	PCB-50/53	43.6 - 45.6	500,000
PCB-188	21.8 - 22.8	500,000	PCB-23	21.8 - 22.8	500,000	PCB-52	21.8 - 22.8	500,000
PCB-189	21.8 - 22.8	500,000	PCB-24	21.8 - 22.8	500,000	PCB-54	21.8 - 22.8	500,000
PCB-19	21.8 - 22.8	500,000	PCB-25	21.8 - 22.8	500,000	PCB-55	21.8 - 22.8	500,000
PCB-190	21.8 - 22.8	500,000	PCB-26/29	43.6 - 45.6	500,000	PCB-56	21.8 - 22.8	500,000
PCB-191	21.8 - 22.8	500,000	PCB-27	21.8 - 22.8	500,000	PCB-57	21.8 - 22.8	500,000
PCB-192	21.8 - 22.8	500,000	PCB-3	21.8 - 22.8	500,000	PCB-58	21.8 - 22.8	500,000
PCB-193/180	43.6 - 45.6	500,000	PCB-31	21.8 - 22.8	500,000	PCB-59/62/75	65.5 - 68.4	500,000
PCB-194	21.8 - 22.8	500,000	PCB-32	21.8 - 22.8	500,000	PCB-6	21.8 - 22.8	500,000
PCB-195	21.8 - 22.8	500,000	PCB-34	21.8 - 22.8	500,000	PCB-60	21.8 - 22.8	500,000
PCB-196	21.8 - 22.8	500,000	PCB-35	21.8 - 22.8	500,000	PCB-61/76/70/74	87.3 - 91.2	500,000
PCB-197/200	43.6 - 45.6	500,000	PCB-36	21.8 - 22.8	500,000	PCB-63	21.8 - 22.8	500,000
PCB-198/199	43.6 - 45.6	500,000	PCB-37	21.8 - 22.8	500,000	PCB-64	21.8 - 22.8	500,000
PCB-2	21.8 - 22.8	500,000	PCB-38	21.8 - 22.8	500,000	PCB-66	21.8 - 22.8	500,000
PCB-20/28	43.6 - 45.6	500,000	PCB-39	21.8 - 22.8	500,000	PCB-67	21.8 - 22.8	500,000
PCB-201	21.8 - 22.8	500,000	PCB-4	21.8 - 22.8	500,000	PCB-68	21.8 - 22.8	500,000
PCB-202	21.8 - 22.8	500,000	PCB-40/71	43.6 - 45.6	500,000	PCB-69/49	43.6 - 45.6	500,000
PCB-203	21.8 - 22.8	500,000	PCB-41	21.8 - 22.8	500,000	PCB-7	21.8 - 22.8	500,000
PCB-204	21.8 - 22.8	500,000	PCB-42	21.8 - 22.8	500,000	PCB-72	21.8 - 22.8	500,000
PCB-205	21.8 - 22.8	500,000	PCB-43	21.8 - 22.8	500,000	PCB-73	21.8 - 22.8	500,000
PCB-206	21.8 - 22.8	500,000	PCB-44/65/47	65.5 - 68.4	500,000	PCB-77	21.8 - 22.8	500,000
PCB-207	21.8 - 22.8	500,000	PCB-45/51	43.6 - 45.6	500,000	PCB-78	21.8 - 22.8	500,000
PCB-208	21.8 - 22.8	500,000	PCB-46	21.8 - 22.8	500,000	PCB-79	21.8 - 22.8	500,000

Refer to footnotes at end of table.

Table A-11 *(Concluded)*
Chemical Parameter, PQL/MCL for Polychlorinated Biphenyls Congeners Analyzed
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)	EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)	EPA Test Method 1668A[a]	PQL (pg/L)	MCL (pg/L)
PCB-8	21.8 - 22.8	500,000	PCB-86/87/97/109/119/125	131 - 137	500,000	PCB-94	21.8 - 22.8	500,000
PCB-80	21.8 - 22.8	500,000	PCB-88/91	43.6 - 45.6	500,000	PCB-95	21.8 - 22.8	500,000
PCB-81	21.8 - 22.8	500,000	PCB-89	21.8 - 22.8	500,000	PCB-96	21.8 - 22.8	500,000
PCB-82	21.8 - 22.8	500,000	PCB-9	21.8 - 22.8	500,000	PCB-99	21.8 - 22.8	500,000
PCB-83	21.8 - 22.8	500,000	PCB-92	21.8 - 22.8	500,000			
PCB-84	21.8 - 22.8	500,000	PCB-93/100	43.6 - 45.6	500,000			

[a]U.S. Environmental Protection Agency, August 2003. "Method 1668, Revision A, Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS," EPA-821-R-07-004, (and updates), Office of Science and Technology Engineering and Analysis Division, U.S. Environmental Protection Agency, Washington, D.C.

EPA = Environmental Protection Agency.
MCL = Maximum contaminant levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments, or the New Mexico Environmental Improvement Board in the *New Mexico Register*, Title 20, Chapter 7, Part 1).
NE = Not established.
pg/L = Picrogram(s) per liter.
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.

Table A-12

Summary of Detected Volatile and Semi-Volatile Organic Compounds, Chlorinated Herbicides, and Polychlorinated Biphenyls
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

			ARCOC No.: 612446 Sample No.: 087825 Well No.: CWL-MW2BL Sample Type: Environmental Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-14-09	612446 087826 CWL-MW2BL Duplicate Bennett Pump GEL 10-14-09	612451 087839 CWL-MW4 Environmental Bennett Pump GEL 10-21-09	612447 087829 CWL-MW5L Environmental QED Pump GEL 10-15-09
Parameter	**Method**	**MCL**	**All results in μg/L**			
Acetone	8260B	NE	ND (3.50) UJ	ND (3.50) UJ	ND (3.50)	3.68 (10.0) J, J-
Chloroform	8260B	NE	ND (1.00)	ND (1.00)	ND (0.250)	0.449 (1.00) J
Chloromethane	8260B	NE	ND (0.300)	ND (0.300)	ND (0.300)	ND (0.300)
Toluene	8260B	1,000	ND (0.250)	ND (0.250)	ND (0.250)	ND (0.250)
Trichloroethene	8260B	5	ND (0.250)	ND (0.250)	ND (0.250)	0.945 (1.00) J
bis(2-Ethylhexyl)phthalate	8270C	6	ND (2.00)	ND (2.00)	ND (2.11)	ND (2.00)

Refer to footnotes at end of table.

Table A-12 *(Concluded)*

Summary of Detected Volatile and Semi-Volatile Organic Compounds, Chlorinated Herbicides, and Polychlorinated Biphenyls
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

			ARCOC No.: 612449 Sample No.: 087833 Well No.: CWL-MW5U Sample Type: Environmental Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-19-09	612449 087834 CWL-MW5U Duplicate Bennett Pump GEL 10-19-09	612450 087837 CWL-MW6L Environmental QED Pump GEL 10-20-09	612444 087821 CWL-MW6U Environmental Bennett Pump GEL 10-13-09
Parameter	**Method**	**MCL**	**All results in μg/L**			
Acetone	8260B	NE	ND (3.50)	ND (3.50)	ND (3.50)	ND (3.50) UJ
Chloroform	8260B	NE	ND (0.250)	ND (0.250)	ND (0.250)	ND (0.250)
Chloromethane	8260B	NE	0.400 (1.00) J, J-	ND (0.300)	ND (0.300)	ND (0.300)
Toluene	8260B	1,000	1.06	1.12	ND (0.250)	0.307 (1.00) J
Trichloroethene	8260B	5	0.910 (1.00) J	0.930 (1.00) J	0.270 (1.00) J	0.305 (1.00) J
bis(2-Ethylhexyl)phthalate	8270C	6	ND (2.22)	ND (2.11)	2.46 (10.5) J	2.05 (9.80) J

Results for CWL-MW4 are included for table completeness, as no compounds were detected above laboratory practical quantitiation limits.
If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.
ARCOC= Analysis Request and Chain of Custody.
GEL = General Engineering Laboratories.
J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.
J- = The associated numerical value is an estimated quantity with a suspected negative bias.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board in the New Mexico Register, Title 20, Chapter 7, Part 1).
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected or qualified as not detected during data validation. The associated numerical value is the sample quantitation limit.
U = Upper well completion zone.
UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
μg/L = Milligram(s) per liter.

Table A-13

Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

			ARCOC No.: 612446 Sample No.: 087825 Well No.: CWL-MW2BL Sample Type: Environmental Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-14-09	ARCOC No.: 612446 Sample No.: 087826 Well No.: CWL-MW2BL Sample Type: Duplicate Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-14-09	ARCOC No.: 612451 Sample No.: 087839 Well No.: CWL-MW4 Sample Type: Environmental Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-21-09	ARCOC No.: 612447 Sample No.: 087829 Well No.: CWL-MW5L Sample Type: Environmental Sample Method: QED Pump Laboratory: GEL Date Sampled: 10-15-09
Parameter	**Method**	**MCL**	**All results in mg/L**			
Antimony	6020	0.006	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Arsenic	6020	0.01	ND (0.0015)	ND (0.0015)	ND (0.019)	ND (0.0015)
Barium	6020	2.0	0.0649	0.0631	0.0595	0.0705
Beryllium	6020	0.004	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)
Cadmium	6020	0.005	ND (0.00011)	ND (0.00011)	0.000176 (0.001) J	ND (0.00011)
Chromium	6020	0.1	ND (0.0025)	ND (0.0025)	0.0131	ND (0.0025)
Cobalt	6020	NE	0.000214 (0.001) J	0.000241 (0.001) J	0.00385	0.000261 (0.001) J
Copper	6020	NE	ND (0.00104)	ND (0.0041)	0.00149	0.000709 (0.001) J
Iron	6020	NE	0.213	0.216	0.714	0.235
Lead	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Mercury	7470A	0.002	ND (0.000066)	ND (0.000066)	ND (0.000066)	ND (0.000066)
Nickel	6020	NE	0.00393	0.00394	0.456	0.00402
Selenium	6020	0.05	0.00224 (0.005) J	0.00186 (0.005) J	0.00103 (0.005) J, NJ-	0.002 (0.005) J
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Thallium	6020	0.002	ND (0.0032)	ND (0.0003)	ND (0.0003)	ND (0.0003)
Tin	6020	NE	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Uranium	6020	0.03	0.0163	0.016	0.0131	NS
Vanadium	6020	NE	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)
Zinc	6020	NE	ND (0.0026)	ND (0.0026)	0.00282 (0.010) J	ND (0.0026)

Refer to footnotes at end of table.

Table A-13 *(Continued)*

Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

			ARCOC No.: 612449 Sample No.: 087833 Well No.: CWL-MW5U Sample Type: Environmental Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-19-09	612449 087834 CWL-MW5U Duplicate Bennett Pump GEL 10-19-09	612450 087837 CWL-MW6L Environmental QED Pump GEL 10-20-09	612444 087821 CWL-MW6U Environmental Bennett Pump GEL 10-13-09
Parameter	**Method**	**MCL**	**All results in mg/L**			
Antimony	6020	0.006	ND (0.011)	ND (0.011)	ND (0.0005)	ND (0.0005)
Arsenic	6020	0.01	ND (0.019)	ND (0.019)	ND (0.019)	ND (0.0015)
Barium	6020	2.0	0.0705	0.0687	0.0571	0.0719
Beryllium	6020	0.004	ND (0.0001)	ND (0.0001)	ND (0.0001)	ND (0.0001)
Cadmium	6020	0.005	0.000262 (0.001) J	0.000241 (0.001) J	ND (0.00011)	0.000111 (0.001) J
Chromium	6020	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
Cobalt	6020	NE	0.000206 (0.001) J	0.000164 (0.001) J	0.000132 (0.001) J	0.000132 (0.001) J
Copper	6020	NE	ND (0.0056) UJ	ND (0.0056) UJ	0.000563 (0.001) J	0.00176
Iron	6020	NE	0.247	0.220	0.266	0.177
Lead	6020	NE	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Mercury	7470A	0.002	ND (0.000066)	ND (0.000066)	ND (0.000066)	ND (0.000066)
Nickel	6020	NE	0.00498	0.00492	0.00147 (0.002) J	0.00345
Selenium	6020	0.05	0.00175 (0.005) J, NJ-	0.00189 (0.005) J, NJ-	0.00127 (0.005) J, NJ-	0.0018 (0.005) J
Silver	6020	NE	ND (0.0002)	ND (0.0002)	ND (0.0002)	ND (0.0002)
Thallium	6020	0.002	0.000408 (0.001) J	ND (0.0003)	ND (0.0003)	ND (0.0003)
Tin	6020	NE	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Uranium	6020	0.03	NS	NS	0.0148	NS
Vanadium	6020	NE	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)
Zinc	6020	NE	0.037	0.0371	ND (0.0026)	0.00283 (0.010) J

Refer to footnotes at end of table.

Table A-13 *(Concluded)*

Summary of Total Metal Parameters
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.

ARCOC = Analysis Request and Chain of Custody.
GEL = General Engineering Laboratories.
J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board. In the New Mexico Register, Title 20, Chapter 7, Part 1).
mg/L = Milligram(s) per liter.
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected or qualified as not detected during data validation. The associated numerical value is the sample quantitation limit.
NE = Not established.
NJ- = Presumptive evidence of the presence of the material at an estimated quantity with a suspected negative bias.
NS = Not sampled.
U = Upper well completion zone.
UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Table A-14

Summary of Dissolved Chromium, Total Cyanide, and Sulfides
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

		ARCOC No.:	**612446**	**612446**	**612451**	**612447**
		Sample No.:	**087825**	**087826**	**087839**	**087829**
		Well No.:	**CWL-MW2BL**	**CWL-MW2BL**	**CWL-MW4**	**CWL-MW5L**
		Sample Type:	**Environmental**	**Duplicate**	**Environmental**	**Environmental**
		Sample Method:	**Bennett Pump**	**Bennett Pump**	**Bennett Pump**	**QED Pump**
		Laboratory:	**GEL**	**GEL**	**GEL**	**GEL**
		Date Sampled:	**10-14-09**	**10-14-09**	**10-21-09**	**10-15-09**
Parameter	**Method**	**MCL**	**All results in mg/L**			
Dissolved Chromium	6020	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
Total Cyanide	9010A	0.2	ND (0.00166) UJ	ND (0.00166) UJ	ND (0.00166) UJ	ND (0.00166) UJ
Sulfides	9034	NE	ND (0.835)	ND (0.835)	ND (0.835)	ND (0.835)

Refer to footnotes at end of table.

Table A-14 *(Concluded)*

Summary of Dissolved Chromium, Total Cyanide, and Sulfides
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

		ARCOC No.:	**612449**	**612449**	**612450**	**612444**
		Sample No.:	**087833**	**087834**	**087837**	**087821**
		Well No.:	**CWL-MW5U**	**CWL-MW5U**	**CWL-MW6L**	**CWL-MW6U**
		Sample Type:	**Environmental**	**Duplicate**	**Environmental**	**Environmental**
		Sample Method:	**Bennett Pump**	**Bennett Pump**	**QED Pump**	**Bennett Pump**
		Laboratory:	**GEL**	**GEL**	**GEL**	**GEL**
		Date Sampled:	**10-19-09**	**10-19-09**	**10-20-09**	**10-13-09**
Parameter	**Method**	**MCL**	**All results in mg/L**			
Dissolved Chromium	6020	0.1	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)
Total Cyanide	9010A	0.2	ND (0.00166)	ND (0.00166)	ND (0.00166)	ND (0.00166) UJ
Sulfides	9034	NE	ND (0.835)	ND (0.835)	ND (0.835)	ND (0.835)

If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.
ARCOC= Analysis Request and Chain of Custody.
BW = Background well.
GEL = General Engineering Laboratories.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board in the New Mexico Register, Title 20, Chapter 7, Part 1).
mg/L = Milligrams per liter.
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
NE = Not established.
U = Upper well completion zone.
UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

Table A-15

Summary of Detected Parameters in Equipment Blank Samples
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

			ARCOC No.: 612445 Sample No.: 087823 Well No.: Prior to CWL-MW2BL Sample Type: Equipment Blank Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-13-09	ARCOC No.: 612448 Sample No.: 087831 Well No.: Prior to CWL-MW5U Sample Type: Equipment Blank Sample Method: Bennett Pump Laboratory: GEL Date Sampled: 10-15-09
Parameter	**Method**	**MCL**	**All results in µg/L (unless otherwise specified)**	
2-Butanone	8260B	NE	ND (1.25)	1.27 (5.00) J, J-
Bromodichloromethane	8260B	NE	ND (0.250)	0.645 (1.00) J
Chloroform	8260B	NE	1.22	2.09
Dibromochloromethane	8260B	NE	ND (0.300)	0.528 (1.00) J
bis(2-Ethylhexyl)phthalate	8270C	6	2.08 (10.0) J	ND (2.00)
Copper (in mg/L)	6020	NE	0.000829 (0.001) J	0.00111

If result detected below laboratory practical quantitation limit, then practical quantitation limit is indicated in parenthesis.
ARCOC = Analysis Request and Chain of Custody.
GEL = General Engineering Laboratories.
J = The associated value is an estimated quantity and/or detected below the practical quantitation limit.
J- = The associated numerical value is an estimated quantity with a suspected negative bias.
L = Lower well completion zone.
MCL = Maximum contamination levels (established by the U.S. EPA Primary Drinking Water Regulations in 40 CFR 141.11(b), subsequent amendments or the New Mexico Environmental Improvement Board in the New Mexico Register, Title 20, Chapter 7, Part 1).
mg/L = Milligrams per liter.
MW = Monitoring well.
ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
U = Upper well completion zone.
µg/L = Microgram(s) per liter.

Table A-16

Summary of Environmental and Duplicate Analyses
Sandia National Laboratories/New Mexico
Chemical Waste Landfill
Semi-annual Assessment, August 2009 - January 2010

Parameter	Environmental Sample Results (R_1) (mg/L, unless indicated)	Duplicate Sample Results (R_2) (mg/L, unless indicated)	RPD
CWL-MW2BL			
Barium	0.0649	0.0631	3
Cobalt	0.000214 (0.001) J	0.000241 (0.001) J	NC
Iron	0.213	0.216	1
Nickel	0.00393	0.00394	< 1
Selenium	0.00224 (0.005) J	0.00186 (0.005) J	NC
Uranium	0.0163	0.016	2
CWL-MW5U			
Chloroform (µg/L)	0.400 (1.000) J, J-	ND (0.300)	NC
Toluene (µg/L)	1.06	1.12	6
Trichloroethene (µg/L)	0.910 (1.00) J	0.930 (1.00) J	NC
Barium	0.0705	0.0687	3
Cadmium	0.000262 (0.001) J	0.000241 (0.001) J	NC
Cobalt	0.000206 (0.001) J	0.000164 (0.001) J	NC
Iron	0.247	0.220	12
Nickel	0.00498	0.00492	1
Selenium	0.00175 (0.005) J, NJ-	0.00189 (0.005) J, NJ-	NC
Zinc	0.037	0.0371	< 1

L = Lower well completion zone.
J = The associated value is qualified as an estimated quantity and/or detected below the practical quantitation limit.
J- = The associated numerical value is an estimated quantity with a suspected negative bias.
mg/L = Milligram(s) per liter.
MW = Monitoring well.
µg/L = Microgram(s) per liter.
NC = Not calculated for estimated or non-detected values.
ND = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
NJ- = Presumptive evidence of the presence of the material at an estimated quantity with a suspected negative bias.
RPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number:

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

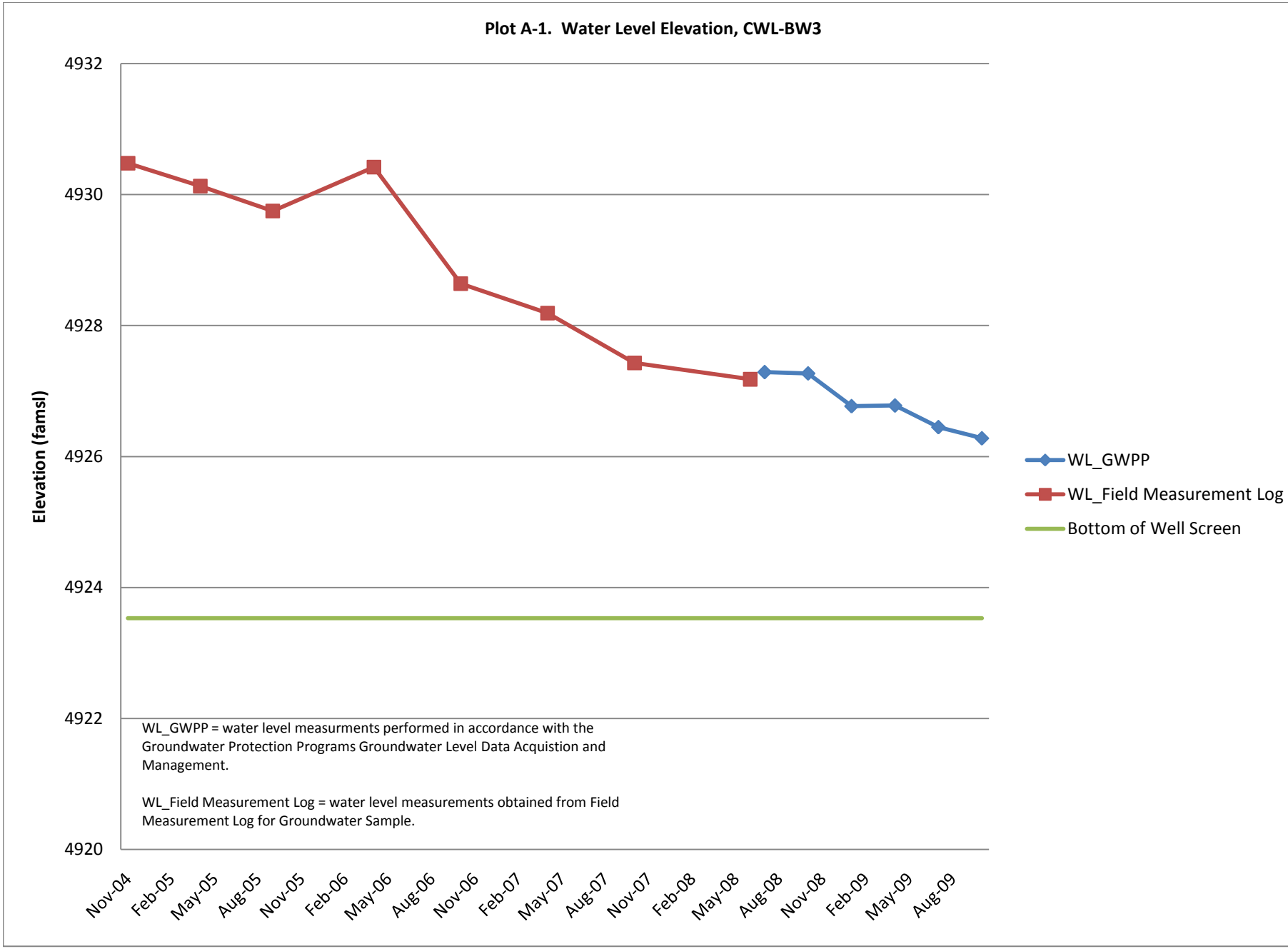
where: R_1 = analysis result.

R_2 = duplicate analysis result.

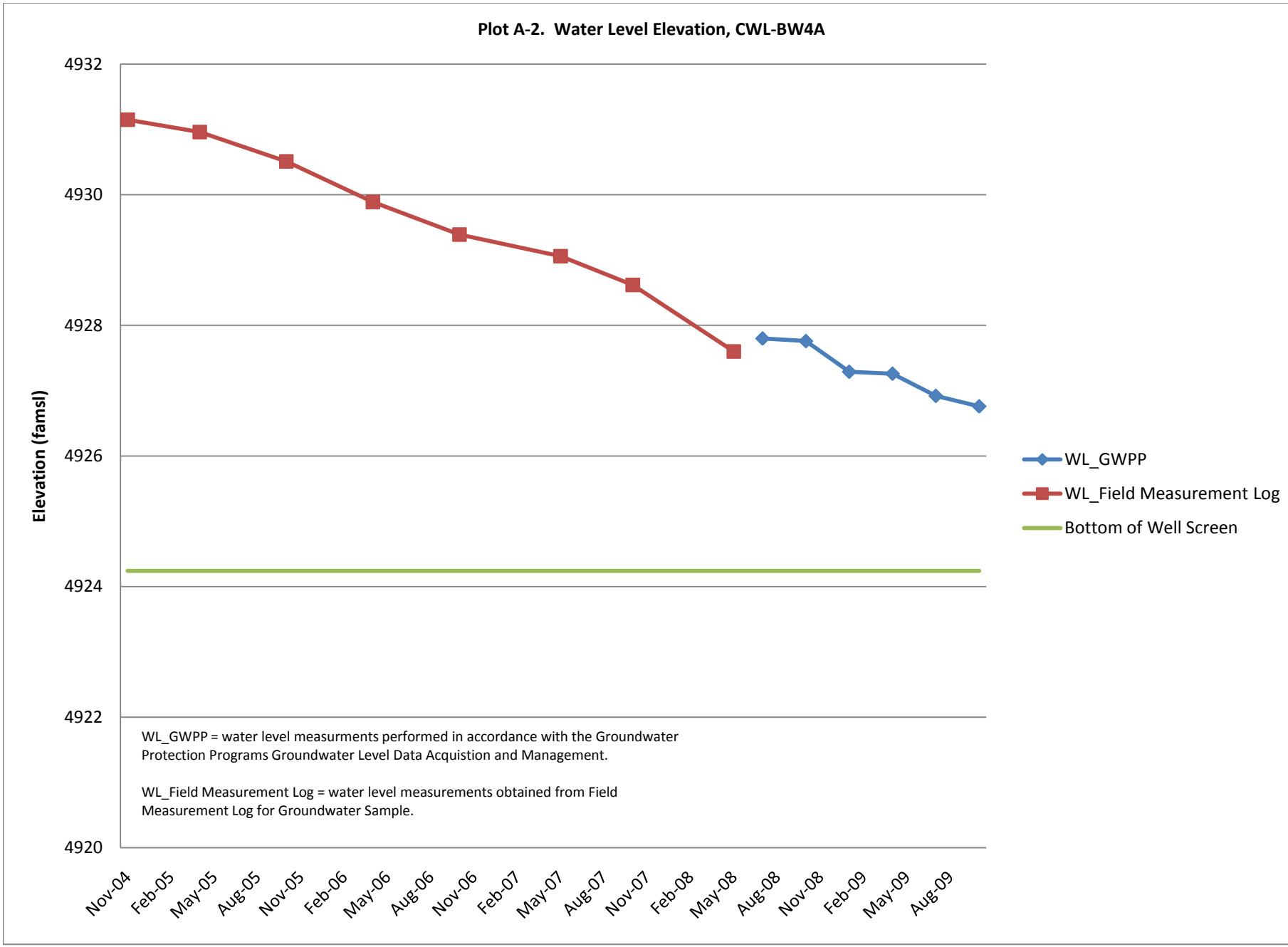
U = Upper well completion zone.

PLOTS

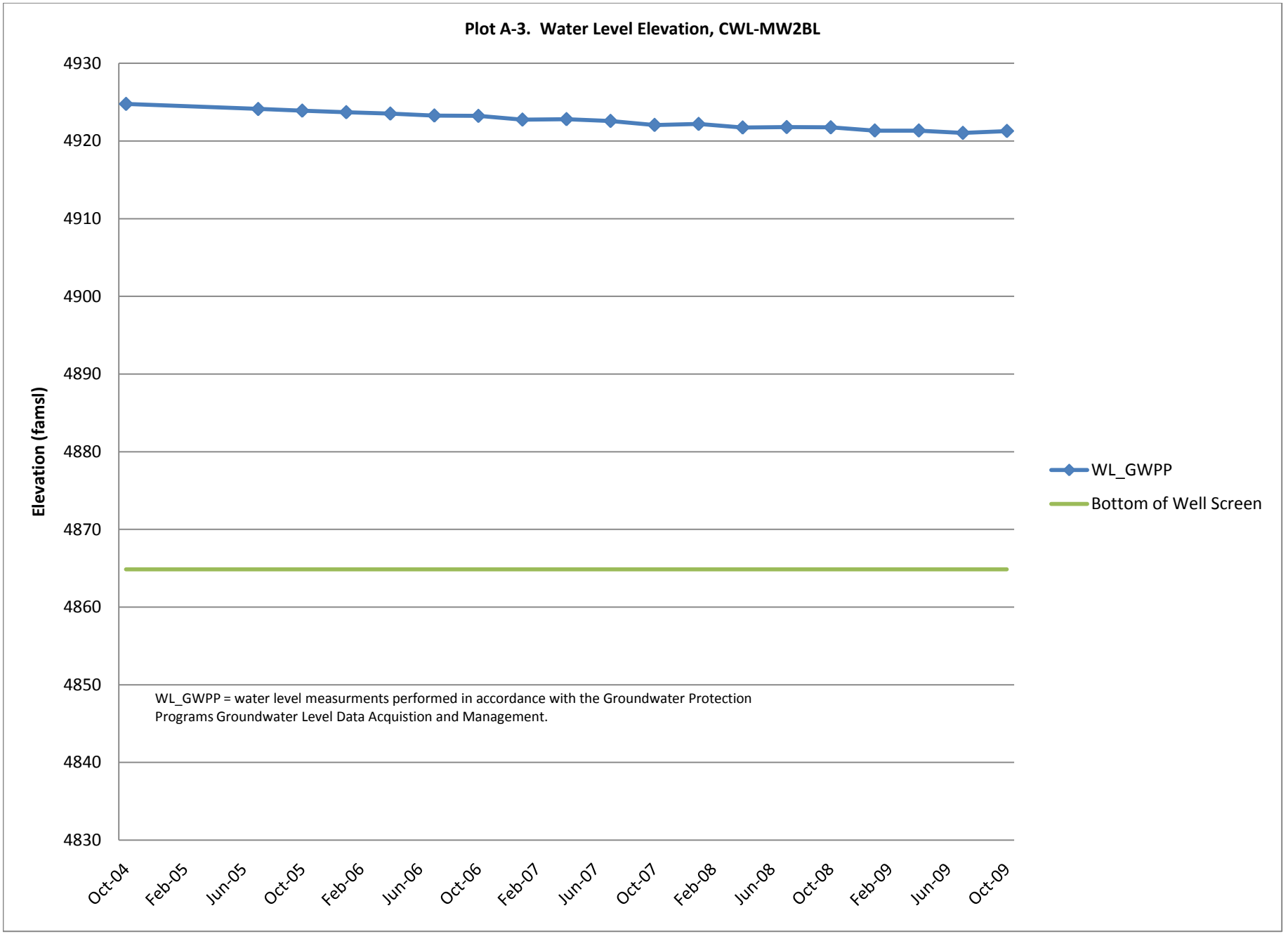
Plot A-1. Water Level Elevation, CWL-BW3



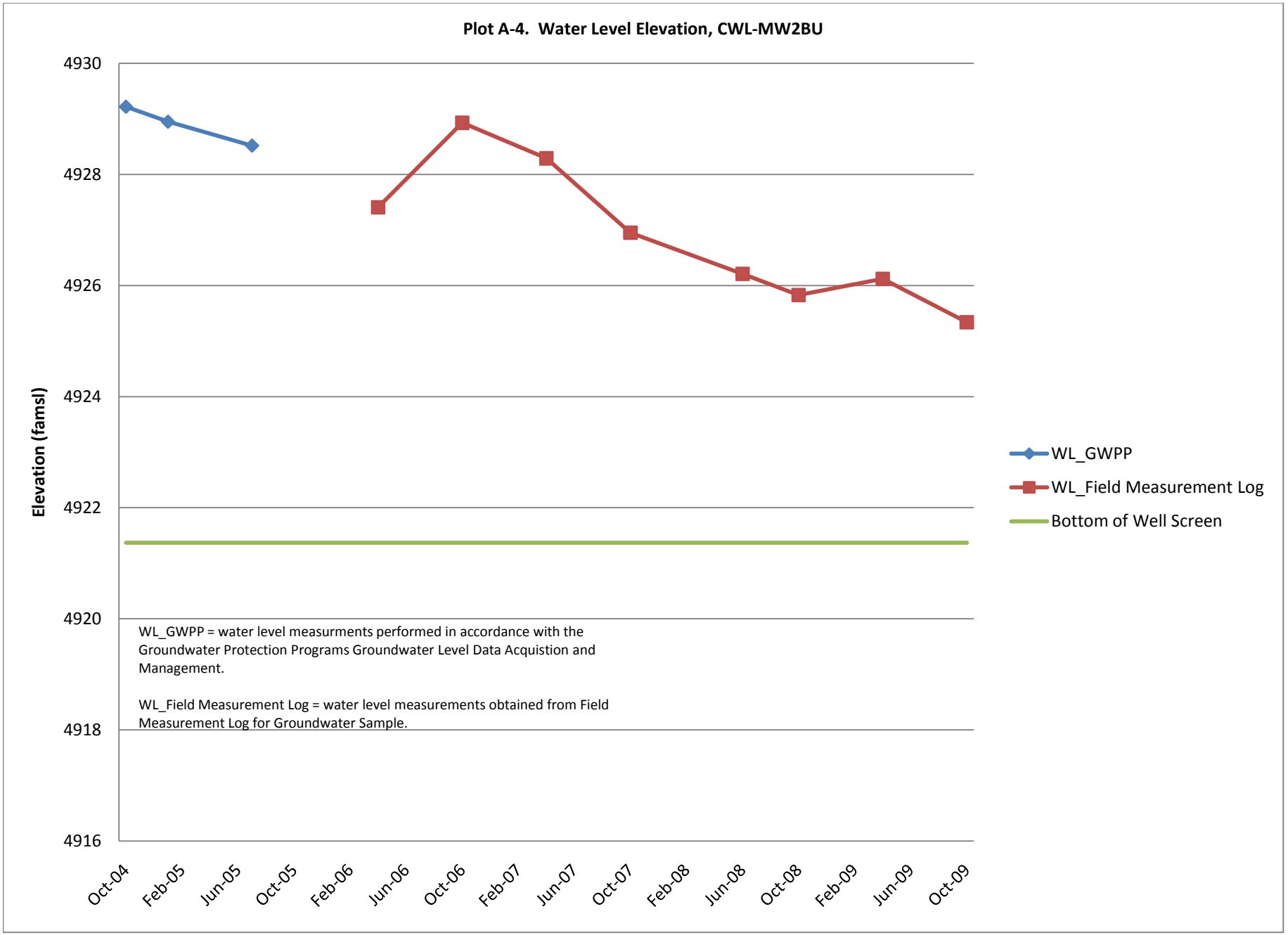
Plot A-2. Water Level Elevation, CWL-BW4A



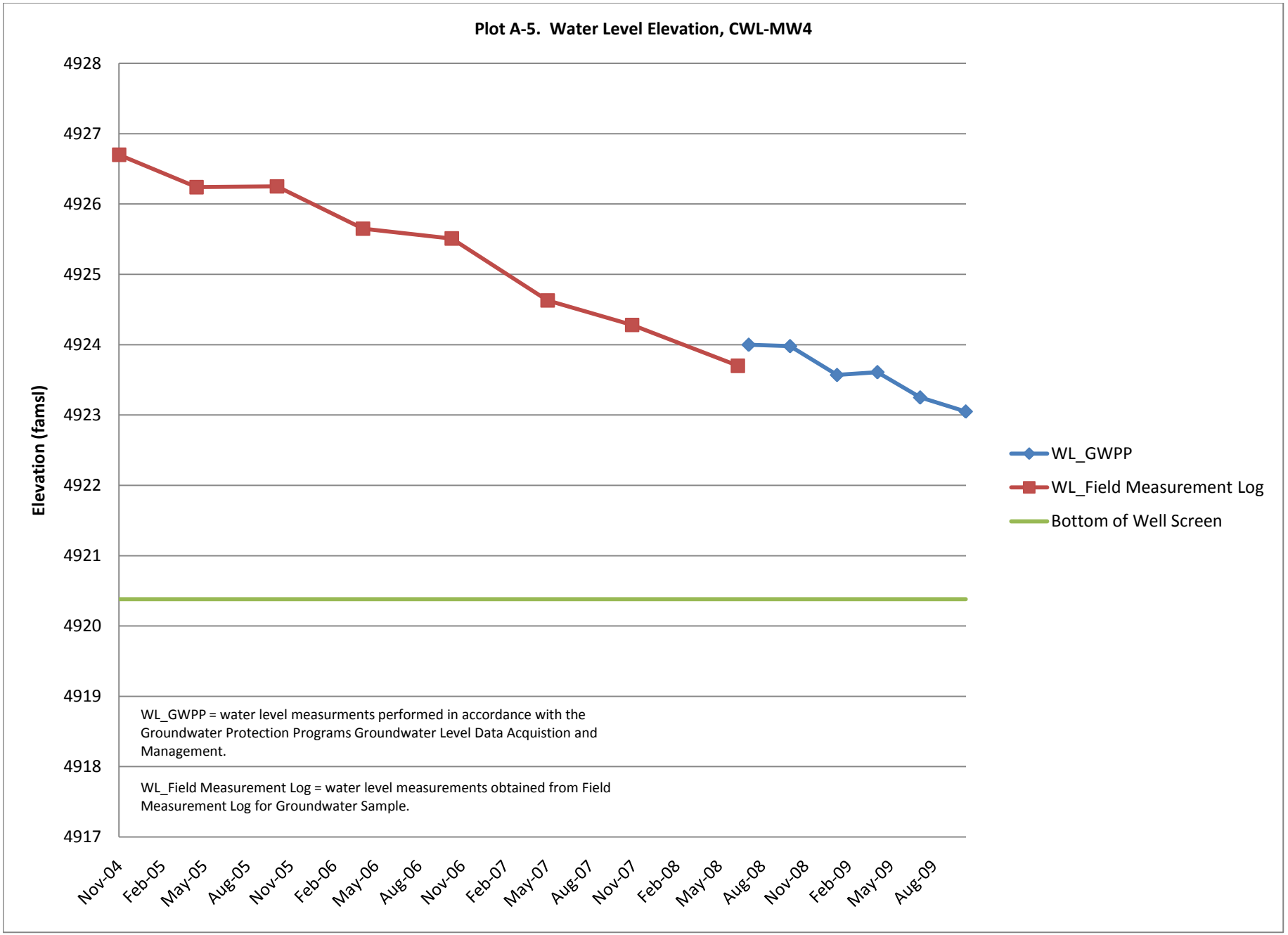
Plot A-3. Water Level Elevation, CWL-MW2BL



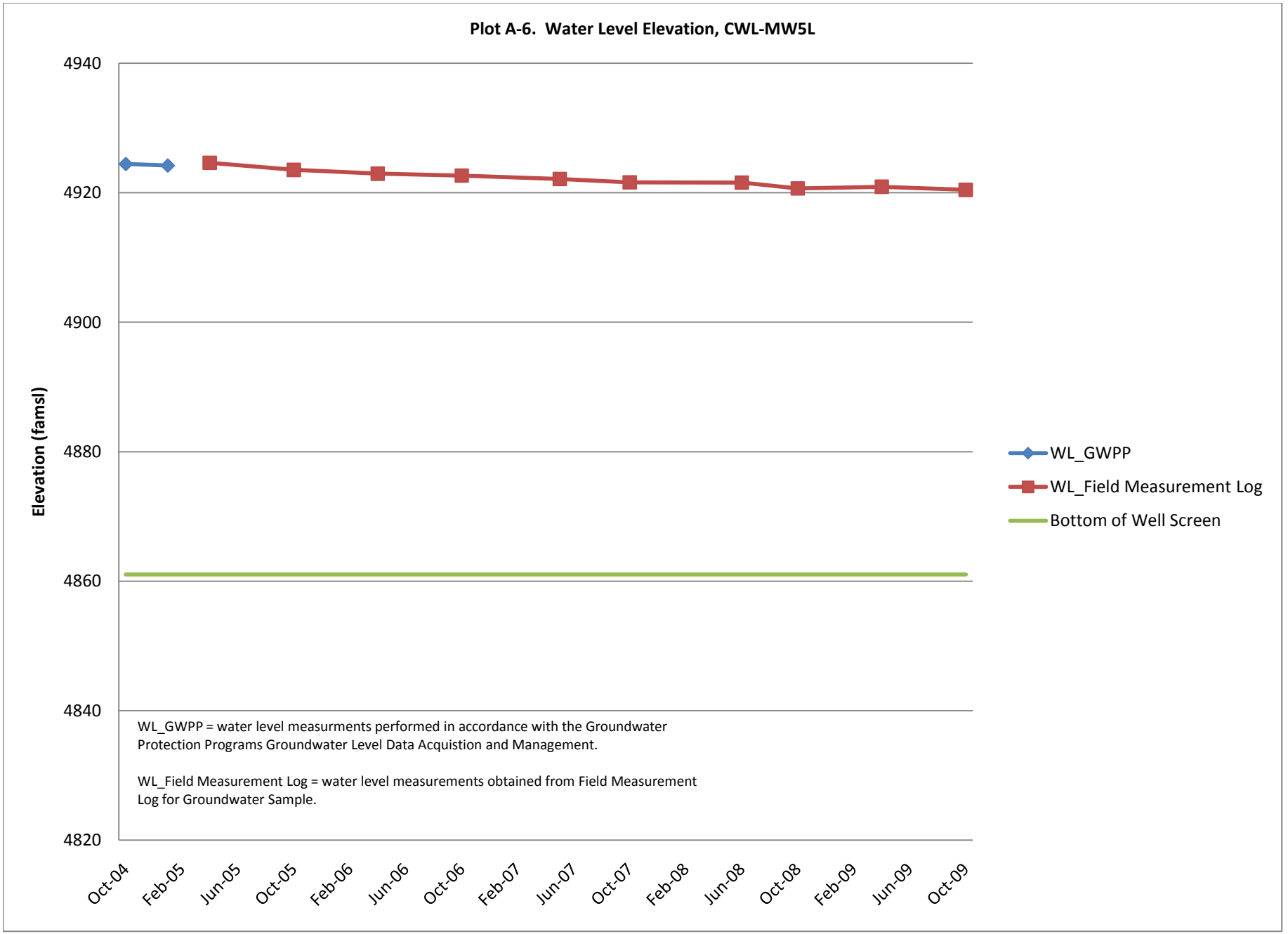
Plot A-4. Water Level Elevation, CWL-MW2BU



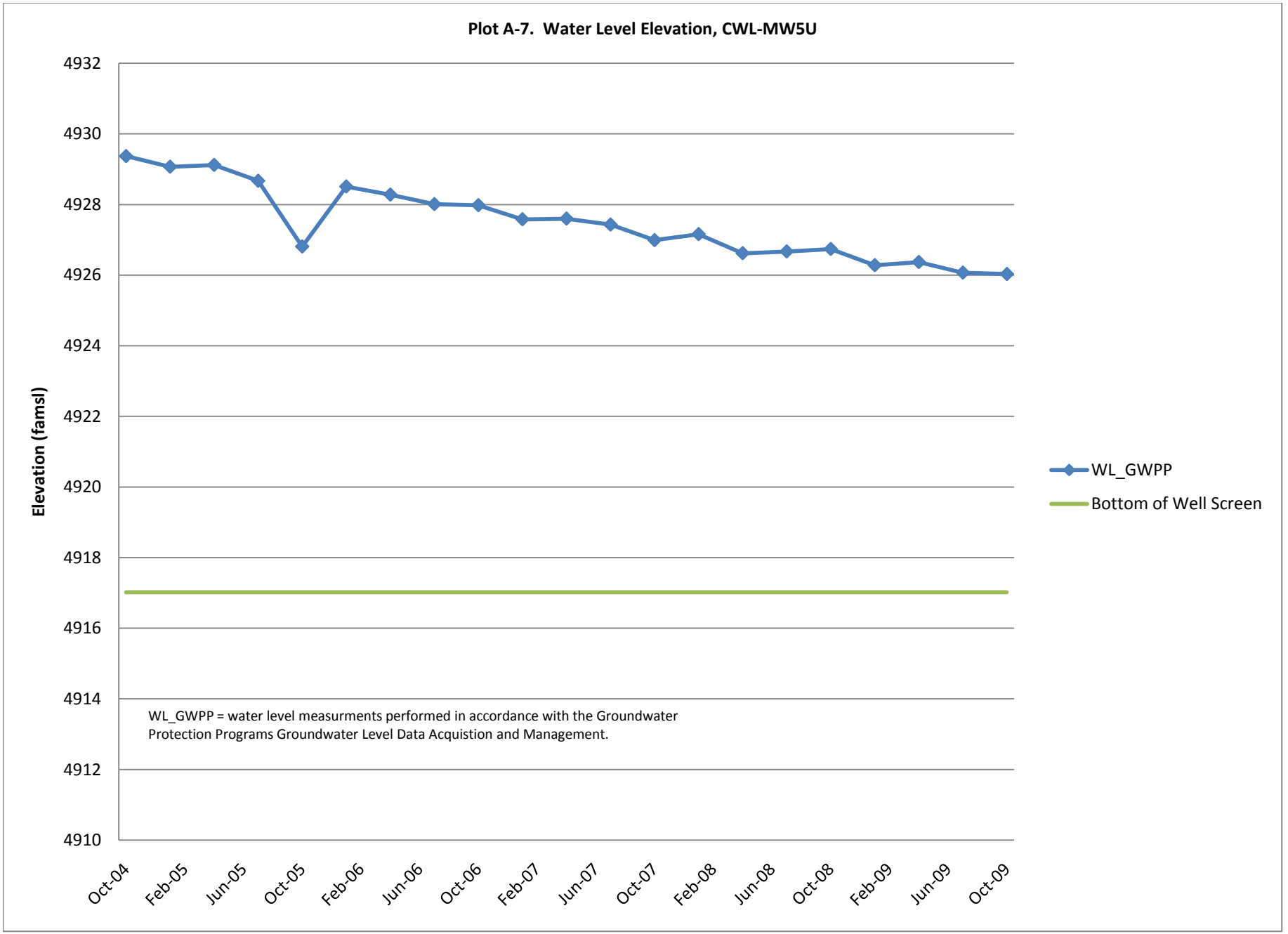
Plot A-5. Water Level Elevation, CWL-MW4



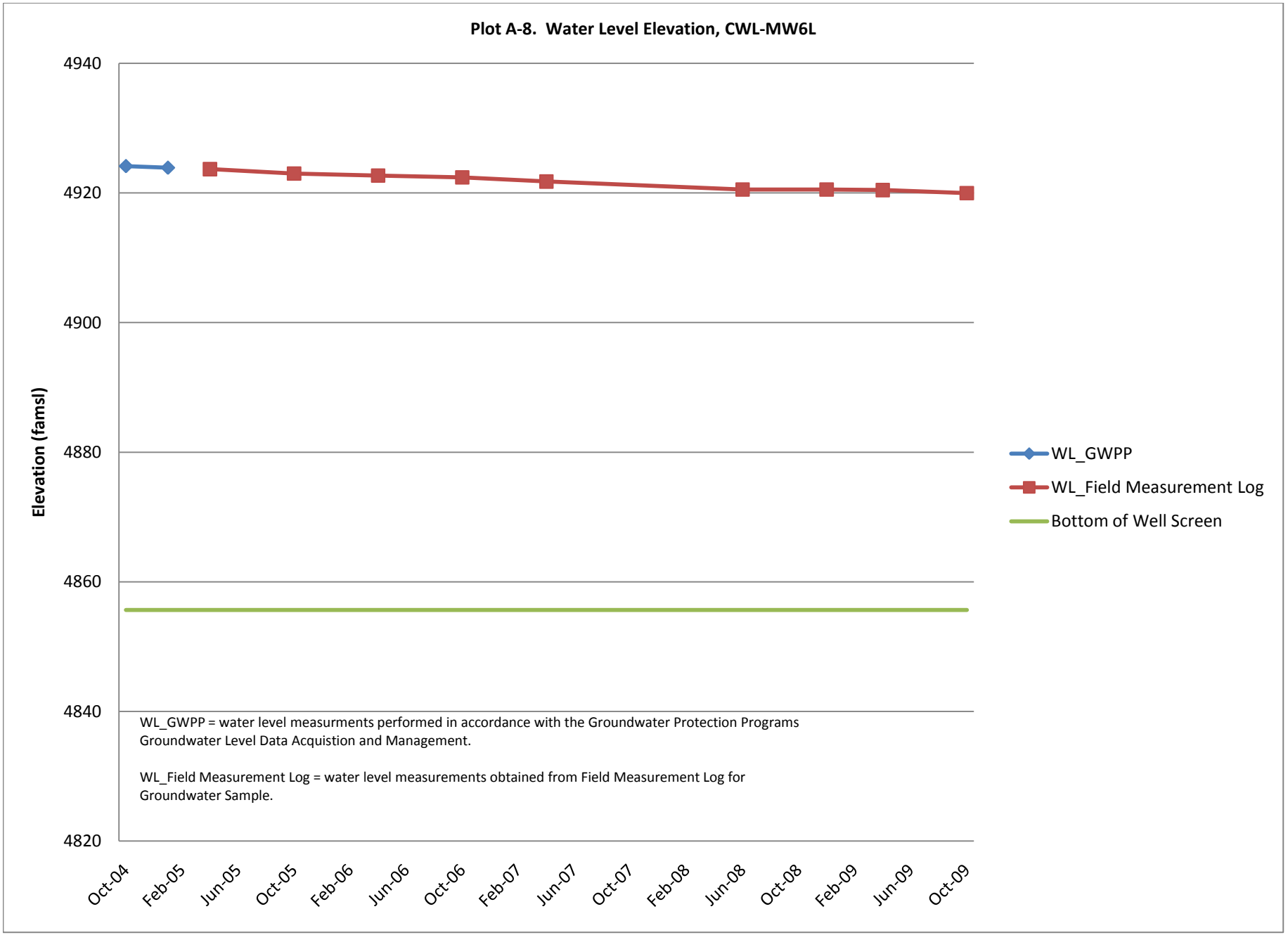
Plot A-6. Water Level Elevation, CWL-MW5L



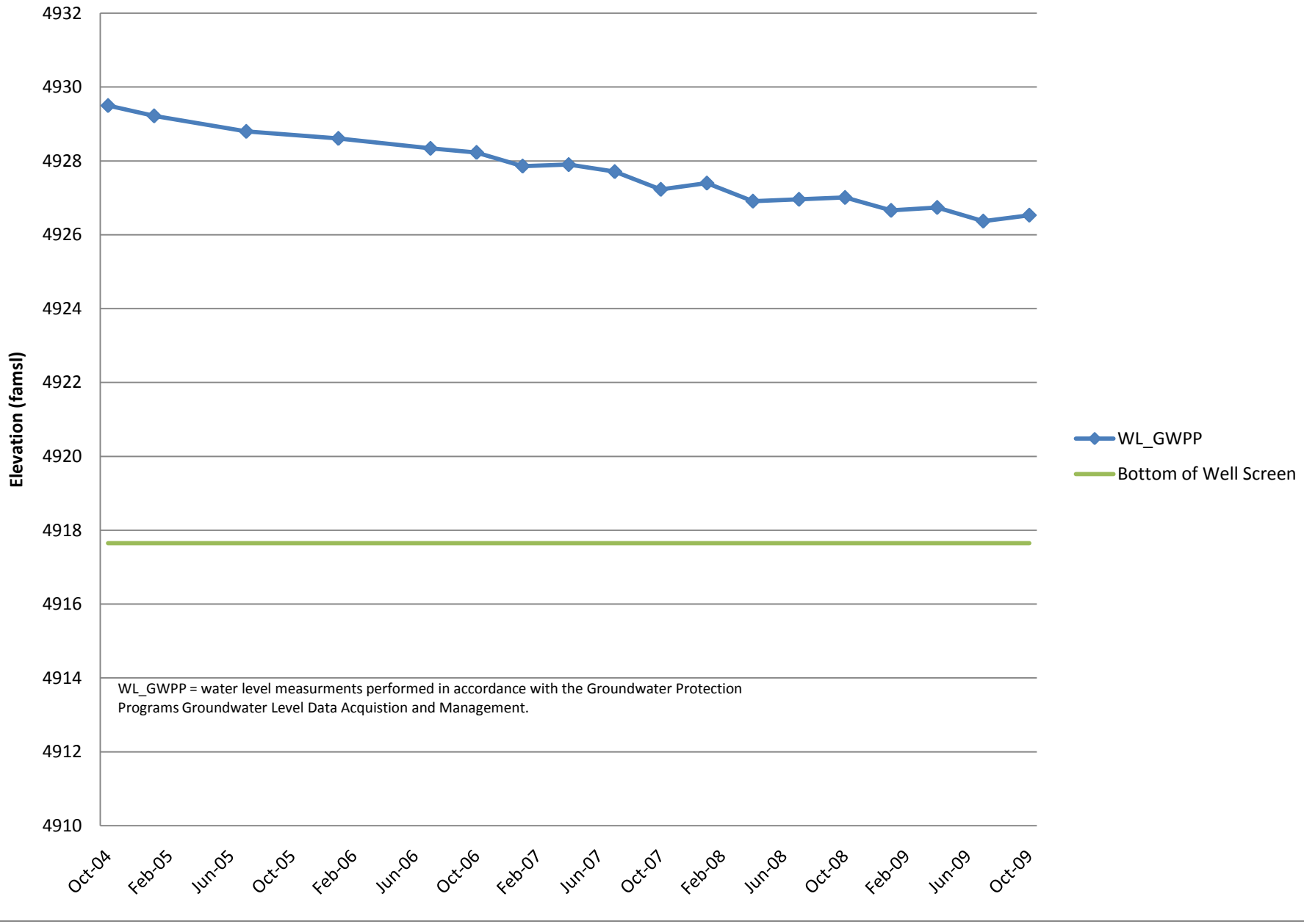
Plot A-7. Water Level Elevation, CWL-MW5U



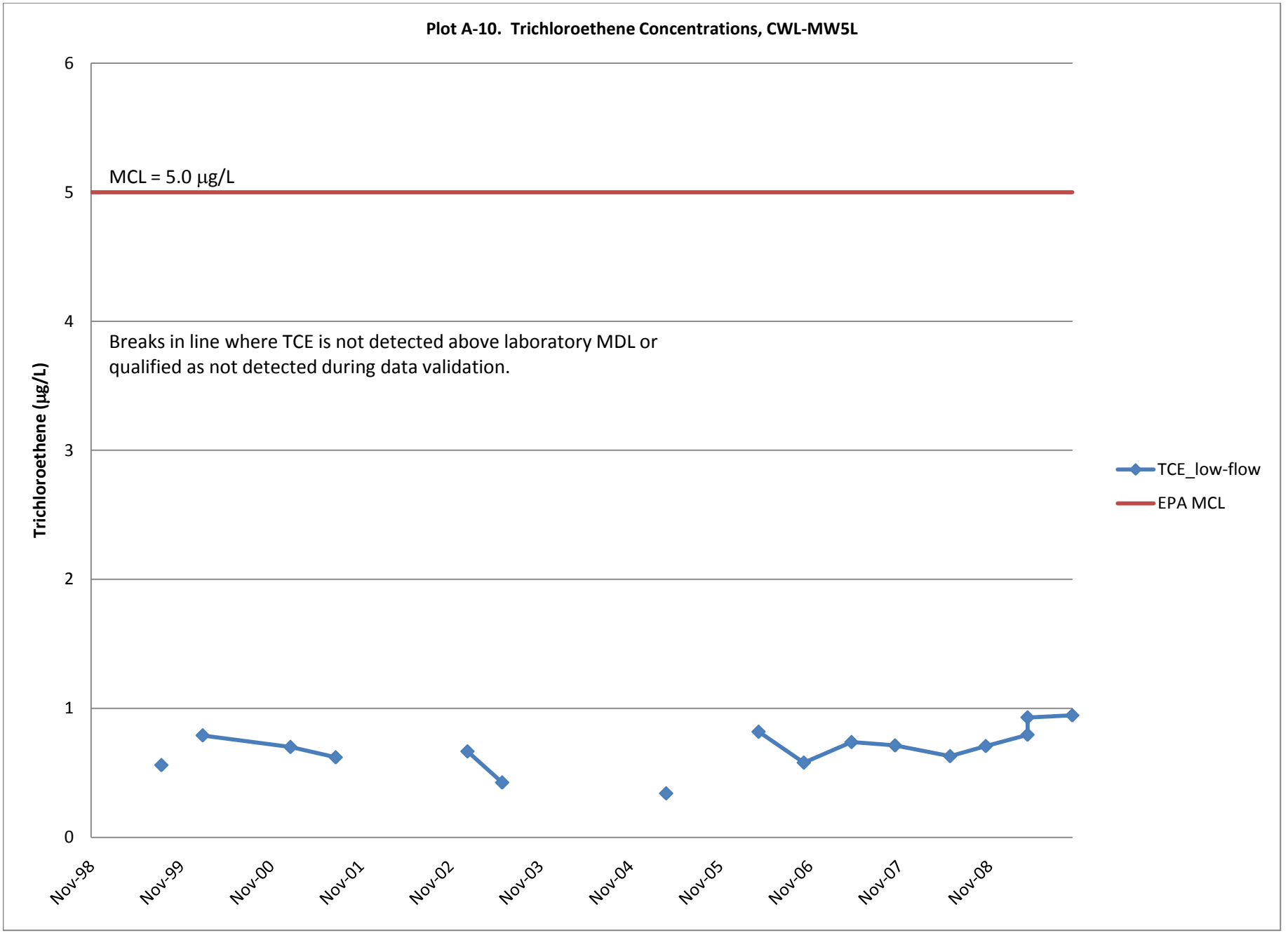
Plot A-8. Water Level Elevation, CWL-MW6L



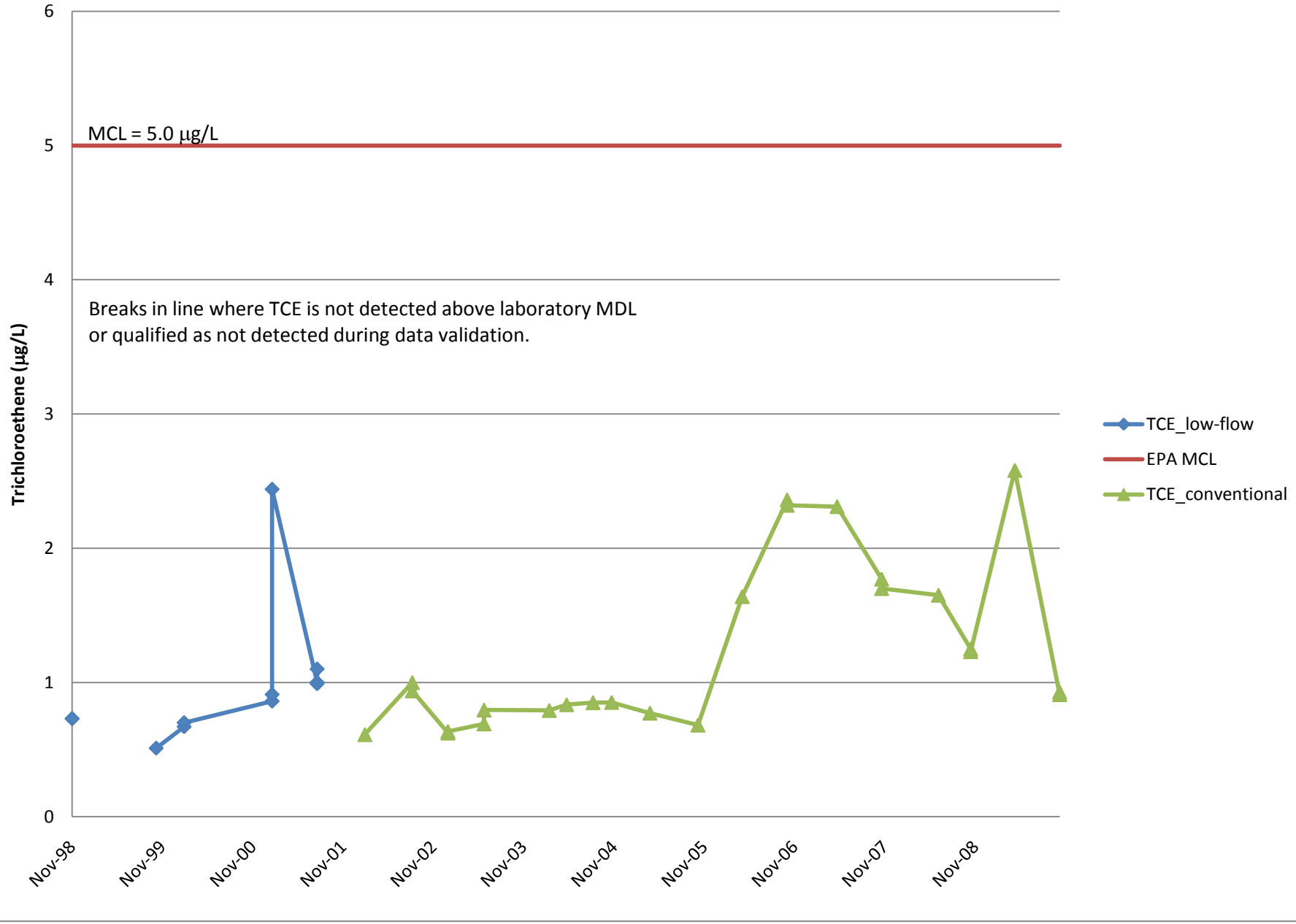
Plot A-9. Water Level Elevation, CWL-MW6U



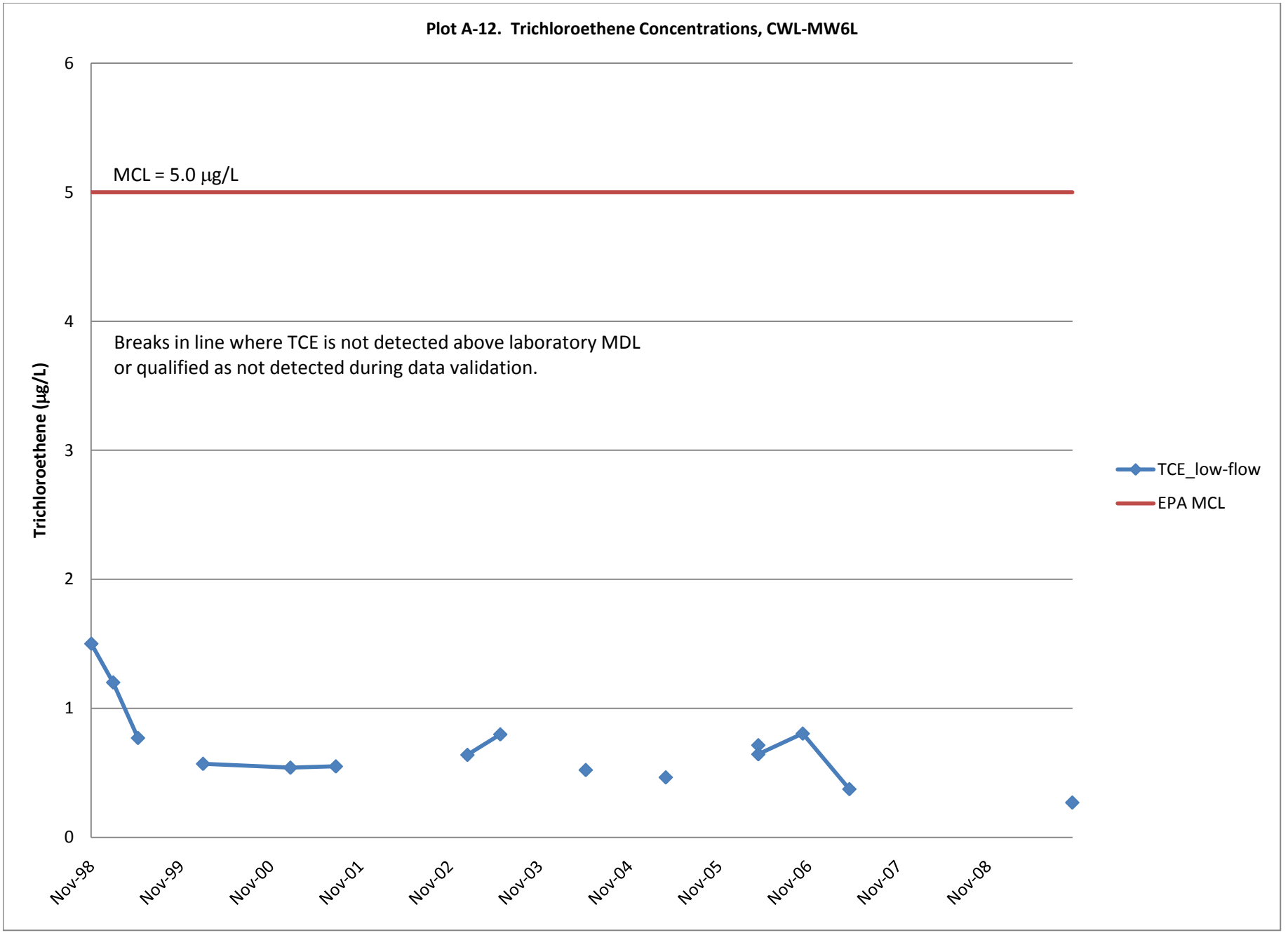
Plot A-10. Trichloroethene Concentrations, CWL-MW5L



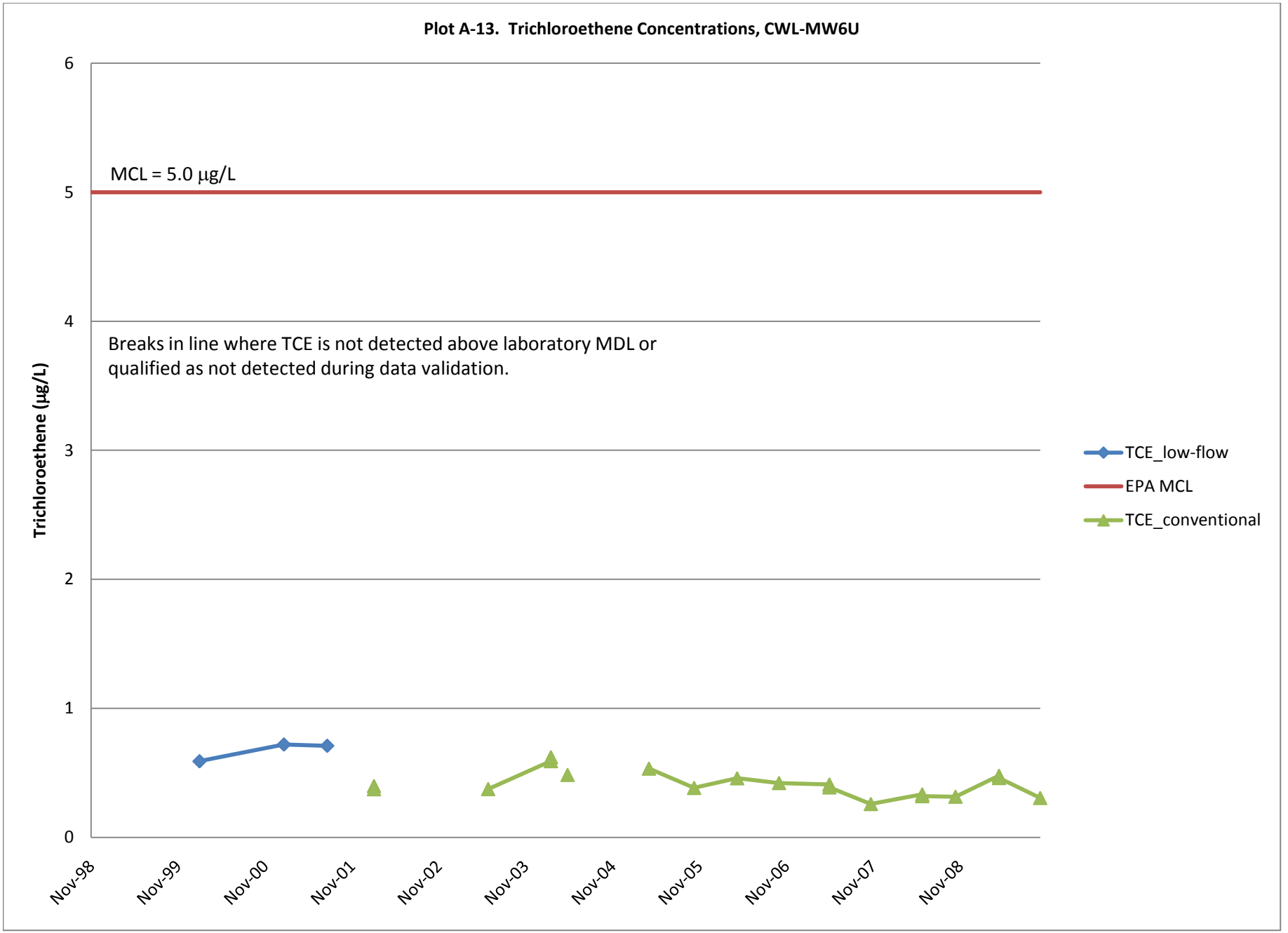
Plot A-11. Trichloroethene Concentrations, CWL-MW5U



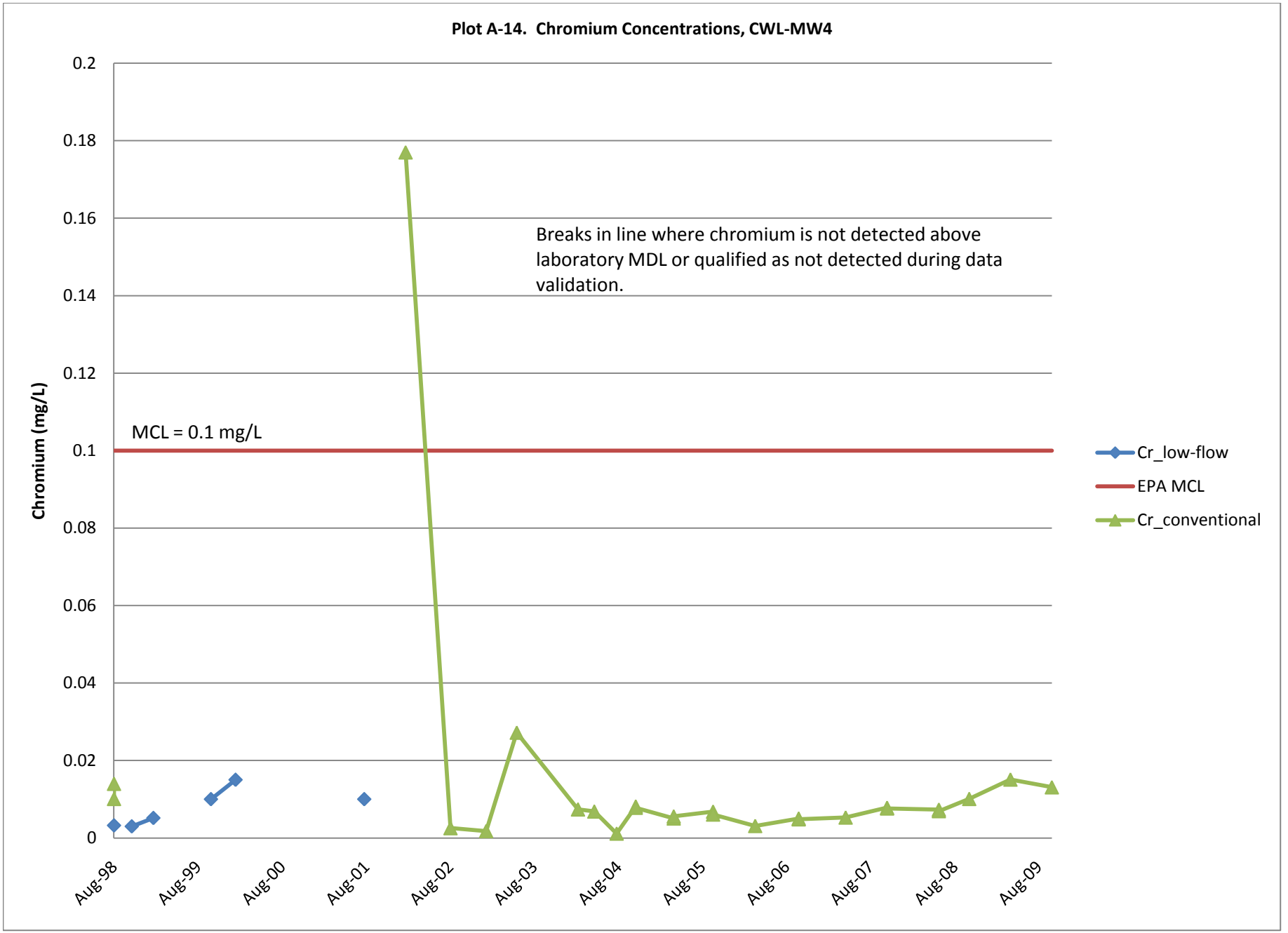
Plot A-12. Trichloroethene Concentrations, CWL-MW6L



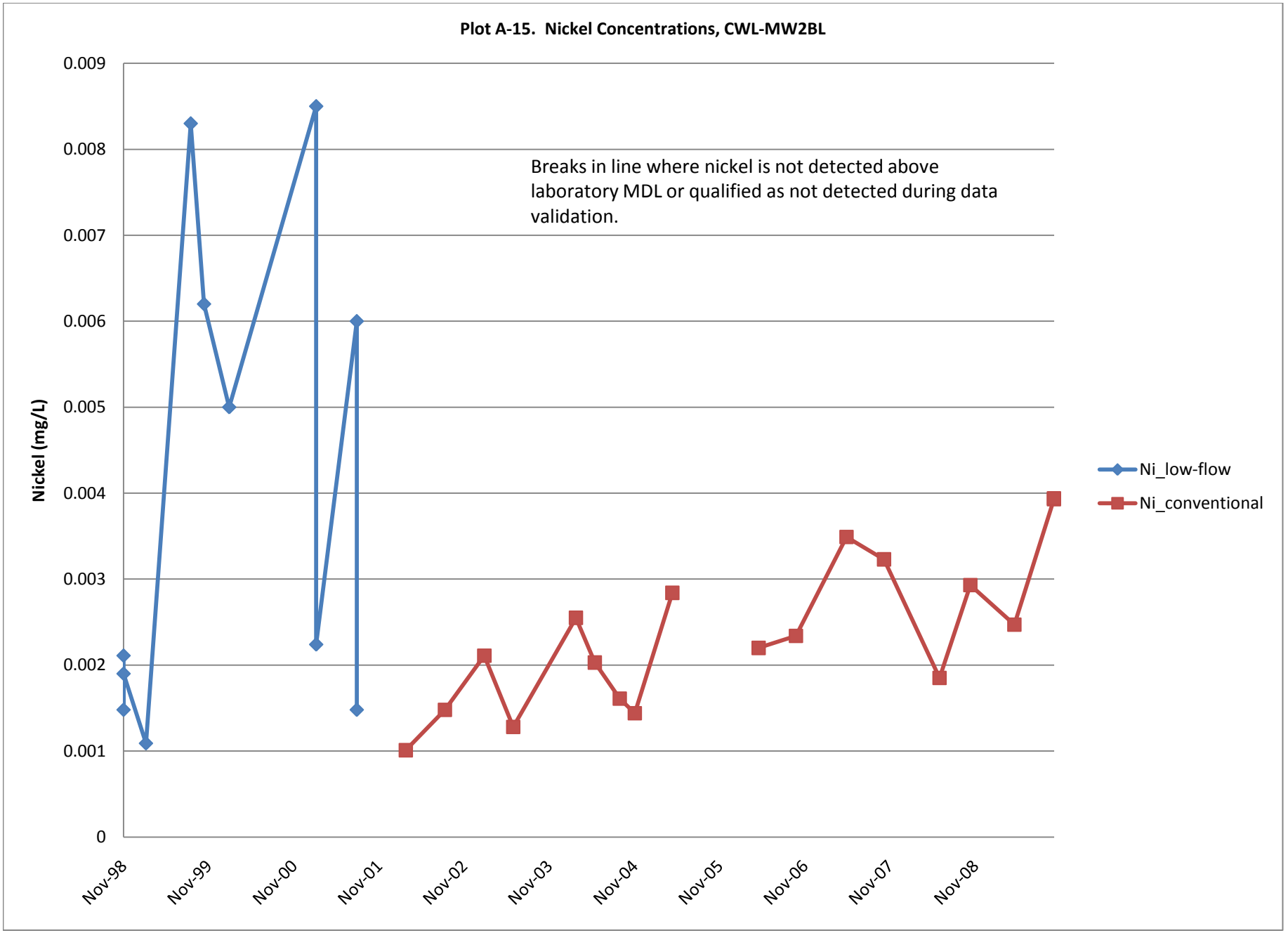
Plot A-13. Trichloroethene Concentrations, CWL-MW6U



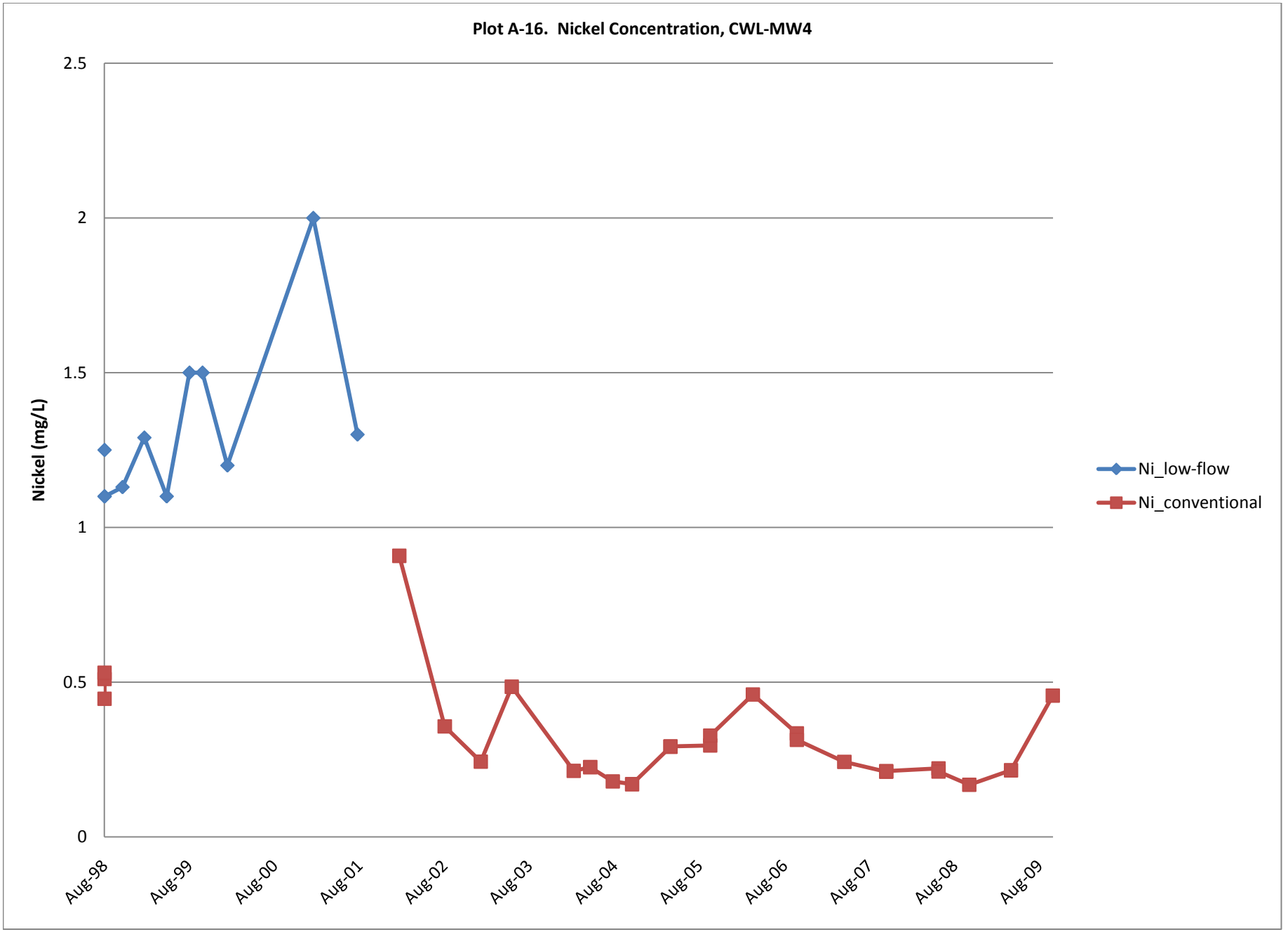
Plot A-14. Chromium Concentrations, CWL-MW4



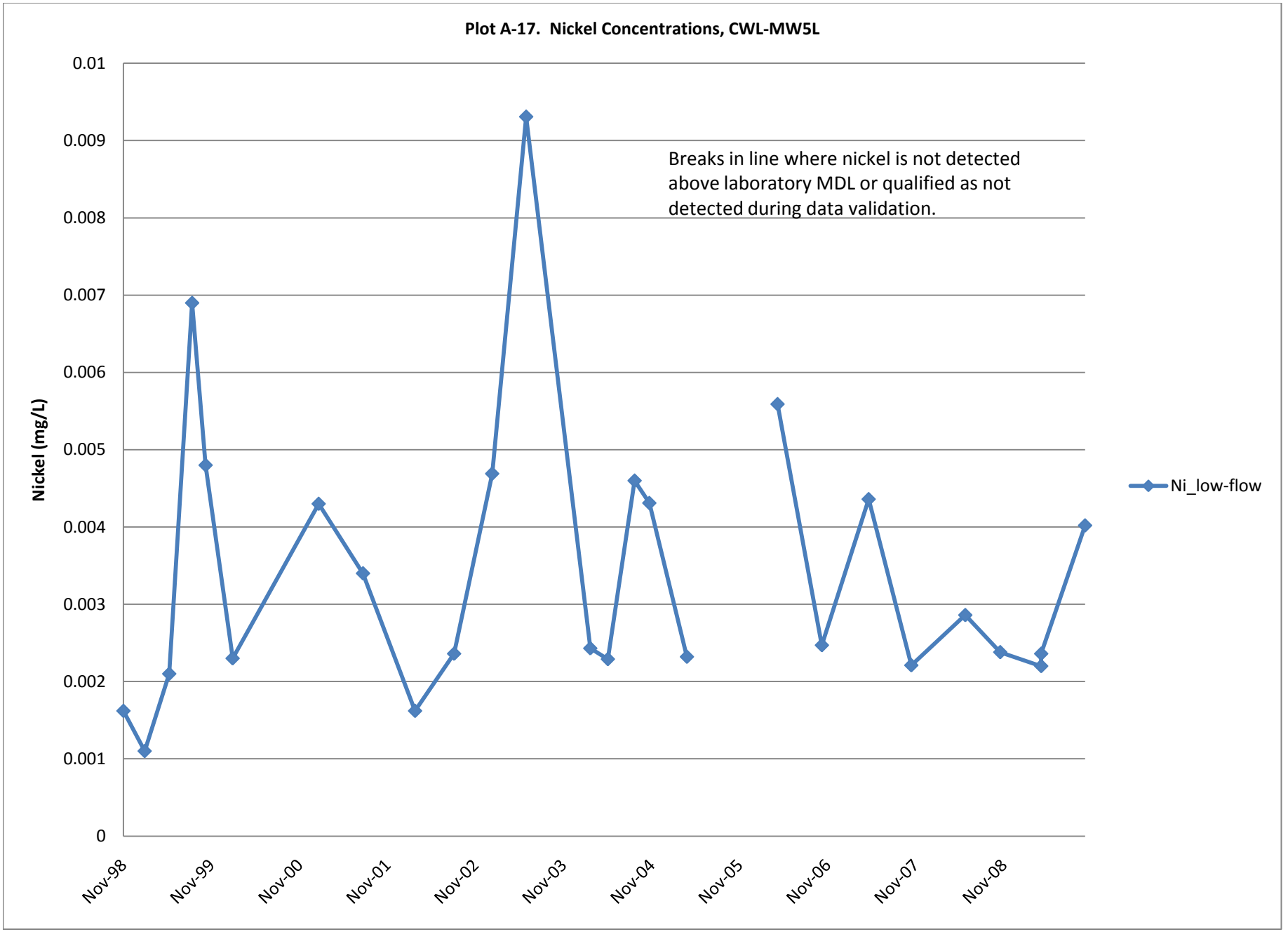
Plot A-15. Nickel Concentrations, CWL-MW2BL



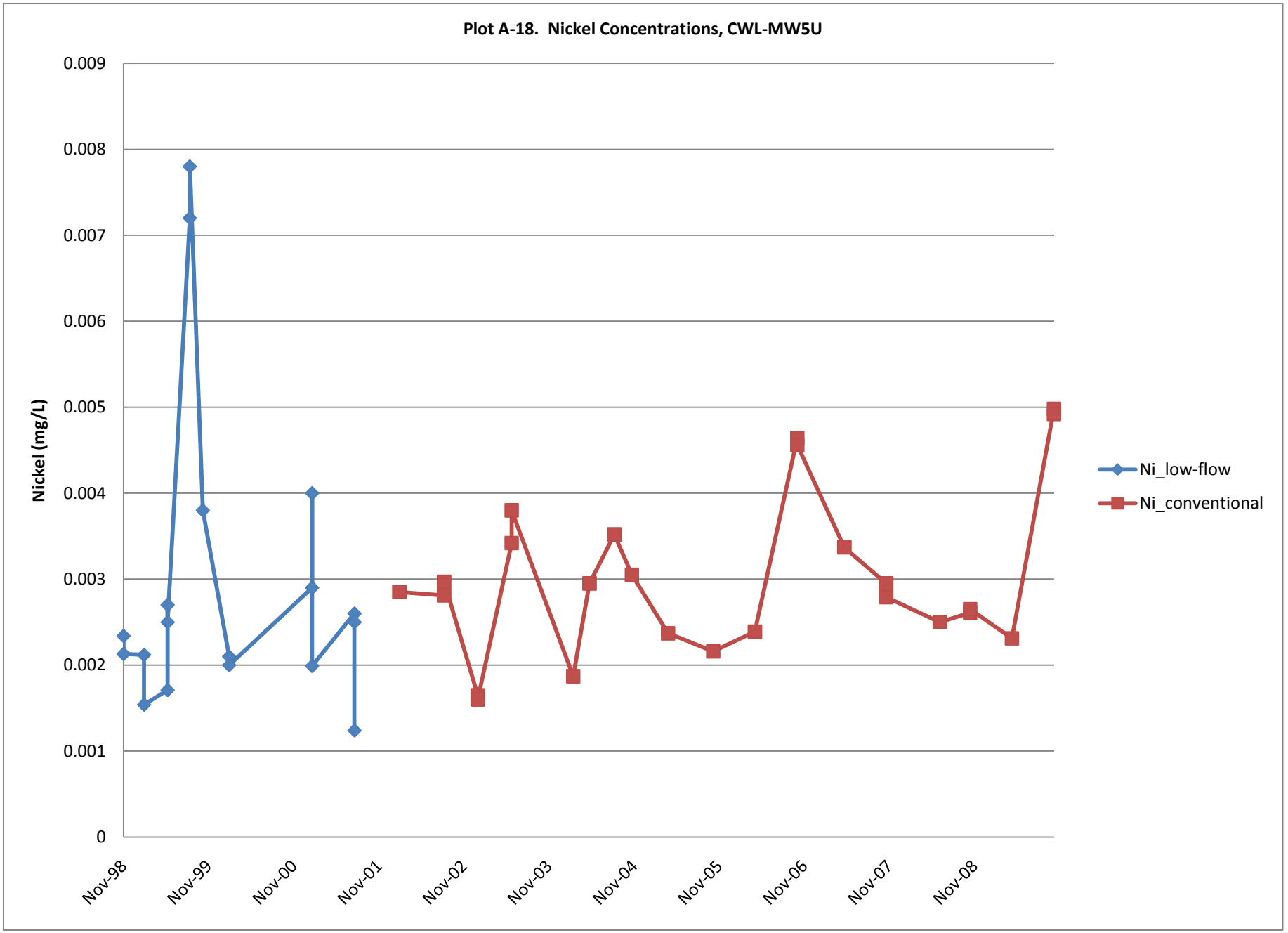
Plot A-16. Nickel Concentration, CWL-MW4



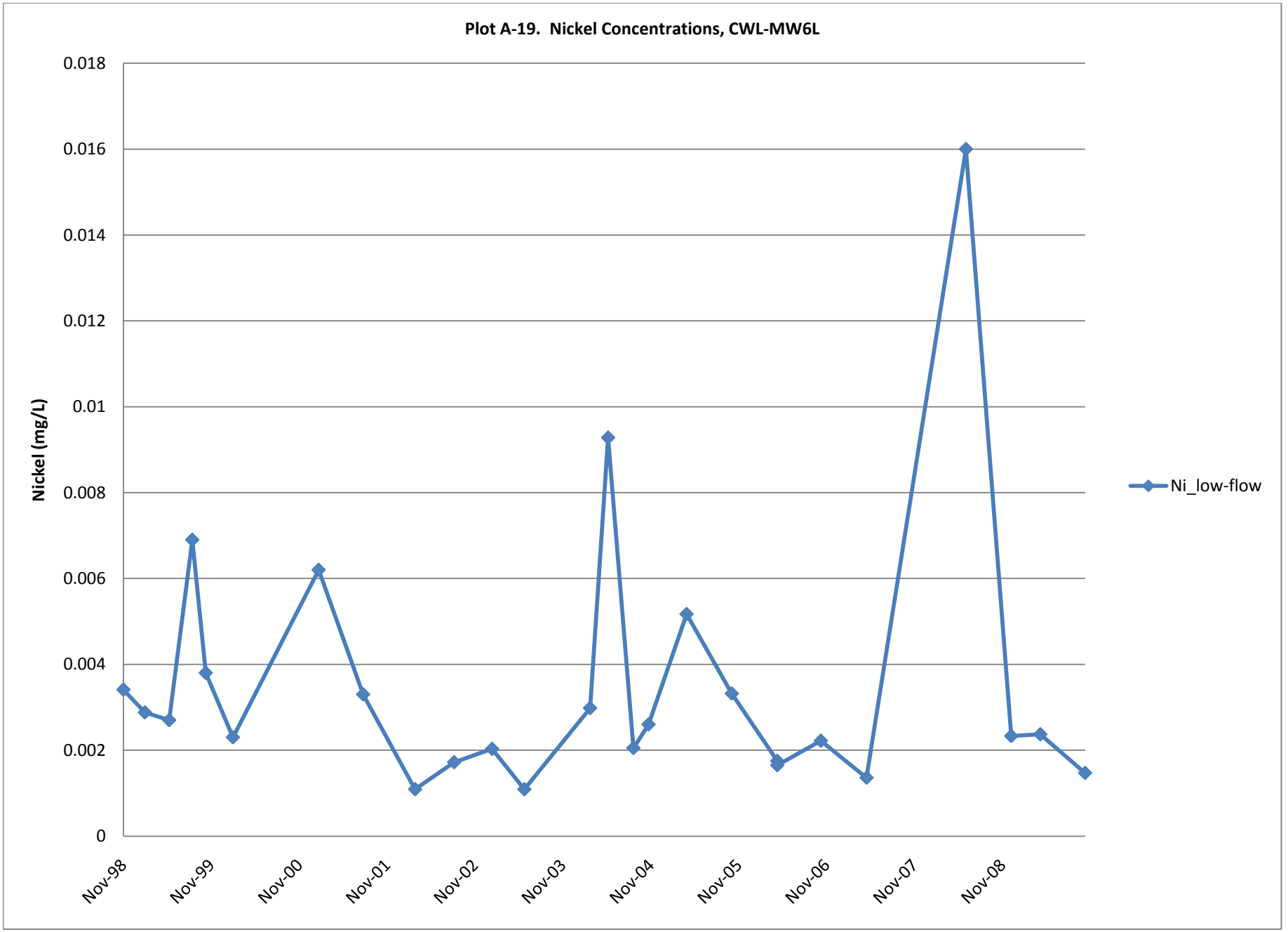
Plot A-17. Nickel Concentrations, CWL-MW5L



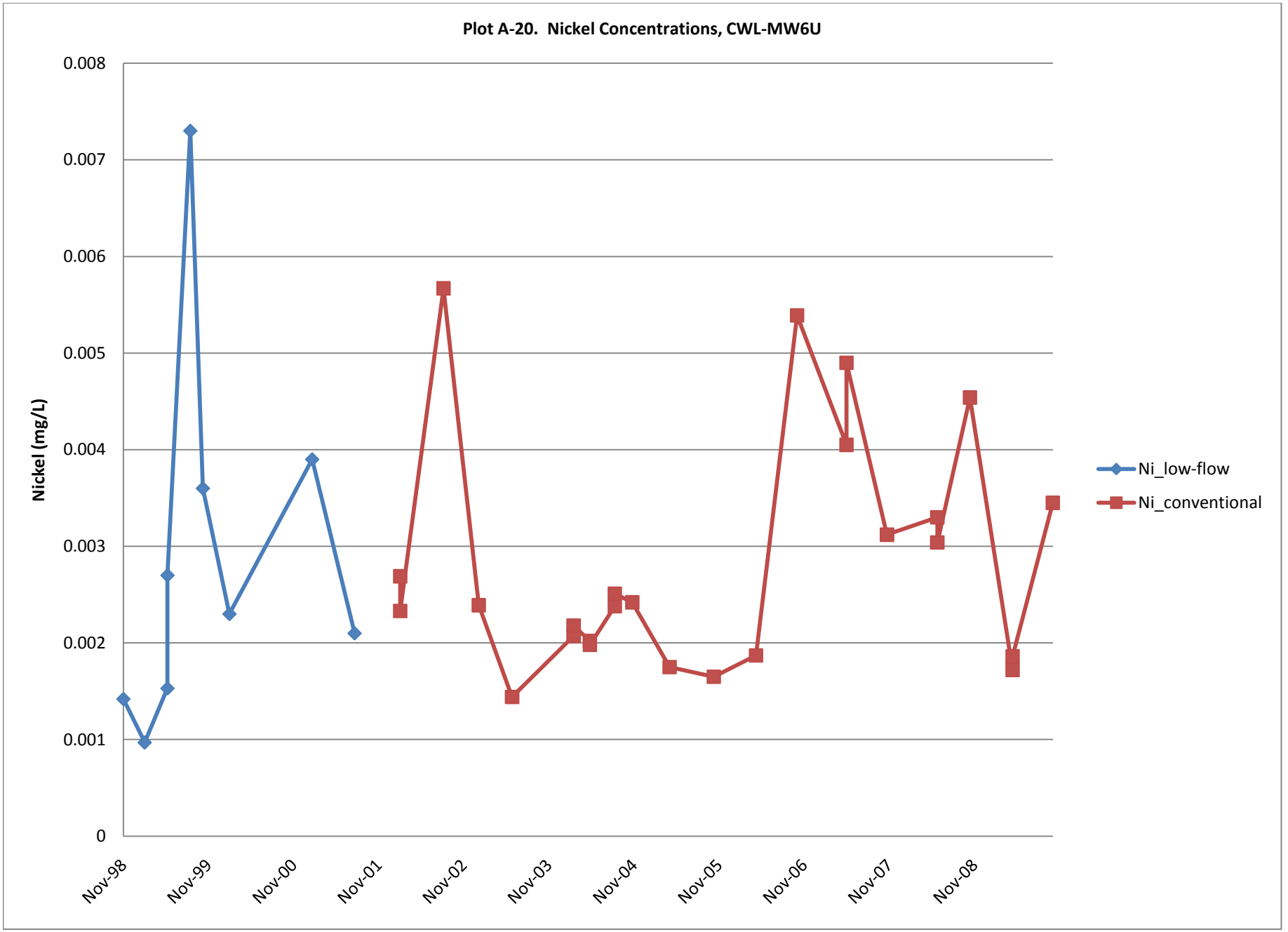
Plot A-18. Nickel Concentrations, CWL-MW5U



Plot A-19. Nickel Concentrations, CWL-MW6L



Plot A-20. Nickel Concentrations, CWL-MW6U



ATTACHMENT A

FIELD MEASUREMENT LOGS AND DOCUMENTATION

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-BW3	Date: 10-23-09
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 506.2

3.5gals PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
504.10	0822		START							
506.66	0832	well	DRY / no water to surface							
NA	0904	START								
	0908	0.5	11.39	837	332.4	6.54		1.61	71.3	7.66
	0909	1	13.92	802	322.2	7.01		3.03	36.7	3.74
	0909		sampling for wash only							

COC number(s):

Sample number(s):

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters
1/2" OD: 2 1.5 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-Gwm	Project No.:
Well I.D.: CWL-BW4A	Date: 10-22-09
Weather	
Method: X Portable pump ____ Dedicated pump	Pump depth: 506.6'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol L (gal)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
504.68	0834		START							
506.40	0844	2	well DRY		no water to surface					
	0919		START							
	~~0924~~	0.5	11.67	990	233.8	6.90		2.63	92.3	10.03
		1	12.28	1007	233.8	7.04		1.14	67.0	7.15
			waste Sample Only							

COC number(s): 612462

Sample number(s): 087868

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters
1/2" OD: 21.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW2BL	Date: 10-14-09
Weather	
Method: X Portable pump ____ Dedicated pump	Pump depth: 544.5'

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
498.60	0740		START							
498.80	0831	50	20.01	1099	198.2	6.84		0.37	73.7	6.61
498.81	0919	100	20.14	1101	195.5	6.83		0.29	78.5	7.10
498.82	1005	150	20.22	1104	196.0	6.83		0.27	78.3	7.06
498.83	1051	200	20.67	1104	197.1	6.83		0.33	79.2	7.08
498.84	1059	205	20.70	1102	197.2	6.83		0.38	78.5	7.01
498.84	1109	210	20.69	1101	197.8	6.83		0.31	72.9	6.52
498.84	1119	215	20.77	1100	198.1	6.83		0.38	78.0	6.96
498.84	1129	220	20.82	1098	198.8	6.83		0.38	79.5	7.09
498.79	1135	222	20.79	1098	199.2	6.83		0.30	69.1	6.17
498.79	1142	224	20.78	1098	199.9	6.83		0.35	78.2	6.97
498.79	1145	225	20.80	1097	199.9	6.83		0.32	76.9	6.86
	1146		SAMPLING							

COC number(s): 612446

Sample number(s): 087825, 087826

~4.00 gals. purged from tubing

0747

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters

1/2" OD: 21.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW2BU	Date: 10-16-09
Weather	
Method: _____ Portable pump ___X___ Dedicated pump QED	Pump depth: 495.05'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. (1) gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
494.08	0757		START							
NA	0811	0.4	15.23	729	192.6	8.23		25.2	80.0	8.03
NA	0823	0.650	13.74	718	187.5	8.12		47.4	88.6	8.91
	0823		well	DRY						
			NO Sample volume							
			Insufficient							

COC number(s):

Sample number(s):

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters
1/2" OD: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name:	CWL-AAt GWM	Project No.:	
Well I.D.:	CWL-MW4	Date:	10-21-09
Weather			
Method:	X Portable pump	____ Dedicated pump	Pump depth: 499.5'

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol L (gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
497.03	0810		START							
498.28	0832	2	13.20	885	111.0	6.58		11.9	10.7	1.11
498.35	0839	4	15.09	903	68.5	6.63		7.53	7.2	0.72
498.41	0846	6	15.98	918	51.7	6.71		7.89	~~25.2~~	~~2.49~~ RL 10.8
498.45	0852	8	16.27	951	43.3	6.95		48.5	32.4	3.18 1.03
498.45	0856	9	16.35	952	51.4	6.99		46.3	37.9	3.71
498.45	0859	10	16.43	953	56.3	6.99		32.2	43.3	4.22
498.45	0903	11	16.44	952	60.9	7.00		29.1	46.2	4.51
498.41	0907	12	16.41	952	65.5	7.00		20.1	48.4	4.72
498.45	0911	13	16.43	951	68.7	7.01		17.6	51.2	5.00
498.33	0915	14	16.31	949	73.8	7.01		14.2	51.9	5.07
498.28	0919	15	16.21	949	78.8	7.02		10.9	55.2	5.41
498.10	0925	16	16.00	949	84.8	7.02		7.14	55.9	5.50
497.95	0933	17	15.40	948	90.9	7.02		7.26	55.9	5.57
COC number(s): 612451										
Sample number(s): 087839										

~ 4.00 gals purged from tubing 0825

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters
1/2" OD: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name:	Project No.:
Well I.D.: CWL-MW4 cont.	Date: 10-21-09
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 499.5

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. L (gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	Color and appearance
497.99	0938	18	15.17	948	92.9	7.02		4.67	56.8	5.69
498.02	0944	19	15.37	947	95.3	7.02		4.90	57.4	5.73
498.04	0950	20	15.56	947	94.7	7.02		4.71	56.6	5.62
	0951	21	SAmpling							

COC number(s):

Sample number(s):

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons
4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons
6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ millileters
3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ millileters
1/2" ODl: 2 1.6 ml/ft X____ (length of tubing)) = _____ millileters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name:	Project No.:
Well I.D.: CWL-MW5L	Date: 10-15-09
Weather	
Method: _____ Portable pump ___X___ Dedicated pump QED	Pump depth: 544.78'

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. (L) gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
495.35	0800	/	START							
495.43	0819	2	17.11	792	194.0	7.91		0.42	80.2	7.72
495.41	0826	4	17.74	809	198.0	7.69		0.29	76.3	7.25
495.43	0834	6	18.01	1052	207.0	7.00		0.34	75.6	7.13
495.43	0839	7	18.10	1079	208.7	6.91		0.30	79.4	7.49
495.43	0843	8	18.16	1083	209.8	6.89		0.25	81.2	7.64
495.43	0847	9	18.19	1083	210.4	6.89		0.28	81.8	7.69
495.43	0851	10	18.26	1083	210.2	6.89		0.26	81.1	7.61
	0852	/	sampling							

COC number(s): 612447

Sample number(s): 087829

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters

1/2" OD: 2 1.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

80% =

Project Name:	CWL	Project No.:	
Well I.D.:	CWL-MW5H	Date:	10-16-09 10-19-09
Weather	Clear & Cool		
Method:	X Portable pump	____ Dedicated pump	Pump depth: 498.5

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol. L gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
490.24	0846		START							
494.60	0903	1	15.91	828	238.2	7.01		0.27	85.2	8.41
495.50	0907	2	17.16	828	232.4	7.14		0.28	76.2	7.33
496.42	0910	3	18.12	823	228.0	7.18		0.36	75.7	7.13
497.46	0913	4	18.84	818	224.0	7.21		0.43	76.3	7.10
498.30	0917	5	19.28	819	220.4	7.22		0.40	76.7	7.06
498.56	0919	5.5	19.48	818	218.8	7.23		0.43	76.8	7.03
498.56	0919		well DRY							
490.39	0825		START purge							→ 10-19-09
494.31	0840	0.25	18.00	924	203.8	7.50		0.71	83.8	7.91
	0841		Sampling							

COC number(s): 612449

Sample number(s): 087833, 087834

2 4.00 gal. purged prior to measurements 0900

10-19-09 0839

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters

1/2" OD: 21.6 ml/ft X____ (length of tubing) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL- GWM	Project No.:
Well I.D.: CWL-MW6L	Date: 10-20-09
Weather	
Method: _____ Portable pump X Dedicated pump QED	Pump depth: 551.48'

PURGE MEASUREMENTS

Depth to Water (FT)	Time 24 hr	Vol. (L) gls	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	DO mg/L ~~Color and appearance~~
497.15	0830	/	START							
497.38	0855	2	17.71	782	207.8	7.83		0.21	79.3	7.59
497.36	0909	4	18.47	866	208.9	7.58		0.23	61.4	5.73
497.17	0926	6	19.05	940	209.5	7.58		0.78	44.9	4.47
497.24	0934	7	19.21	1026	206.1	7.00		0.89	51.7	4.76
497.24	0943	8	19.32	1027	205.8	6.96		0.67	66.0	6.04
497.26	0950	9	19.56	1028	205.5	6.96		0.50	65.2	5.97
497.26	0957	10	19.77	1027	205.6	6.95		0.48	62.2	5.66
	0958	/	sampling							

COC number(s): 612450

Sample number(s): 087837

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters

1/2" OD: 21.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

Project Name: CWL-GWM	Project No.:
Well I.D.: CWL-MW6U	Date: 10-12-09 | 10-13-09
Weather	
Method: X Portable pump _____ Dedicated pump	Pump depth: 498.6

PURGE MEASUREMENTS

DO mg/L

Depth to Water (FT)	Time 24 hr	Vol L (gls)	Temp °C	Ec µmho	ORP MV	pH	Flow L gls	Turb NTU	DO %	~~Color and appearance~~
490.45	0807	—	START							
494.90	0830	2	15.37	920	234.5	7.05		0.28	59.7	5.96
495.58	0834	3	16.57	921	230.8	7.06		0.58	59.9	5.83
496.34	0838	4	17.34	921	227.7	7.06		0.39	60.5	5.78
496.95	0841	5	17.84	921	225.1	7.07		0.38	60.6	5.75
497.82	0846	6	18.40	920	221.6	7.07		0.33	60.8	5.70
498.22	0849	6.75	18.60	920	218.9	7.07		0.31	61.0	5.69
498.22	0849	well	DRY							
13 490.48	0810	—	START							
494.95	0822	1	18.49	918	168.4	7.06		0.26	66.5	6.17
495.72	0825	2	19.03	919	169.5	7.06		0.34	60.0	5.54
	0826	—	Sampling							

COC number(s): 612444

Sample number(s): 087821

~4.00 gals purged from tubing 0823

10-13-09 0819

Purge Volume Calculations

Well Diameter

2" well: 0.16 gal/ft X____ (height of water column) = _____ gallons

4" well: 0.65 gal/ft X____ (height of water column) = _____ gallons

6" well: 1.47 gal/ft X____ (height of water column) = _____ gallons

Tubing Diameter

1/4" OD: 2.4 ml/ft X____ (length of tubing) = _____ milliliters

3/8" OD: 9.7 ml/ft X____ (length of tubing) = _____ milliliters

1/2" OD: 21.6 ml/ft X____ (length of tubing)) = _____ milliliters

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0652	4.02	17.1	7.01	17.1	9.99	17.1
2. Time: 1055	4.03	18.4	7.02	18.4	10.00	18.4
3. Time: 0640	4.02	18.8	7.01	18.8	10.00	18.8
4. Time: 0958	4.03	19.2	7.01	19.2	10.00	19.2
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0648	1271	17.1	
2. Time: 1050	1274	18.4	
3. Time: 0636	1276	18.8	
4. Time: 0954	1278	19.2	

Comments:	
Calibration Done by: RL RL	Date: 10-12-09 10-13-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0649	199.8	17.1	
2. Time: 1052	200.0	18.4	
3. Time: 0638	200.3	18.8	
4. Time 0955	200.4	19.2	

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0749	.09	19.8	99.9	796
2. Time 0900	.10	19.9	100	797
3. Time 0751	.09	19.8	101	799
4. Time 0846	.11	20.1	102	801

Comments:

Calibration Done By: RL RL

Date: 10-12-09 10-13-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0646	81.1	7.97	24.25
2. Time: 1047	81.4	7.94	24.26
3. Time: 0634	81.1	7.55	24.25
4. Time: 0950	81.0	7.54	24.25

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL RL	Date: 10-12-09 10-13-09

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0636	4.00	16.9	7.01	16.9	9.99	16.9
2. Time: 1349	3.99	19.6	7.01	19.6	10.01	19.6
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0633	1272	16.9	
2. Time: 1343	1277	19.6	
3. Time:			
4. Time:			

Comments:	
Calibration Done by: RL	Date: 10-14-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0634	201.0	16.9	
2. Time: 1345	200.4	19.6	
3. Time:			
4. Time			

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0710	.10	19.8	99.9	796
2. Time 1217	.09	19.8	100	798
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 10-14-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX	
DO Probe Serial No.: 08G101303			
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0632	81.2	7.85	24.35
2. Time: 1341	81.3	7.83	24.37
3. Time:			
4. Time:			
Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.			
Calibration done by: RL		Date: 10-14-09	

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0644	3.99	18.2	7.01	18.2	9.99	18.2
2. Time: 1058	4.00	18.8	7.01	18.8	10.00	18.8
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0638	1275	18.2	
2. Time: 1053	1276	18.8	
3. Time:			
4. Time:			

Comments:	
Calibration Done by: RL	Date: 10-15-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0641	199.8	18.3	
2. Time: 1055	199.9	18.8	
3. Time:			
4. Time			

TURBIDIMETER	
Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0756	.09	19.9	100	799
2. Time 0940	.10	20.1	102	800
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 10-15-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2	Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303	

Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0636	81.5	7.67	24.39
2. Time: 1051	81.4	7.66	24.40
3. Time:			
4. Time:			

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 10-15-09

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0642	4.02	18.7	7.01	18.7	10.01	18.7
2. Time: 1009	4.01	19.4	7.02	19.4	10.01	19.4
3. Time: 0639	4.00	19.4	7.01	19.4	10.00	19.4
4. Time: 1035	4.02	19.9	7.01	19.9	9.99	19.9
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0637	1275	18.7	
2. Time: 1006	1275	19.4	
3. Time: 0636	1276	19.4	
4. Time: 1031	1277	19.9	

Comments:

Calibration Done by: RL TCL	Date: 10-16-09 10-19-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0640	201.1	18.8	
2. Time: 1007	200.9	19.4	
3. Time: 0637	201.0	19.4	
4. Time 1032	200.8	19.8	

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0750	.11	20.1	101	802
2. Time 0940	.10	20.2	100	802
3. Time 0748	.10	20.1	101	801
4. Time 0912	.09	20.2	102	798

Comments:

Calibration Done By: RL RL	Date: 10-16-09 10-19-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303		
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L	Atmospheric Pressure in/Hg
1. Time: 0635	81.6 / 7.60	24.45
2. Time: 1004	81.5 / 7.58	24.45
3. Time: 0634	81.4 / 7.48	24.36
4. Time: 1029	81.5 / 7.47	24.37

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL RL	Date: 10-16-09 10-19-09

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0647	4.02	18.6	6.99	18.6	10.01	18.6
2. Time: 1146	4.01	19.4	7.00	19.4	10.01	19.4
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0644	1275	18.6	
2. Time: 1142	1277	19.4	
3. Time:			
4. Time:			

Comments:	
Calibration Done by: RL	Date: 10-20-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0645	199.9	18.6	
2. Time: 1143	199.8	19.4	
3. Time:			
4. Time			

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0756	.09	19.9	101	798
2. Time 1015	.10	19.9	100	797
3. Time				
4. Time				

Comments:	
Calibration Done By: RC	Date: 10-20-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303		
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L	Atmospheric Pressure in/Hg
1. Time: 0642	80.8 / 7.55	24.20
2. Time: 1140	80.9 / 7.55	24.19
3. Time:		
4. Time:		

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 10-20-09

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0644	4.00	16.8	7.01	16.8	9.98	16.8
2. Time: 1107	4.01	17.4	7.00	17.4	9.99	17.4
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0640	1275	16.8	
2. Time: 1102	1274	17.4	
3. Time:			
4. Time:			

Comments:	
Calibration Done by: RL	Date: 10-21-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0641	198.7	16.8	
2. Time: 1103	199.1	17.4	
3. Time:			
4. Time			

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0753	.09	19.9	100	797
2. Time 1024	.10	19.8	99.9	798
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 10-21-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303		

Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0638	80.8	7.53	24.27
2. Time: 1100	81.0	7.55	24.25
3. Time:			
4. Time:			

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 10-21-09

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0641	4.03	17.5	7.01	17.5	9.99	17.5
2. Time: 0954	4.02	18.0	7.00	18.0	9.98	18.0
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date:12/ 2009
1. Time: 0637	1275	17.5	
2. Time: 0950	1275	18.0	
3. Time:			
4. Time:			

Comments:	
Calibration Done by: RL	Date: 10-22-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0639	200.1	17.6	
2. Time: 0951	199.8	18.0	
3. Time:			
4. Time			

TURBIDIMETER				
Make & Model No.: HACH 2100P			Serial No.: 030900032367	
Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0747	.09	20.1	102	799
2. Time 0928	.09	20.0	101	797
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 10-22-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303		

Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L		Atmospheric Pressure in/Hg
1. Time: 0636	81.0	7.74	24.23
2. Time: 0948	81.1	7.77	24.25
3. Time:			
4. Time:			

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RC	Date: 10-22-09

ATTACHMENT A-1

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			SNL/NM Project No.: 125778.10.11.01			
Contractor Project Name:			Contractor Project No.:			
pH, TEMPERATURE Meter						
Make & Model: YSI 6920 V2			Serial No.: 08H 100031			
PH Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A			
pH Calibrated to (std): 7.00			pH sloped to (std): 10.00			
Reference Value:	4.00		7.00		10.00	
	Value	Temp	Value	Temp	Value	Temp
1. Time: 0640	4.00	17.3	7.01	17.3	9.99	17.3
2. Time: 1005	4.01	17.8	7.02	17.8	10.00	17.8
3. Time:						
4. Time:						
Standard Lot No.: 031187						
Expiration Date: 12/2009						

Ec Probe Model No.: YSI6560			Serial No.: 08G 100420
Reference Value: 1278 @ 20C			Standard Lot #: 1710737
	Value	Temp	Expiration Date: 12/ 2009
1. Time: 0637	1274	17.3	
2. Time: 1001	1276	17.8	
3. Time:			
4. Time:			

Comments:

Calibration Done by: TCL	Date: 10-23-09

ATTACHMENT A-2

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL			Project No.: 125778.10.11.01
ORP Probe Model No.: YSI 6565			Serial No.: YSI 6565 03A
Reference value: 200.0			Standard Lot No. A6349
	Value	Temp	Expiration Date: 12/2009
1. Time: 0638	198.7	17.4	
2. Time: 1000	200.0	17.9	
3. Time:			
4. Time			

TURBIDIMETER	
Make & Model No.: HACH 2100P	Serial No.: 030900032367

Reference Value	.1	20	100	800
Standard Lot No. A5265				
1. Time 0758	.09	19.9	100	798
2. Time 0911	.09	19.8	101	798
3. Time				
4. Time				

Comments:	
Calibration Done By: RL	Date: 10-23-09

ATTACHMENT A-3

WATER-SAMPLE-COLLECTION FIELD EQUIPMENT CHECK LOG

SNL/NM Project Name: CWL	SNL/NM Project No.: 125778.10.11.01
Contractor Project Name:	Contractor Project No.:

ORGANIC VAPOR DETECTOR

Make & Model:		Serial No.:
Cal. Gas: Isobutylene	Conc., ppm:	Bulb, eV:

1. Time:	Value:	Span Setting:
2.		
3.		
4.		

DISSOLVED OXYGEN METER

Make & Model: YSI 6920 V2		Serial No.: YSI 6150 ROX
DO Probe Serial No.: 08G101303		
Calibration value:	81% Air Saturation @ 5200 ft./ DO mg/L	Atmospheric Pressure in/Hg
1. Time: 0635	81.1 / 7.79	24.29
2. Time: 0958	81.0 / 7.77	24.30
3. Time:		
4. Time:		

Comments: Nova Lynx Digital Barometer/ Altimeter S# 986870-T3 used in calibration.

Calibration done by: RL	Date: 10-23-09

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW6U	Date: 10/13/09

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 43911
Personnel Performing Decontamination: Print Name: Robert Lynch Initial: RL Print Name: William Gibson Initial: WJG	Personnel Performing Decontamination: Print Name: Robert Lynch Initial: RL Print Name: William Gibson Initial: WJG

Condition of Equipment

Pump: Good Tubing Bundle: Good Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 09-27-09** **EB-1;612444 taken prior to CWL-MW2BL purge.**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW2BL	Date: 10/15/09

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 43911
Personnel Performing Decontamination: Print Name: Alfred Satillanes Initial: Print Name: William Gibson Initial:	Personnel Performing Decontamination: Print Name: Alfred Santillanes Initial: Print Name: William Gibson Initial

Condition of Equipment

Pump: Good Tubing Bundle: Good Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 09-27-09** **EB-2;612448 taken prior to CWL-MW5U purge.**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	Monitoring Well ID # CWL-MW5U	Date: 10/19/09

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	Water Level Indicator ID#: 43911
Personnel Performing Decontamination: Print Name: Robert Lynch Initial: RL Print Name: William Gibson Initial: WJG	Personnel Performing Decontamination: Print Name: Robert Lynch Initial: RL Print Name: William Gibson Initial: WJG

Condition of Equipment

Pump: Good Tubing Bundle: Good Water Level Indicator: Good

List of Decontamination Materials

Distilled or **Deionized** (circle one) **Source: Culligan** **Lot Number: 09-27-09**	**HNO_3** **Grade: Reagent** **UN #: 2031** **Manufacture: Fisher** **Lot Number: 002735**

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	**Monitoring Well ID #:** CWL-MW4	**Date:** 10/21/09

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	**Water Level Indicator ID#:** 43908
Personnel Performing Decontamination: Print Name: Robert Lynch Initial: Print Name: William Gibson Initial:	**Personnel Performing Decontamination:** Print Name: Robert Lynch Initial: Print Name :William Gibson Initial:

Condition of Equipment

Pump: Good Tubing Bundle: **Good** **Water Level Indicator:** Good

List of Decontamination Materials

Distilled or **Deonized** (circle one) **Source:** Culligan **Lot Number:** 09-27-09	**HNO_3** **Grade:** Reagent **UN #:** 2031 **Manufacture:** Fisher **Lot Number:** 002735

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	**Monitoring Well ID #:** CWL-BW4A	**Date:** 10/22/09

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	**Water Level Indicator ID#:** 43908
Personnel Performing Decontamination: Print Name: Robert Lynch Initial: RL Print Name: William Gibson Initial: WJG	**Personnel Performing Decontamination:** Print Name: Robert Lynch Initial: RL Print Name :William Gibson Initial: WJG

Condition of Equipment

Pump: Good Tubing Bundle: **Good** **Water Level Indicator:** Good

List of Decontamination Materials

Distilled or **Deonized** (circle one) **Source:** Culligan **Lot Number:** 09-27-09	**HNO_3** **Grade:** Reagent **UN #:** 2031 **Manufacture:** Fisher **Lot Number:** 002735

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

Project Name: CWL	**Monitoring Well ID #:** CWL-BW3	**Date:** 10/23/09

The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03

Pump and Tubing Bundle ID #: Pump 2	**Water Level Indicator ID#:** 43908
Personnel Performing Decontamination: Print Name: Robert Lynch Initial: RL Print Name: William Gibson Initial: WG	**Personnel Performing Decontamination:** Print Name: Robert Lynch Initial: RL Print Name :William Gibson Initial: WG

Condition of Equipment

Pump: Good | Tubing Bundle: **Good** | **Water Level Indicator:** Good

List of Decontamination Materials

Distilled or **Deonized** (circle one) **Source:** Culigan **Lot Number:** 09-27-09	**HNO_3** **Grade:** Reagent **UN #:** 2031 **Manufacture:** Fisher **Lot Number:** 002735

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson Phone: 284-5232 Task Leader: Don Schofield

Signature: _____ **To the best of my knowledge this information is correct & accurate.**

Container I.D. # (site-date-sequence)	**CWL-MW6U-101209**		**CWL-101309**			
Container Certification # (i.e.SNL/NM######)	**NA**		**NA**			
Project Name	**CWL-GWM**		**CWL-GWM**			
Site Number	**NA**		**NA**			
Waste Mgt. Case #	**125778.10.11.01**		**125778.10.11.01**			
Initial Label Type	**HAZ-Waste**		**HAZ-Waste**			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	**Purge water**		**Decon water**			
Container Type / Vol (always use Certified containers)	**CHPD**	**55gal.**	**CHPD**	**55gal.**		
Volume of Waste	**20 gals**		**30 gals**			
Total Container Weight	**200 lbs.**		**300 lbs.**			
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	**COC# 612444 SMO# 087821**		**COC# 612444 SMO# 087821**		**COC# SMO#**	
SMO Radioactive [ ]	**NA**		**NA**		**NA**	
ERCL Haz [ ] Rad [ ]	**NA**		**NA**		**NA**	
RPSD Rad [ ] (Amir's on-site Rad Lab)	**NA**		**NA**		**NA**	
Container Exterior RAD SURVEY #	**Survey: NA Swipes:**		**Survey: NA Swipes:**		**Survey: NA Swipes:**	
Container Contents RAD SURVEY #	**Survey: NA Swipes:**		**Survey: NA Swipes:**		**Survey: NA Swipes:**	
Accumulation Date	**Start 10/12/09 Full 10/13/09**		**Start 10/13/09 Full 10/13/09**		**Start Full**	
Date Moved to Waste Accumulation Area	**10/13/09**		**10/13/09**			
Accumulation Area Name	**9925**		**9925**		**9925**	
ERwm Memo #						
Comments			**Decon pump after CWL-MW6U purge;CoC 612444 .EB-1; CoC 612445 taken prior CWL-MW2BL purge.**			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson Phone: 284-5232 Task Leader: Don Schofield

Signature: To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW2BL-101409-01		CWL-MW2BL-101409-02		CWL-MW2BL-101409-03	
Container Certification # (i.e.SNL/NM######)	NA		NA		NA	
Project Name	CWL-GWM		CWL-GWM		CWL-GWM	
Site Number	NA		NA		NA	
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01		125778.10.11.01	
Initial Label Type	HAZ-Waste		HAZ-Waste		HAZ-Waste	
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Purge water		Purge water	
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.	CHPD	55gal.
Volume of Waste	38 gals		38 gals		38 gals	
Total Container Weight	380 lbs.		380 lbs.		380 lbs.	
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612446 SMO# 087825, 087826		COC# 612446 SMO# 087825, 087826		COC# 612446 SMO# 087825, 087826	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 10/14/09 Full 10/14/09		Start 10/14/09 Full 10/14/09		Start 10/14/09 Full 10/14/09	
Date Moved to Waste Accumulation Area	10/14/09		10/14/09		10/14/09	
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments						

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson Phone: 284-5232 Task Leader: Don Schofield

Signature: _____ **To the best of my knowledge this information is correct & accurate.**

Container I.D. # (site-date-sequence)	CWL-MW2BL-101409-04		CWL-MW2BL-101409-05		CWL-MW2BL-101409-06	
Container Certification # (i.e.SNL/NM######)	NA		NA		NA	
Project Name	CWL-GWM		CWL-GWM		CWL-GWM	
Site Number	NA		NA		NA	
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01		125778.10.11.01	
Initial Label Type	HAZ-Waste		HAZ-Waste		HAZ-Waste	
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Purge water		Purge water	
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.	CHPD	55gal.
Volume of Waste	38 gals		38 gals		35 gals	
Total Container Weight	380 lbs.		380 lbs.		350 lbs.	
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612446 SMO# 087825, 087826		COC# 612446 SMO# 087825, 087826		COC# 612446 SMO# 087825, 087826	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 10/14/09 Full 10/14/09		Start 10/14/09 Full 10/14/09		Start 10/14/09 Full 10/14/09	
Date Moved to Waste Accumulation Area	10/14/09		10/14/09		10/14/09	
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments						

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson Phone: 284-5232 Task Leader: Don Schofield

Signature: _____ **To the best of my knowledge this information is correct & accurate.**

Container I.D. # (site-date-sequence)	CWL-101509					
Container Certification # (i.e.SNL/NM######)	NA					
Project Name	CWL-GWM					
Site Number	NA					
Waste Mgt. Case #	125778.10.11.01					
Initial Label Type	HAZ-Waste					
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Decon water					
Container Type / Vol (always use Certified containers)	CHPD	55gal.				
Volume of Waste	30 gals					
Total Container Weight	300 lbs.					
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612446 SMO# 087825, 087826		COC# SMO#		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 10/15/09 Full 10/15/09		Start Full		Start Full	
Date Moved to Waste Accumulation Area	10/15/09					
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments	Decon pump after CWL-MW2BL purge;CoC 612446 .EB-2; CoC 612448 taken prior CWL-MW5U purge.					

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: William J. Gibson To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW5U-101609		CWL-101909			
Container Certification # (i.e.SNL/NM######)	NA		NA			
Project Name	CWL-GWM		CWL-GWM			
Site Number	NA		NA			
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	HAZ-Waste		HAZ-Waste			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Decon water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	20 gals		30 gals			
Total Container Weight	200 lbs.		300 lbs.			
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612449 SMO# 087833, 087834		COC# 612449 SMO# 087833, 087834		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 10/16/09 Full 10/19/09		Start 10/19/09 Full 10/19/09		Start Full	
Date Moved to Waste Accumulation Area	10/19/09		10/19/09			
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments			Decon pump after CWL-MW5U purge;CoC 612449			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson Phone: 284-5232 Task Leader: Don Schofield

Signature: _____ **To the best of my knowledge this information is correct & accurate.**

Container I.D. # (site-date-sequence)	CWL-QED-101509					
Container Certification # (i.e.SNL/NM######)	NA					
Project Name	CWL-GWM					
Site Number	NA					
Waste Mgt. Case #	125778.10.11.01					
Initial Label Type	HAZ-Waste					
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water					
Container Type / Vol (always use Certified containers)	CHPD	55gal.				
Volume of Waste	9 gals					
Total Container Weight	90 lbs.					
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612447, 612450 SMO# 087829, 087837		COC# SMO#		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 10/15/09 Full 10/20/09		Start Full		Start Full	
Date Moved to Waste Accumulation Area	10/20/09					
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments	CWL-MW2BU not enough water to sample.					

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody toCraig Wood MS-1087 Fax 284-2616

Form Generator: William Gibson **Phone:** 284-5232 **Task Leader:** Don Schofield

Signature: [signature] To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-MW4-102109		CWL-102109			
Container Certification # (i.e.SNL/NM######)	NA		NA			
Project Name	CWL-GWM		CWL-GWM			
Site Number	NA		NA			
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	HAZ-Waste		HAZ-Waste			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge water		Decon water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	~~15~~ 22 gals 24 gals		30 gals			
Total Container Weight	~~150 lbs.~~ 240 165.		300 lbs.			
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612451 SMO# 087839		COC# 612451 SMO# 087839		COC# SMO#	
SMO Radioactive [ ]	NA		NA		NA	
ERCL Haz [ ] Rad [ ]	NA		NA		NA	
RPSD Rad [ ] (Amir's on-site Rad Lab)	NA		NA		NA	
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Accumulation Date	Start 10/21/09 Full 10/21/09		Start 10/21/09 Full 10/21/09		Start Full	
Date Moved to Waste Accumulation Area	10/21/09		10/21/09			
Accumulation Area Name	9925		9925		9925	
ERwm Memo #						
Comments			Decon pump after CWL-MW4 purge;CoC 612451			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

NOTE: Complete all information, mark boxes NA if Not Applicable. Shaded area is for ERwm use only.

ER WASTE GENERATION LOG

(Version: 5/2/01) Return completed form with a copy of the Chain of Custody to Ernest Vinsant. MS-1087 Fax 284-2616

Form Generator: Robert Lynch **Phone:** 844-4013 **Task Leader:** Don Schofield

Signature: Robert Lynch To the best of my knowledge this information is correct & accurate.

Container I.D. # (site-date-sequence)	CWL-BW4A-102209		CWL-BW3-102309			
Container Certification # (i.e.SNL/NM######)						
Project Name	CWL-GWM		CWL-GWM			
Site Number						
Waste Mgt. Case #	125778.10.11.01		125778.10.11.01			
Initial Label Type	HAZ		HAZ			
Waste Matrix (i.e. Water, Cuttings, Soil, Samples, Metal, etc.)	Purge Water/Decon water		Purge water/Decon Water			
Container Type / Vol (always use Certified containers)	CHPD	55gal.	CHPD	55gal.		
Volume of Waste	36		38			
Total Container Weight	320		350			
Waste Char. Samples (COC#: Sample#-Fraction) **SMO Hazardous [ ]**	COC# 612462 SMO# 087868		COC# 612462 SMO# 087870			
SMO Radioactive [ ]						
ERCL Haz [ ] Rad [ ]						
RPSD Rad [ ] (Amir's on-site Rad Lab)						
Container Exterior RAD SURVEY #	Survey: NA Swipes:		Survey: NA Swipes:		Survey: NA Swipes:	
Container Contents RAD SURVEY #	Survey: Swipes: NA		Survey: Swipes: NA		Survey: Swipes: NA	
Accumulation Date	Start: 10/22/09 Full 10/22/09		Start 10/23/09 Full 10/23/09		Start Full	
Date Moved to Waste Accumulation Area	10/22/09		10/23/09			
Accumulation Area Name	9925		9925			
ERwm Memo #						
Comments	Decon after CWL-BW4A		Decon after CWL-BW3			

(OHSD)= open head steel drum; (CHSD)= closed head steel drum; (CHPD)= closed head poly drum; (OHPD)= open head poly drum; (OHPB)= open head poly bucket; (RL-Off)= roll off; (WGLR)= wrangler bag; (744)= 7'x4'x4' steel box; (BB)= Burrito bag.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/12/09 10-13-09 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW6U Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE:
NAME PRINTED: William Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: William Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____

10/13/09

UNK: Unknown: NA: Not applicable: ND: Not done.

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/14/09 Sheet ___of___

ER Site #(s): CWL -GWM Well=CWL-MW2BL Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch _____
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE: _____
NAME PRINTED: William Gibson SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/15/09 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW5L Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch _____
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE: _____
NAME PRINTED: William Gibson SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/16/09 ~~10/19/09~~ Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW2BU Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch [signature] [signature]
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: [signature]
10/19/09 NAME PRINTED: ALFRED SANTILLANES SIGNATURE: [signature]
10/19/09 NAME PRINTED: ALFRED SANTILLANES SIGNATURE: [signature]
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/16/09 10/19/09 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-MW5U Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch _____
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: William Gibson SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/20/09 Sheet ___of___

ER Site #(s): CWL -GWM Well=CWL-MW6L Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch _____
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE: _____
NAME PRINTED: William Gibson SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/21/09 Sheet ___of___

ER Site #(s): CWL -GWM Well=CWL-MW4 Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: William Gibson SIGNATURE: William J Gibson

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/22/09 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-BW4A Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE:
NAME PRINTED: William Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

FOP 94-01
Rev. 1
Attachment

ENVIRONMENTAL RESTORATION
TAILGATE SAFETY MEETING FORM

Date: 10/23/09 Sheet ___ of ___

ER Site #(s): CWL -GWM Well=CWL-BW3 Operable Units(s) _____
Applicable documentation:
Site Work Plan: PHS :9631246780-010, HASP 222696
FOP's : 94-01,94-25,94-26,94-28,94-30,94-34,94-46,94-47,94-48,95-02

MEETING CONDUCTED BY: Robert Lynch
NAME PRINTED SIGNATURE

SAFETY TOPICS PRESENTED

Protective Cloting/Equipment: Level-D, when sampling

Chemical Hazards: Acids in Sample containers, safety glasses and latex gloves when sampling

Radiological Hazards: None

Physical Hazards: Elements, slip, trip, falls, possible biological

Emergency Procedures: Aide, Call, Transport

Hospital/Clinic: Sandia Medical Phone: ( )844-0911/ 911 Paramedic Phone: ( )911

Hospital Address: 7th & F street

Special Equipment: Sampling pumps

Other: _____

ATTENDEES

NAME PRINTED: ALFRED SANTILLANES SIGNATURE:
NAME PRINTED: William J Gibson SIGNATURE:
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____
NAME PRINTED: _____ SIGNATURE: _____

UNK: Unknown: NA: Not applicable: ND: Not done.

ATTACHMENT B
ANALYSIS REQUEST/CHAIN-OF-CUSTODY FORMS

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612462

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/26/09	Project/Task No. 125778.10.11.01	☑ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.		SMO Authorization: [illegible] SMO	-Send preliminary/copy report to:Tim Jackson
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	☐ Released by COC No.:
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Validation Required
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		Bill To:Sandia National Labs (Accounts Payable)
Service Order No.	CF 025-10	Send Report to SMO:	Lorraine Herrera/505-844-3199		P.O. Box 5800 MS 0154
Location	Tech Area				Albuquerque, NM 87185-0154
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
087868-001	CWL-BW4A	506.6	N/A	10/22/09 0920	WW	G	3x40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087868-009	CWL-BW4A	506.6		10/22/09 0921	WW	P	500ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APP IX	
087869-001	CWL-TB9	NA		10/22/09 0920	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	
087870-001	CWL-BW3	506.2		10/23/09 0910	WW	G	3x40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087870-009	CWL-BW3	506.2		10/23/09 0911	WW	P	500ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APP IX	
087871-001	CWL-TB10	NA	N/A	10/23/09 0910	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA ☐ Yes ☑ No Ref. 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
	Alfred Santillanes	[signature]	AS	Weston/4133/844-5130/228-0710
	Robert Lynch	[signature]	RL	Weston/4133/844-4013/250-7090
	William J Gibson	[signature]	WJG	Weston/4133/844-4013/239-7367

*Send report to:

Tim Jackson/Org 4133/MS 0756/505-284-2547

Sampling complete for CWL 1st Qtr 10

SA Samples for waste characterization only

*Please list as separate report.

1.Relinquished by	[signature]	Org. 4133	Date 10/26/09	Time 0935	4.Relinquished by		Org.	Date	Time
1. Received by	[signature]	Org. 4133	Date 10/26/09	Time 0935	4. Received by		Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by		Org.	Date	Time
2. Received by		Org.	Date	Time	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

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC **612446**

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/14/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	106510	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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
087825-001	CWL-MW2BL	544.5	NA	101409/1146	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087825-002	CWL-MW2BL	544.5	NA	101409/1147	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270) APP IX	
087825-010	CWL-MW2BL	544.5	NA	101409/1151	GW	P	500 ml	HNO3	G	SA	Metals+Fe+Ur(SW846-6020/7470)APP IX	
087825-013	CWL-MW2BL	544.5	NA	101409/1152	FGW	P	250 ml	HNO3	G	SA	Dissoloved Chromium (SW846-6020)	
087825-025	CWL-MW2BL	544.5	NA	101409/1153	GW	AG	3 x 1L	4C	G	SA	PCBs (SW846-8082) APP IX	
087825-027	CWL-MW2BL	544.5	NA	101409/1157	GW	P	500 ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
087825-029	CWL-MW2BL	544.5	NA	101409/1158	GW	P	1 L	NaOH	G	SA	Sulfide (SW846-9034)	
087825-032	CWL-MW2BL	544.5	NA	101409/1159	GW	AG	3 x 1L	4C	G	SA	Chloro Herbicides(SW846-8151) APP IX	
087825-043	CWL-MW2BL	544.5	NA	101409/1203	GW	AG	4 x 1L	4C	G	SA	PCB Congeners (1668A)	
087826-001	CWL-MW2BL	544.5	NA	101409/1146	GW	G	3x40ml	HCL	G	DU	VOC (SW846-8260) APP IX	

RMMA	☐ Yes ☑ No Ref. 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 0756/505-284-2547

FGW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by		Org.	4133	Date	10/14/09	Time	1238	4.Relinquished by	Org.	Date	Time
1. Received by		Org.	4133	Date	10/14/09	Time	1238	4. Received by	Org.	Date	Time
2.Relinquished by		Org.		Date		Time		5.Relinquished by	Org.	Date	Time
2. Received by		Org.		Date		Time		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- 612446

Project Name:	CWL GWM	Project/Task Manger:	John Cochran			Project/Task No.:	125778.10.11.01					
Location	Tech Area	**Reference LOV (available at SMO)**										Lab use
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
087826-002	CWL-MW2BL	544.5	NA	101409/1147	GW	AG	3 x 1L	4C	G	DU	SVOC (SW846-8270) APP IX	
087826-010	CWL-MW2BL	544.5	NA	101409/1151	GW	P	500 ml	HNO3	G	DU	Metals+Fe+Ur(SW846-6020/7470)APP IX	
087826-013	CWL-MW2BL	544.5	NA	101409/1152	FGW	P	250 ml	HNO3	G	DU	Dissoloved Chromium (SW846-6020)	
087826-025	CWL-MW2BL	544.5	NA	101409/1153	GW	AG	3 x 1L	4C	G	DU	PCBs (SW846-8082) APP IX	
087826-027	CWL-MW2BL	544.5	NA	101409/1157	GW	P	500 ml	NaOH	G	DU	Total Cyanide (SW846-9012)	
087826-029	CWL-MW2BL	544.5	NA	101409/1158	GW	P	1 L	NaOH	G	DU	Sulfide (SW846-9034)	
087826-032	CWL-MW2BL	544.5	NA	101409/1159	GW	AG	3 x 1L	4C	G	DU	Chloro Herbicides(SW846-8151) APP IX	
087826-043	CWL-MW2BL	544.5	NA	101409/1203	GW	AG	4 x 1L	4C	G	DU	PCB Congeners (1668A)	
087827-001	CWL-FB1	NA	NA	101409/1107	DIW	G	3 x 40ml	HCL	G	FB	VOC (SW846-8260) APP IX	
087828-001	CWL-TB3	NA	NA	101409/1146	DIW	G	3 x 40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

Abnormal Conditions on Receipt LAB USE

Recipient Initials_____

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612451

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10-21-09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	106747	SMO Authorization: [signature] SMO	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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	**Reference LOV(available at SMO)**			Albuquerque, NM 87185-0154

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
087839-001	CWL-MW4	499.5	NA	102109/0951	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087839-002	CWL-MW4	499.5	NA	102109/0954	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270) APP IX	
087839-009	CWL-MW4	499.5	NA	102109/0956	GW	P	500 ml	HNO3	G	SA	Metals+Fe+Ur (SW846-6020/7470) APP IX	
087839-013	CWL-MW4	499.5	NA	102109/0957	FGW	P	250 ml	HNO3	G	SA	Dissoloved Chromium (SW846-6020)	
087839-025	CWL-MW4	499.5	NA	102109/0958	GW	AG	3 x 1L	4C	G	SA	PCBs (SW846-8082) APP IX	
087839-027	CWL-MW4	499.5	NA	102109/1000	GW	P	500 ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
087839-029	CWL-MW4	499.5	NA	102109/1001	GW	P	1 L	NaOH	G	SA	Sulfide (SW846-9034)	
087839-032	CWL-MW4	499.5	NA	102109/1002	GW	AG	3 x 1L	4C	G	SA	Chloro Herbicides(SW846-8151) APP IX	
087839-043	CWL-MW4	499.5	NA	102109/1005	GW	AG	4 x 1L	4C	G	SA	PCB Congeners (1668A)	
087840-001	CWL-TB8	NA	NA	102109/0951	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/Org 4133/MS 0756/505-284-2547

FGW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by	[signature]	Org. 4133	Date 10/21/09	Time 1045	4.Relinquished by		Org.	Date	Time
1. Received by	[signature] SMO	Org. 4133	Date 10/21/09	Time 1045	4. Received by		Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by		Org.	Date	Time
2. Received by		Org.	Date	Time	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

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC **612447**

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/15/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybil No.	186577	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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
087829-001	CWL-MW5L	544.78	NA	101509/0852	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087829-002	CWL-MW5L	544.78	NA	101509/0853	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270) APP IX	
087829-010	CWL-MW5L	544.78	NA	101509/0859	GW	P	500 ml	HNO3	G	SA	Metals+Fe+Ur(SW846-6020/7470)APP IX	
087829-013	CWL-MW5L	544.78	NA	101509/0901	FGW	P	250 ml	HNO3	G	SA	Dissoloved Chromium (SW846-6020)	
087829-025	CWL-MW5L	544.78	NA	101509/0902	GW	AG	3 x 1L	4C	G	SA	PCBs (SW846-8082) APP IX	
087829-027	CWL-MW5L	544.78	NA	101509/0908	GW	P	500 ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
087829-029	CWL-MW5L	544.78	NA	101509/0910	GW	P	1 L	NaOH	G	SA	Sulfide (SW846-9034)	
087829-032	CWL-MW5L	544.78	NA	101509/0912	GW	AG	3 x 1L	4C	G	SA	Chloro Herbicides(SW846-8151) APP IX	
087829-043	CWL-MW5L	544.78	NA	101509/0918	GW	G	4 x 1L	4C	G	SA	PCB Congeners (1668A)	
087830-001	CWL-TB4	NA	NA	101509/0852	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA	☐ Yes ☑ No Ref. 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 0756/505-284-2547

FGW (Filtered in field w/ 45 micron filter)

Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by		Org. 4133	Date 10/15/09	Time 1037	4.Relinquished by		Org.	Date	Time
1. Received by		Org. 4133	Date 10/15/09	Time 1037	4. Received by		Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by		Org.	Date	Time
2. Received by		Org.	Date	Time	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

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC **612449**

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/19/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.		SMO Authorization: Ryb. for SMO	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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	**Reference LOV(available at SMO)**			Albuquerque, NM 87185-0154

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
087833-001	CWL-MW5U	498.5	NA	091909/0841	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087833-002	CWL-MW5U	498.5	NA	091909/0843	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270) APP IX	
087833-009	CWL-MW5U	498.5	NA	091909/0844	GW	P	500 ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APP IX	
087833-013	CWL-MW5U	498.5	NA	091909/0845	FGW	P	250 ml	HNO3	G	SA	Dissoloved Chromium (SW846-6020)	
087833-025	CWL-MW5U	498.5	NA	091909/0847	GW	AG	3 x 1L	4C	G	SA	PCBs (SW846-8082) APP IX	
087833-027	CWL-MW5U	498.5	NA	091909/0848	GW	P	500 ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
087833-029	CWL-MW5U	498.5	NA	091909/0849	GW	P	1 L	NaOH	G	SA	Sulfide (SW846-9034)	
087833-032	CWL-MW5U	498.5	NA	091909/0851	GW	AG	3 x 1L	4C	G	SA	Chloro Herbicides(SW846-8151) APP IX	
087834-001	CWL-MW5U	498.5	NA	091909/0841	GW	G	3x40ml	HCL	G	DU	VOC (SW846-8260) APP IX	
087834-002	CWL-MW5U	498.5	NA	091909/0843	GW	AG	3 x 1L	4C	G	DU	SVOC (SW846-8270) APP IX	

RMMA	☐ Yes ☑ No Ref. 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 0756/505-284-2547

FGW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by		Org.	4133	Date	10/19/09	Time	0945	4.Relinquished by	Org.	Date	Time
1. Received by	Ryb. for SMO	Org.	4133	Date	10/19/09	Time	0945	4. Received by	Org.	Date	Time
2.Relinquished by		Org.		Date		Time		5.Relinquished by	Org.	Date	Time
2. Received by		Org.		Date		Time		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- 612449

Project Name:	CWL GWM	Project/Task Manger:	John Cochran	Project/Task No.:	125778.10.11.01
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
087834-009	CWL-MW5U	498.5	NA	091909/0844	GW	P	500 ml	HNO3	G	DU	Metals+Fe (SW846-6020/7470) APP IX	
087834-013	CWL-MW5U	498.5	NA	091909/0845	FGW	P	250 ml	HNO3	G	DU	Dissoloved Chromium (SW846-6020)	
087834-025	CWL-MW5U	498.5	NA	091909/0847	GW	AG	3 x 1L	4C	G	DU	PCBs (SW846-8082) APP IX	
087834-027	CWL-MW5U	498.5	NA	091909/0848	GW	P	500 ml	NaOH	G	DU	Total Cyanide (SW846-9012)	
087834-029	CWL-MW5U	498.5	NA	091909/0849	GW	P	1 L	NaOH	G	DU	Sulfide (SW846-9034)	
087834-032	CWL-MW5U	498.5	NA	091909/0851	GW	AG	3 x 1L	4C	G	DU	Chloro Herbicides(SW846-8151) APP IX	
087835-001	CWL-FB2	NA	NA	091909/0830	DIW	G	3x40ml	HCL	G	FB	VOC (SW846-8260) APP IX	
087836-001	CWL-TB6	NA	NA	091909/0841	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

Abnormal Conditions on Receipt LAB USE

Recipient Initials_____

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use /

AR/COC 612450

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/20/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	10.6.18	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL		☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185	5 EDS BOTTLE ORDER	☑ Validation Required
Service Order No.	CF 025-10	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		Reference LOV(available at SMO)		Albuquerque, NM 87185-0154

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
087837-001	CWL-MW6L	551.48	NA	102009/0958	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087837-002	CWL-MW6L	551.48	NA	102009/1012	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270) APP IX	
087837-010	CWL-MW6L	551.48	NA	102009/1105	GW	P	500 ml	HNO3	G	SA	Metals+Fe+Ur(SW846-6020/7470)APP IX	
087837-013	CWL-MW6L	551.48	NA	102009/1033	FGW	P	250 ml	HNO3	G	SA	Dissoloved Chromium (SW846-6020)	
087837-025	CWL-MW6L	551.48	NA	102009/1126	GW	AG	3 x 1L	4C	G	SA	PCBs (SW846-8082) APP IX	
087837-027	CWL-MW6L	551.48	NA	102009/1109	GW	P	500 ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
087837-029	CWL-MW6L	551.48	NA	102009/1118	GW	P	1 L	NaOH	G	SA	Sulfide (SW846-9034)	
087837-032	CWL-MW6L	551.48	NA	102009/1205	GW	AG	3 x 1L	4C	G	SA	Chloro Herbicides(SW846-8151) APP IX	
087837-043	CWL-MW6L	551.48	NA	102009/1229	GW	G	4 x 1L	4C	G	SA	PCB Congeners (1668A)	
087838-001	CWL-TB7	NA	NA	102009/0958	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking — Smo Use

Date Entered(mm/dd/yy)

Entered by:

QC Inits.

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0756/505-284-2547

FGW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by		Org. 4133	Date 10/20/09	Time 1315	4.Relinquished by	Org.	Date	Time	
1. Received by		Org. 4133	Date 10/20/09	Time 1315	4. Received by	Org.	Date	Time	
2.Relinquished by		Org.	Date	Time	5.Relinquished by	Org.	Date	Time	
2. Received by		Org.	Date	Time	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	

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

Internal Lab

Batch No. N/A

SMO Use

AR/COC **612444**

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/13/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No:	106788	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
087821-001	CWL-MW6U	498.6	NA	101309/0826	GW	G	3 x 40ml	HCL	G	SA	VOC (SW846-8260) APP IX	
087821-002	CWL-MW6U	498.6	NA	101309/0828	GW	AG	3 x 1L	4C	G	SA	SVOC (SW846-8270) APP IX	
087821-009	CWL-MW6U	498.6	NA	101309/0829	GW	P	500 ml	HNO3	G	SA	Metals+Fe (SW846-6020/7470) APP IX	
087821-013	CWL-MW6U	498.6	NA	101309/0830	FGW	P	250 ml	HNO3	G	SA	Dissoloved Chromium (SW846-6020)	
087821-025	CWL-MW6U	498.6	NA	101309/0832	GW	AG	3 x 1L	4C	G	SA	PCBs (SW846-8082) APP IX	
087821-027	CWL-MW6U	498.6	NA	101309/0833	GW	P	500 ml	NaOH	G	SA	Total Cyanide (SW846-9012)	
087821-029	CWL-MW6U	498.6	NA	101309/0834	GW	P	1 L	NaOH	G	SA	Sulfide (SW846-9034)	
087821-032	CWL-MW6U	498.6	NA	101309/0836	GW	AG	3 x 1L	4C	G	SA	Chloro Herbicides(SW846-8151) APP IX	
087822-001	CWL-TB1	NA	NA	101309/0826	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by: QC Inits

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0756/505-284-2547

FGW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by		Org. 4133	Date 10/13/09	Time 1020	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 10/13/09	Time 1020	4. Received by	Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date	Time	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

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Prior to CWL-MW2BL

Internal Lab

Batch No. NA

SMO Use

AR/COC 612445

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/13/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.		SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SOW BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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				
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
087823-001	CWL-EB1	NA	NA	101309/0949	DIW	G	3 x 40ml	HCL	G	EB	VOC (SW846-8260) APP IX	
087823-002	CWL-EB1	NA	NA	101309/0950	DIW	AG	3 x 1L	4C	G	EB	SVOC (SW846-8270) APP IX	
087823-010	CWL-EB1	NA	NA	101309/0952	DIW	P	500 ml	HNO3	G	EB	Metals+Fe+Ur(SW846-6020/7470)APP IX	
087823-013	CWL-EB1	NA	NA	101309/0953	FDIW	P	250 ml	HNO3	G	EB	Dissoloved Chromium (SW846-6020)	
087823-025	CWL-EB1	NA	NA	101309/0954	DIW	AG	3 x 1L	4C	G	EB	PCBs (SW846-8082) APP IX	
087823-027	CWL-EB1	NA	NA	101309/0956	DIW	P	500 ml	NaOH	G	EB	Total Cyanide (SW846-9012)	
087823-029	CWL-EB1	NA	NA	101309/0957	DIW	P	1 L	NaOH	G	EB	Sulfide (SW846-9034)	
087823-032	CWL-EB1	NA	NA	101309/0958	DIW	AG	3 x 1L	4C	G	EB	Chloro Herbicides(SW846-8151) APP IX	
087823-043	CWL-EB1	NA	NA	101309/1000	DIW	AG	4 x 1L	4C	G	EB	PCB Congeners (1668A)	
087824-001	CWL-TB2	NA	NA	101309/0949	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA ☐ Yes ☑ No Ref. 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
	Alfred Santillanes			Weston/4133/844-5130/228-0710
	Robert Lynch		RL	Weston/4133/844-4013/250-7090
	William J Gibson			Weston/4133/844-4013/239-7367

*Send report to:

Tim Jackson/Org 4133/MS 0756/505-284-2547

FDIW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

1.Relinquished by		Org. 4133	Date 10/13/09	Time 1030	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 10/13/09	Time 1030	4. Received by	Org.	Date	Time
2.Relinquished by		Org.	Date	Time	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date	Time	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

Prior to CWL - MW 5U

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612448

Dept. No./Mail Stop:	6765/0719	Date Samples Shipped:	10/15/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	John Cochran	Carrier/Waybill No.	106577	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	CWL GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1267 074/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	ER 049	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CF 025-10	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
A	087831-001	CWL-EB2	NA	NA	101509/0830	DIW	G	3 x 40ml	HCL	G	EB	VOC (SW846-8260) APP IX	
B	087831-002	CWL-EB2	NA	NA	101509/0832	DIW	AG	3 x 1L	4C	G	EB	SVOC (SW846-8270) APP IX	
D	087831-009	CWL-EB2	NA	NA	101509/0833	DIW	P	500 ml	HNO3	G	EB	Metals+Fe (SW846-6020/7470) APP IX	
F	087831-013	CWL-EB2	NA	NA	101509/0834	FDIW	P	250 ml	HNO3	G	EB	Dissoloved Chromium (SW846-6020)	
H	087831-025	CWL-EB2	NA	NA	101509/0836	DIW	AG	3 x 1L	4C	G	EB	PCBs (SW846-8082) APP IX	
C	087831-027	CWL-EB2	NA	NA	101509/0837	DIW	P	500 ml	NaOH	G	EB	Total Cyanide (SW846-9012)	
E	087831-029	CWL-EB2	NA	NA	101509/0838	DIW	P	1 L	NaOH	G	EB	Sulfide (SW846-9034)	
G	087831-032	CWL-EB2	NA	NA	101509/0840	DIW	AG	3 x 1L	4C	G	EB	Chloro Herbicides(SW846-8151) APP IX	
I	087832-001	CWL-TB5	NA	NA	101509/0830	DIW	G	3x40ml	HCL	G	TB	VOC (SW846-8260) APP IX	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day ☐ Negotiated TAT

Return Samples By:

Sample Tracking — Smo Use

Date Entered(mm/dd/yy):

Entered by: QC Inits:

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/Org 4133/MS 0756/505-284-2547

FDIW (Filtered in field w/ 45 micron filter)

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by		Org.	4133	Date	10/15/09	Time	1030	4.Relinquished by	Org.	Date	Time
1. Received by		Org.	4133	Date	10/15/09	Time	1030	4. Received by	Org.	Date	Time
2.Relinquished by		Org.		Date		Time		5.Relinquished by	Org.	Date	Time
2. Received by		Org.		Date		Time		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

ATTACHMENT C

DATA VALIDATION REPORTS FOR GROUNDWATER ANALYTICAL RESULTS

August 2009 - January 2010

Sample Findings Summary

Site: CWL GWM **AR/COC:** 612444, 612445, 612446, 612447, 612448 **Data Type:** Organic, Metals, Gen Chem

	VOC	75-05-8 (acetronitrile)	107-02-8 (acrolein)	78-83-1 (isobutyl alcohol)	107-12-0 (propionitrile)	67-64-1 (acetone)	78-93-3 (2-butanone)	67-66-3 (chloroform)	SVOC	56-57-5 (4-nitroquinoline-1-oxide)	100-02-7 (4-nitrophenol)						
087821-001 CWL-MW6U		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087822-001 CWL-TB1		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087823-001 CWL-EB1		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087824-001 CWL-TB2		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087825-001 CWL-MW2BL		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3		1.0U,B2									
087826-001 CWL-MW2BL		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3		1.0U,B2									
087827-001 CWL-FB1		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	J-,C3		1.0U,B2									
087828-001 CWL-TB3		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087829-001 CWL-MW5L		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	J-,C3											
087830-001 CWL-TB4		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087831-001 CWL-EB2		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3	J-,C3										
087832-001 CWL-TB5		UJ,I4	UJ,I4,C3	UJ,I4,C3	UJ,I4,C3	UJ,C3											
087821-002 CWL-MW6U										UJ,I4	UJ,MS5						
087823-002 CWL-EB1										UJ,I4	UJ,MS5						
087825-002 CWL-MW2BL										UJ,I4	UJ,MS5						
087826-002 CWL-MW2BL										UJ,I4	UJ,MS5						
087829-002 CWL-MW5L										UJ,I4	UJ,MS5						
087831-002 CWL-EB2										UJ,I4	UJ,MS5						
		PCBs, Herbicides, CVAA Hg, and Total Sulfide analyses met QC acceptance criteria. No sample data will be qualified.															

Validated By:

Kevin A. Lambert

Kevin A. Lambert

Date: 11/27/09

Sample Findings Summary

Site: CWL GWM **AR/COC:** 612444, 612445, 612446, 612447, 612448 **Data Type:** Organic, Metals, Gen Chem

	ICP-MS metals	7440-38-2 (arsenic)	7440-50-8 (copper)	7440-28-0 (thallium)	Greneral Chemistry	57-12-5 (total cyanide)
087823-010 CWL-EB1		0.0078U ,B				
087825-010 CWL-MW2BL			0.0041U ,B2	0.0032U ,B3		
087826-010 CWL-MW2BL			0.0041U ,B2			
087821-027 CWL-MW6U						UJ,B4
087823-027 CWL-EB1						UJ,B4
087825-027 CWL-MW2BL						UJ,B4
087826-027 CWL-MW2BL						UJ,B4
087829-027 CWL-MW5L						UJ,B4
087831-027 CWL-EB2						UJ,B4

PCBs, Herbicides, CVAA Hg, and Total Sulfide analyses met QC acceptance criteria. No sample data will be qualified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: November 23, 2009

To: File

From: Kevin Lambert

Subject: GC/MS Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612444, 612445, 612446, 612447, and 612448
SDG: 239035
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: VOCs

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Twelve samples were prepared and analyzed with accepted procedures using method EPA 8260B (VOCs). All compounds were successfully analyzed. Problems were identified with the data package that result in the qualification of data.

1. The initial calibration response factor (RF) for acetonitrile, acrolein, isobutyl alcohol, and propionitrile were <0.05 but ≥0.01. All associated sample results were non-detects and will be **qualified "UJ, I4."**

2. The calibration verification percent difference for acetone was >40% but ≤60% with negative bias. The acetone results for samples 239035-035 and -037 were detects and will be **qualified "J-,C3."** All other associated sample results were non-detects and will be **qualified "UJ,C3."**

3. The calibration verification percent differences for 2-butanone, acrolein, isobutyl alcohol, and propionitrile were >20% but ≤40% with negative bias. The 2-butanone result for sample -046 was a detect and will be **qualified "J-,C3."** It should be noted that all associated acrolein, isobutyl alcohol, and propionitrile results have already been qualified due to poor initial calibration RFs and, thus, will not be further qualified. However, the appropriate reason code will be included to indicate the poor calibration verification percent differences. All other associated sample results were non-detects and will not be qualified.

4. Chloroform was detected in the equipment blank (EB) associated with samples -019, -027, and -035 at a concentration > the practical quantitation limit (PQL). The associated sample results were detects <5X the EB concentration and < the PQL and will be **qualified "1.0U,B2"** at the value of the PQL.

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

Holding Times

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria except as noted above in the summary section and as follows.

The calibration verification percent differences for acetonitrile and dichlorodifluoromethane were >20% with a positive bias (see VOC Organic Worksheet). The associated sample results were non-detects and will not be qualified for the calibration infraction.

The calibration verification percent differences for 2,-chloro-1,3-butadiene, 2-hexanone, and acrylonitrile were >20% but ≤40% with negative bias (see VOC Organic Worksheet). All associated sample results were non-detects, and no other calibration infractions occurred for these analytes. Therefore, the associated sample results will not be qualified.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

Chloroform and acetone were detected in the field blank (FB) associated with samples -019 and -027 at concentrations > the method detection limits (MDLs) but < the PQLs. However, it should be noted that the chloroform result for the FB has already been qualified non-detect due to EB contamination and, thus, does not affect the field sample results. The associated acetone results were non-detects and will not be qualified.

Bromodichloromethane was detected in the FB associated with samples -019 and -027 at a concentration > the PQL. The associated sample results were non-detects and will not be qualified.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

Trip blanks, EB, FB, and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612448 is associated with samples in another SNL SDG on AR/COC# 612449.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: November 24, 2009

To: File

From: Kevin Lambert

Subject: GC/MS Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612444, 612445, 612446, 612447, and 612448
SDG: 239035
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: SVOCs

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Six samples were prepared and analyzed with accepted procedures using method EPA 8270C (SVOCs). All compounds were successfully analyzed. Problems were identified with the data package that result in the qualification of data.

1. The initial calibration response factor (RF) for 4-nitroquinoline-1-oxide was <0.05 but ≥0.01. All associated sample results were non-detects and will be **qualified "UJ, I4."**

2. The matrix spike/matrix spike duplicate (MS/MSD) relative percent difference (RPD) for 4-nitrophenol was not within the laboratory acceptance limit. All associated sample results were non-detects and will be **qualified "UJ,MS5."**

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

Holding Times

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria except as noted above in the summary section and as follows.

The initial calibration intercepts for benzidine and dinoseb were positive and >3X the method detection limits (MDLs). All associated sample results were non-detects and will not be qualified.

The calibration verification percent differences for 1,2,4,5-tetrachlorobenzene, 1,3,5-trinitrobenzne, 1,4-dioxane, 2-acetylaminofluorene, 4-aminobiphenyl, 4-nitroquinoline-1-oxide, ethyl methanesulfonate, ethyl methacrylate, hexachloropropene, methyl methacrylate, pentachloroethane, and safrole were >20% with a positive bias (see SVOC Organic Worksheet). All associated sample results were non-detects and will not be qualified for the calibration infraction.

The calibration verification percent differences for benzo(ghi)perylene and indeno(1,2,3-cd)pyrene were >20% but ≤40% with negative bias (see SVOC Organic Worksheet). All associated sample results were non-detects, and no other calibration infractions occurred for these analytes. Therefore, the associated sample results will not be qualified.

Blanks

No target analytes were detected in the blanks except as follows.

Bis(2-ethylhexyl)phthalate was detected in the equipment blank (EB) associated with samples 239035-020 and -028 at a concentration > the MDL but < the practical quantitation limit (PQL). The associated sample results were non-detects and will not be qualified.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria except as noted above in the summary section.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

EB and a field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612448 is associated with samples in another SNL SDG on AR/COC# 612449.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: November 25, 2009

To: File

From: Kevin Lambert

Subject: GC Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612444, 612445, 612446, 612447, and 612448
SDG: 239035
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: Herbicides

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Six samples were prepared and analyzed with accepted procedures using method EPA 8151A (Herbicides). All compounds were successfully analyzed. No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

The samples were extracted and analyzed within the prescribed holding time and properly preserved.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria except as follows.

The calibration verification percent difference for 2,4,5-T was >15% with a positive bias on one column. The associated sample results were non-detects and will not be qualified for the calibration infraction.

Blanks

No target analytes were detected in the blanks.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria except as follows.

The MS and MSD recoveries for 2,4-D were > the upper QC acceptance limit. The associated sample results were non-detects and will not be qualified.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Target Compound Identification/Confirmation

All continuing calibration verification compounds were within the established retention time windows. All sample results were non-detects. Therefore, confirmation analyses were not required.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Other QC

EB and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612448 is associated with samples in another SNL SDG on AR/COC# 612449.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: November 25, 2009

To: File

From: Kevin Lambert

Subject: GC Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612444, 612445, 612446, 612447, and 612448
SDG: 239035
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: PCBs

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Six samples were prepared and analyzed with accepted procedures using method EPA 8082 (PCBs). All compounds were successfully analyzed. No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

The samples were extracted and analyzed within the prescribed holding time and properly preserved.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Target Compound Identification/Confirmation

All continuing calibration verification compounds were within the established retention time windows. All sample results were non-detects. Therefore, confirmation analyses were not required.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Other QC

EB and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612448 is associated with samples in another SNL SDG on AR/COC# 612449.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: November 27, 2009

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612444, 612445, 612446, 612447, and 612448
SDG: 239035
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: General Chemistry

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

Six samples were prepared and analyzed with accepted procedures using methods EPA 9012A (total cyanide). Six samples were prepared and analyzed with accepted procedures using methods EPA 9034 (total sulfide). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

1. Total Cyanide:
   Total cyanide was detected in the calibration blanks at a negative concentration with an absolute value ≥ the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated sample results were non-detects and will be **qualified "UJ,B4."**

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

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria.

Laboratory Replicate

The replicates met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. No samples were diluted.

Other QC

EB and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612448 is associated with samples in another SNL SDG on AR/COC# 612449.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: November 27, 2009

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612444, 612445, 612446, 612447, and 612448
SDG: 239035
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: Metals

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

Twelve samples were prepared and analyzed with approved procedures using methods EPA 6020 (ICP-MS metals) and EPA 7470A (CVAA mercury). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

1. ICP-MS metals:
   As was detected in the method blank (MB) at a concentration ≥ the method detection limit (MDL) but < the practical quantitation limit (PQL). The As result for sample 239035-012 was a detect <5X the MB result and will be **qualified "0.0078U,B"** at 5X the MB value. The other associated sample results were non-detects and will not be qualified.

   Tl was detected in the calibration blanks at a concentration ≥ the MDL but < the PQL. The Tl result for sample -021 was a detect <5X the highest calibration blank result and will be **qualified "0.0032U,B3"** at 5X the highest calibration blank value. The other associated sample results were non-detects and will not be qualified.

   Cu was detected in the equipment blank (EB) associated with samples -021 and -029 at a concentration ≥ the MDL but < the PQL. The associated sample results were detects <5X the EB result and will be **qualified "0.0041U,B2"** at 5X the EB value.

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

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Reporting Limit Verification

All CRA/CRI recoveries met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

Sb and U were detected in one or more of the blanks at concentrations ≥ the MDL but < the PQL. All associated sample results were either non-detects or >5X the highest blank value and will not be qualified.

As was detected in the EB associated with samples -021 and -029 at a concentration ≥ the MDL but < the PQL. However, it should be noted that the As result for the EB has already been qualified non-detect due to MB contamination and, thus, does not affect the field sample results.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria.

Laboratory Replicate

The replicate analyses met all QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. No samples were diluted.

ICP Interference Check Sample (ICS A and AB)

The results of the ICS A and AB analyses were not evaluated because the concentrations of Al, Ca, Fe, and Mg in the samples were < those in the ICS solutions. No sample data will be qualified as a result.

ICP Serial Dilution

The serial dilution analyses met all QC acceptance criteria.

Other QC

EB and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB on AR/COC# 612448 is associated with samples in another SNL SDG on AR/COC# 612449.

No other specific issues that affect data quality were identified.

Sample Findings Summary

Site: CWL GWM **AR/COC:** 612449, 612450, 612451 **Data Type:** Organic, Metals, Gen Chem

	VOC	75-05-8 (acetonitrile)	107-02-8 (acrolein)	78-83-1 (isobutyl alcohol)	107-12-0 (propionitrile)	74-87-3 (chloromethane)	75-27-4 (bromodichloromethane)	67-66-3 (chloroform)	124-48-1 (dibromochloromethane)	630-20-6 (1,1,1,2-tetrachloroethane)	79-00-5 (1,1,2-trichloroethane)	106-93-4 (1,2-dibromoethane)	108-10-1 (4-methyl-2-pentanone	108-90-7 (chlorobenzene)	127-18-4 (tetrachloroethylene)	
087833-001 CWL-MW5U		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4	J-,C3			UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087834-001 CWL-MW5U		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4				UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087835-001 CWL-FB2		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4		1.3U, B2	1.0U, B2	1.5UJ,B2,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087836-001 CWL-TB6		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4				UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087837-001 CWL-MW6L		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4				UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087838-001 CWL-TB7		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4				UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087839-001 CWL-MW4		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4				UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
087840-001 CWL-TB8		UJ,I4,C3	UJ,I4	UJ,I4	UJ,I4				UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	UJ,MS3	
		PCBs, Herbicides, CVAA Hg, and Total Sulfide analyses met QC acceptance criteria. No sample data will be qualified.														

Validated By:

Kevin A. Lambert

Kevin A. Lambert

Date: 12/08/09

Sample Findings Summary

Site: CWL GWM **AR/COC:** 612449, 612450, 612451 **Data Type:** Organic, Metals, Gen Chem

	SVOC	56-57-5 (4-nitroquinoline-1-oxide)	92-87-5 (benzidine)	110-86-1 (pyridine)	ICP-MS metals	7440-36-0 (antimony)	7440-38-2 (arsenic)	7440-50-8 (copper)	7782-49-2 (selenium)	General Chemistry	57-12-5 (total cyanide)
087833-002 CWL-MW5U		UJ,I4	UJ,L3,MS3	UJ,MS5							
087834-002 CWL-MW5U		UJ,I4	UJ,L3,MS3	UJ,MS5							
087837-002 CWL-MW6L		UJ,I4	UJ,L3,MS3	UJ,MS5							
087839-002 CWL-MW4		UJ,I4	UJ,L3,MS3	UJ,MS5							
087833-009 CWL-MW5U						0.011U ,B,B3	0.019 U,B	0.0056 UJ,B2	NJ-,B4		
087834-009 CWL-MW5U						0.011U ,B,B3	0.019 U,B	0.0056 UJ,B2	NJ-,B4		
087837-010 CWL-MW6L							0.019 U,B		NJ-,B4		
087839-009 CWL-MW4							0.019 U,B		NJ-,B4		
087839-027 CWL-MW4											UJ,B4

PCBs, Herbicides, CVAA Hg, and Total Sulfide analyses met QC acceptance criteria. No sample data will be qualified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: December 1, 2009

To: File

From: Kevin Lambert

Subject: GC/MS Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612449, 612450, and 612451
SDG: 239274
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: VOCs

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Eight samples were prepared and analyzed with accepted procedures using method EPA 8260B (VOCs). All compounds were successfully analyzed. Problems were identified with the data package that result in the qualification of data.

1. The initial calibration response factors (RFs) for acetonitrile, acrolein, isobutyl alcohol, and propionitrile were <0.05 but ≥0.01. All associated sample results were non-detects and will be **qualified "UJ, I4."**

2. The continuing calibration verification percent differences for acetonitrile and chloromethane were >20% but ≤40% with negative bias. It should be noted that all associated acetonitrile results have already been qualified due to a poor initial calibration RF and, thus, will not be further qualified. However, the appropriate reason code will be included to indicate the poor calibration verification percent difference. The chloromethane result for sample 239274-001 was a detect and will be **qualified "J-,C3."** All other associated chloromethane results were non-detects, and no other calibration infractions occurred for this analyte. Therefore, the associated sample results will not be qualified.

3. In the equipment blank (EB) associated with samples -001, -009, and -017, bromodichloromethane and dibromochloromethane were detected at concentrations > the method detection limits (MDLs) but ≤ the practical quantitation limit (PQLs) and chloroform was detected at a concentration > the PQL. The bromodichloromethane and

dibromochloromethane results for sample -017 were detects <5X the EB concentrations but > the PQLs and will be **qualified respectively "1.3U,B2" and "1.5U,B2"** at the reported values. The chloroform result for sample -017 was a detect <5X the EB concentration and ≤ the PQL and will be **qualified "1.0U,B2"** at the value of the PQL. All other associated sample results were non-detects and will not be qualified.

4. The matrix spike duplicate percent recoveries for dibromochloromethane, 1,1,1,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2-dibromoethane, 4-methyl-2-pentanone, chlorobenzene, and tetrachloroethylene were < the lower acceptance limits but ≥10%. All associated sample results were non-detects or qualified non-detects and will be **qualified "UJ,MS3."**

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

Holding Times

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria except as noted above in the summary section and as follows.

The calibration verification percent difference for vinyl acetate was >20% with a positive bias (see VOC Organic Worksheet). The associated sample results were non-detects and will not be qualified for the calibration infraction.

The calibration verification percent differences for 2-butanone, acetone, and 2-hexanone were >20% but ≤40% with negative bias (see VOC Organic Worksheet). All associated sample results were non-detects, and no other calibration infractions occurred for these analytes. Therefore, the associated sample results will not be qualified.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

2-butanone was detected in the EB associated with samples -001, -009, and -017 at a concentration > the MDL but ≤ the PQL. The associated sample results were non-detects and will not be qualified.

Bromodichloromethane, dibromochloromethane, and chloroform were detected in the field blank (FB) associated with samples -001 and -009. However, it should be noted that the associated

sample results for the FB have already been qualified non-detect due to EB contamination and, thus, do not affect the field sample results.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria except as noted above in the summary section.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

Trip blanks, FB, and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB associated with the samples on AR/COC# 612449 is from another SNL SDG on AR/COC# 612448.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: December 8, 2009

To: File

From: Kevin Lambert

Subject: GC/MS Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612449, 612450, and 612451
SDG: 239274
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: SVOCs

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Four samples were prepared and analyzed with accepted procedures using method EPA 8270C (SVOCs). All compounds were successfully analyzed. Problems were identified with the data package that result in the qualification of data.

1. The initial calibration response factor (RF) for 4-nitroquinoline-1-oxide was <0.05 but ≥0.01. All associated sample results were non-detects and will be **qualified "UJ, I4."**

2. The LCS percent recovery for benzidine was <10% and the MS percent recovery for benzidine was < the lower acceptance limit but ≥10%. It should be noted that benzidine is subject to oxidative loss during solvent extraction and this may have attributed to the poor LCS and MS recoveries (see laboratory case narrative). The MSD percent recovery met QC acceptance criteria. The associated sample results were non-detects and will be **qualified "UJ,L3,MS3"** based on professional judgment.

3. The matrix spike/matrix spike duplicate (MS/MSD) relative percent difference (RPD) for pyridine was not within the laboratory acceptance limit. All associated sample results were non-detects and will be **qualified "UJ,MS5."**

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

Holding Times

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria except as noted above in the summary section and as follows.

The calibration verification percent differences for 1,2,4,5-tetrachlorobenzene and hexachloropropene were >20% with a positive bias (see SVOC Organic Worksheet). All associated sample results were non-detects and will not be qualified for the calibration infraction.

Blanks

No target analytes were detected in the blanks.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria except as noted above in the summary section and as follows.

The MS and/or MSD percent recoveries for acetophenone, butylbenzylphthalate, and bis(2-ethylhexyl)phthalate were > the upper acceptance limits. All associated sample results were non-detects and will not be qualified.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria except as noted above in the summary section and as follows.

The LCS percent recoveries for acetophenone, butylbenzylphthalate, and 3,3-dichlorobenzidine were > the upper acceptance limits. All associated sample results were non-detects and will not be qualified

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

A field duplicate pair was submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB associated with the samples on AR/COC# 612449 is from another SNL SDG on AR/COC# 612448.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: December 1, 2009

To: File

From: Kevin Lambert

Subject: GC Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612449, 612450, and 612451
SDG: 239274
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: Herbicides

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Four samples were prepared and analyzed with accepted procedures using method EPA 8151A (Herbicides). All compounds were successfully analyzed. No problems were identified with the data package that result in the qualification of data.

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

Holding Times and Preservation

The samples were extracted and analyzed within the prescribed holding time and properly preserved.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks.

Surrogates

All surrogate recoveries met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD analyses met QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Target Compound Identification/Confirmation

All continuing calibration verification compounds were within the established retention time windows. All sample results were non-detects. Therefore, confirmation analyses were not required.

Detection Limits/Dilutions

All detection limits were properly reported. The samples were not diluted.

Other QC

A field duplicate pair was submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB associated with the samples on AR/COC# 612449 is from another SNL SDG on AR/COC# 612448.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: December 1, 2009

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612449, 612450, and 612451
SDG: 239274
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: General Chemistry

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

Four samples were prepared and analyzed with accepted procedures using methods EPA 9012A (total cyanide). Four samples were prepared and analyzed with accepted procedures using methods EPA 9034 (total sulfide). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

1. Total Cyanide:
   Total cyanide was detected in the calibration blanks associated with sample 239274-033 at a negative concentration with an absolute value ≥ the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated sample result was a non-detect and will be **qualified "UJ,B4."**

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

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria.

Laboratory Replicate

The replicates met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. No samples were diluted.

Other QC

A field duplicate pair was submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB associated with the samples on AR/COC# 612449 is from another SNL SDG on AR/COC# 612448.

No other specific issues that affect data quality were identified.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: December 1, 2009

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612449, 612450, and 612451
SDG: 239274
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: Metals

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

Eight samples were prepared and analyzed with approved procedures using methods EPA 6020 (ICP-MS metals) and EPA 7470A (CVAA mercury). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

1. ICP-MS metals:
   As was detected in the method blank (MB) at a concentration ≥ the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated sample results were detects <5X the MB result and will be **qualified "0.019U,B"** at 5X the MB value.

   Sb was detected in the MB and calibration blanks at concentrations ≥ the MDL but < the PQL. The Sb results for samples 239274-003 and -011 were detects <5X the MB result and <5X the highest calibration blank result and will be **qualified "0.011U,B,B3"** at 5X the highest blank value (calibration blank). The other associated sample results were non-detects and will not be qualified.

   Cu was detected in the equipment blank (EB) associated with samples -003 and -011 at a concentration ≥ the PQL. The associated sample results were detects <5X the EB result and will be **qualified "0.0056UJ,B2"** at 5X the EB value.

Se was detected in the calibration blanks at a negative concentration with an absolute value ≥ the MDL but < the PQL. The associated sample results were detects <5X the MDL and will be **qualified "NJ-,B4."**

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

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Reporting Limit Verification

All CRA/CRI recoveries met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

Sn and U were detected in one or more of the blanks at concentrations ≥ the MDL but < the PQL. All associated sample results were either non-detects or >5X the highest blank value and will not be qualified.

Fe was detected in the calibration blanks at a negative concentration with an absolute value ≥ the MDL but < the PQL. The associated sample results were detects >5X the MDL and will not be qualified.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria.

Laboratory Replicate

The replicate analyses met all QC acceptance criteria.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. No samples were diluted.

ICP Interference Check Sample (ICS A and AB)

The results of the ICS A and AB analyses were not evaluated because the concentrations of Al, Ca, Fe, and Mg in the samples were < those in the ICS solutions. No sample data will be qualified as a result.

ICP Serial Dilution

The serial dilution analyses met all QC acceptance criteria.

Other QC

A field duplicate pair was submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result. It should be noted that the EB associated with the samples on AR/COC# 612449 is from another SNL SDG on AR/COC# 612448.

No other specific issues that affect data quality were identified.

Sample Findings Summary

Site: CWL GWM

AR/COC: 612445, 612446, 612447, 612450, 612451

Data Type: Organics

	PCB Congeners	All PCB congeners and Totals											
087823-043 CWL-EB1		UJ,TP2											
087825-043 CWL-MW2BL		UJ,TP2											
087826-043 CWL-MW2BL DUP		UJ,TP2											
087829-043 CWL-MW5L		UJ,TP2											
087837-043 CWL-MW6L		UJ,TP2											
087839-043 CWL-MW4		UJ,TP2											

Validated By:

Linda Thal

Date: 01/21/10

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: January 21, 2010

To: File

From: Linda Thal

Subject: GC Organic Data Review and Validation – SNL
Site: CWL GWM
AR/COC: 612445, 612446, 612447, 612450 and 612451
SDG: CFA ID # 1104
Laboratory: Cape Fear Analytical, LLC (CFA)
Project/Task: 125778.10.11.01
Analysis: Chlorinated Biphenyl Congeners (PCBs)

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM SMO AOP 00-03 Rev 2.

Summary

Six samples were prepared and analyzed with accepted procedures using method EPA 1668A (Chlorinated Biphenyl Congeners by High Resolution Gas Chromatography / High Resolution Mass Spectrometry [HRGC/HRMS]). All compounds were successfully analyzed. Problems were identified with the data package that resulted in the qualification of data.

1. The samples were not preserved during collection nor were they preserved by the laboratory prior to analysis. The associated sample results were non-detects and will be qualified "**UJ, TP2**".

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

Holding Times/Preservation

The samples were analyzed within the prescribed holding time but were not properly preserved as noted above in the summary section.

Instrument Tune

All requirements were met for the instrument performance analysis associated with the samples.

Calibration

The initial calibration and continuing calibration data met QC acceptance criteria.

Blanks

No target analytes were detected in the method blank or equipment blank.

Labeled compounds

All labeled compound acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD met QC acceptance criteria.

Laboratory Control Sample (LCS)/Ongoing Precision and Accuracy

All ongoing precision and accuracy acceptance criteria were met.

Target Compound Identification

The ion abundance ratio and RRTs were met for the samples except as follows.

The RRTs for PCB-110/115 for all samples and the MB; PCB-156/157 for sample CWL-MW2BL; PCB-193/180 for sample CWL-EB1; and PCB-78 and PCB-193/180 for the MB failed to meet laboratory acceptance criteria. The associated results were non-detects and, thus, no sample results will be qualified for these compounds. The RRTs for PCB-110/115 for the LCSD and MS/MSD failed to meet laboratory acceptance criteria but were reported as "t" qualified detects based on the analysts professional judgment and, thus no sample results will be qualified.

Detection Limits/Dilutions

CFA reports all results >1ng/ml (20pg/L) as detects. This is reflected on the Form 1s as the practical quantitation limit (PQL).

The samples were not diluted.

Other QC

No other specific issues that affect data quality were identified.

Sandia National Laboratories

Environmental Restoration Project Consolidated Quarterly Report

Section III

Perchlorate Screening Quarterly Monitoring Report Fourth Quarter of Calendar Year 2009 (October, November, and December 2009)

March 2010

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

Section III:
Perchlorate Screening Quarterly Monitoring Report Fourth Quarter of Calendar Year 2009 (October, November, and December 2009)

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 monitoring completed during the fourth quarter of Calendar Year 2009 (CY2009) (October, November, and December 2009) in response to the requirements of the Order. During the fourth quarter of CY2009, groundwater samples were collected from LWDS-MW1, TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27.

LWDS-MW1 is in the Technical Area V (TA-V) Groundwater Investigation study area and was sampled for the third time for perchlorate based on requirements stipulated in an April 2009 letter from the NMED (NMED April 2009). TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 are in the Tijeras Arroyo Groundwater (TAG) Investigation study area and were sampled for the second time for perchlorate based on NMED requirements (NMED April 2009). 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 LWDS-MW1, TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27 at a method detection limit of 4 micrograms per liter (μg/L). The April 30, 2009 NMED letter also required that monitoring well TA1-W-03 be sampled for perchlorate. However, a groundwater sample could not be collected from TAG monitoring well TA1-W-03 due excessive turbidity from fine grained sediments in the well. TA1-W-03 is scheduled to be redeveloped in February 2010 and will be sampled immediately after redevelopment. The laboratory analytical results for this sample will be reported in the next consolidated quarterly report.

TABLE OF CONTENTS

List of Figures

Figure Title

List of Tables

Table Title

Appendices

Acronyms

AOP	Administrative Operating Procedures
ARCOC	analysis request and chain of custody
CME	Corrective Measures Evaluation
COA	certificates of analyses
CY	Calendar Year
DO	dissolved oxygen
DOE	Department of Energy
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
GEL	General Engineering Laboratories
LTES	Long Term Environmental Stewardship
LWDS	Liquid Waste Disposal System
MDL	method detection limit
MW	monitoring well
ND	non-detect
NMED	New Mexico Environment Department
NTU	Nephelometric Turbidity Units
ORP	oxidation-reduction potential
pH	potential of hydrogen
PQL	practical quantitation limits
QC	quality control
SAP	Sampling and Analysis Plan
SC	specific conductance
SNL/NM	Sandia National Laboratories, New Mexico
TA	Technical Area
TAG	Tijeras Arroyo Groundwater
µg/L	microgram per liter
W	well

1.0 Introduction

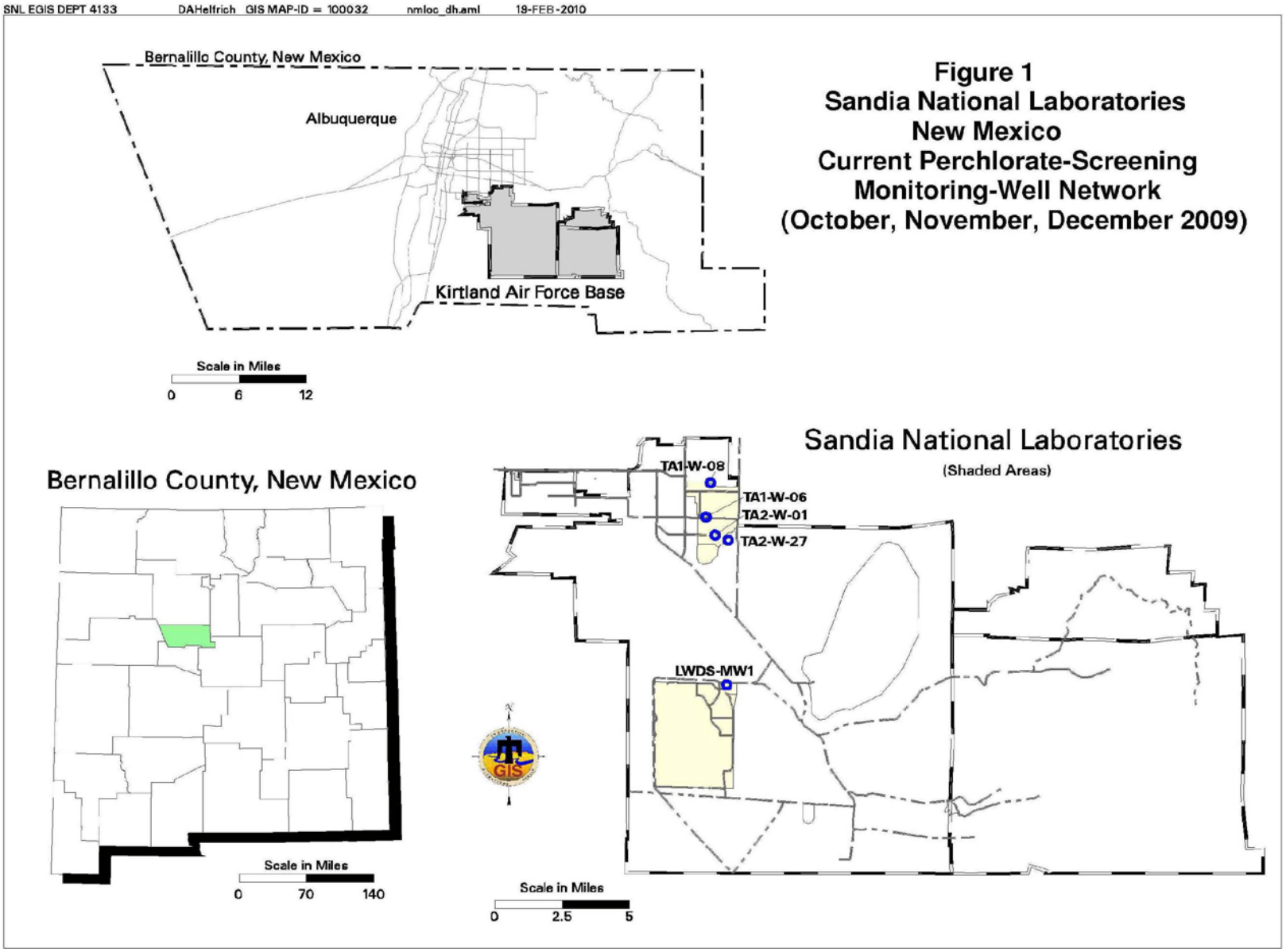
Section IV.B of the Compliance Order on Consent (the Order), between the New Mexico Environment Department (NMED), the U.S. Department of Energy (DOE), and Sandia Corporation (Sandia) for Sandia National Laboratories/New Mexico (SNL/NM), effective on April 29, 2004, stipulates that a select group of groundwater monitoring wells be sampled for perchlorate at SNL/NM (NMED April 2004). This report summarizes the perchlorate screening monitoring completed during the fourth quarter of Calendar Year 2009 (CY2009) (October, November, and December 2009) 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. In November 2008, DOE/Sandia received approval from NMED to proceed to semiannual reporting (NMED November 2008), and then upon further consideration NMED once more required quarterly reporting (NMED April 2009). This did not alter the previously negotiated frequency for CYN-MW6, an existing Burn Site Groundwater study area well that has been under the sampling and reporting requirements of the Order since the well was installed, which will remain at semiannual sampling and reporting.

This report is the sixteenth to be submitted since the November 2005 letter report; the previous reports were submitted Fourth Quarter of Calendar Year 2005 through the Third Quarter of Calendar Year 2009 (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 2008, SNL/NM September 2008, SNL/NM December 2008, SNL/NM June 2009, SNL/NM September 2009, and SNL/NM December 2009).

TA-V well LWDS-MW1 (Figure 1) has been sampled three consecutive quarters; and TAG wells TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 (Figure 1) have been sampled two consecutive quarters. 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. The April 30, 2009 NMED letter, required that monitoring well TA1-W-03 be sampled for perchlorate. However, a groundwater sample could not be collected from TAG monitoring well TA1-W-03 due to unstable turbidity measurements. Two attempts were made to sample this well on July 16th and 24th, 2009. A total of 88 gallons was purged and turbidity measurements ranged from 5.30 Nephelometric Turbidity Units (NTU) to >1000 NTU. SNL/NM personnel have completed a borehole camera survey of this monitoring well, and have found the well casing to be in good physical condition. TA1-W-03 is scheduled to be redeveloped in the first quarter of CY2010 to remove the silt and clay material that produced the turbid water. This well will be sampled immediately after redevelopment and the laboratory analytical results for this sample will be reported in the next consolidated quarterly report.

Figure 1. Sandia National Laboratories, New Mexico Current Perchlorate-Screening Monitoring-Well Network (October, November, and December 2009)



2.0 Scope of Activities

This report provides perchlorate screening results from the fourth quarter of CY2009 (October, November, and December 2009) for the 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 numerous 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-BW2, MWL-MW1, MWL-MW7, MWL-MW8, MWL-MW9, NWTA3-MW2, and SWTA3-MW4.

Table 1
Current Perchlorate-Screening Monitoring-Well Network
Fourth Quarter of CY2009
(October, November, and December 2009)

Well	Date Sampled	Number of Consecutive Sampling Events[a]	Remaining Number of Sampling Events[b]	Sampling Method
LWDS-MW1	08-DEC-2009	3	1	Bennett™ Pump
TA1-W-03	Not Sampled[c]	0	4	--
TA1-W-06	28-OCT-2009	2	2	Bennett™ Pump
TA1-W-08	29-OCT-2009	2	2	Bennett™ Pump
TA2-W-01	30-OCT-2009	2	2	Bennett™ Pump
TA2-W-27	02-NOV-2009	2	2	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] Initial sampling of this well is pending redevelopment (see discussion in Section 1).

DOE/Sandia performed groundwater sampling at five wells on the dates listed in Table 1. These five wells were specifically required by NMED's April 2009 letter (NMED April 2009). Groundwater sampling activities were conducted in conformance with procedures outlined in the investigation-specific sampling and analysis plans (SAP) entitled:

- "Tijeras Arroyo Groundwater Investigation, Mini-SAP for FY10, 1st Quarter Sampling, October/November 2009" (SNL/NM October 2009a), and
- "TA-V Groundwater Monitoring Mini-SAP for First Quarter, Fiscal Year 2010" (SNL/NM October 2009b).

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 August 2007a). Wells TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27 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 August 2007b). Well LWDS-MW1 is a low-yield monitoring well, and was purged dry 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. Groundwater 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 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 (ARCOC) 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 quality control (QC) analyses, and data validation findings (Appendix B) have been submitted to the Sandia Customer-Funded Records Center.

Table 2
Sample Details for the Fourth Quarter of CY2009 Perchlorate Sampling

Well	Sample Identification	ARCOC Number	Associated Groundwater Investigation
LWDS-MW1	087970-020 087971-020	612496	TA-V
TA1-W-03	Not Sampled[a]	--	--
TA1-W-06	087872-020	612463	TAG
TA1-W-08	087873-020	612464	TAG
TA2-W-01	087875-020 087876-020	612466	TAG
TA2-W-27	087877-020	612467	TAG

Notes
[a] Initial sampling of this well is pending redevelopment (see discussion in Section 1).

ARCOC = Analysis request and chain of custody.
TAG = Tijeras Arroyo Groundwater.
TA-V = Technical Area V.

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 using the screening level/MDL of 4 μg/L 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 for detections equal to or greater than 4 μg/L, the DOE/Sandia will 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 April 2009, DOE/Sandia received a letter from the NMED requiring DOE/Sandia to characterize the nature and extent of the perchlorate contamination in soils and groundwater in the Burn Site Groundwater study area (NMED April 2009). A characterization work plan has been prepared and submitted to the NMED (SNL/NM November 2009). The NMED has also

requested that DOE/Sandia monitor perchlorate concentrations for a minimum of four quarters at several Tijeras Arroyo Groundwater and Technical Area-V monitoring wells, including TA1-W-03, TA1-W-06, TA1-W-08, TA2-W-01, TA2-W-27, and LWDS-MW1 (NMED April 2009).

4.0 Monitoring Results

Table 3 summarizes current and historical perchlorate results for wells currently in the perchlorate monitoring network. The analytical laboratory COA for the fourth quarter of CY2009 perchlorate data is included as Appendix A. Consistent with historical analytical results, perchlorate was not detected above the screening level in LWDS-MW1, TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27.

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). Although validation qualifiers were assigned to several of the analytical results, 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.

There was one variance from requirements set forth by NMED (NMED April 2009): no groundwater sample was collected from monitoring well TA1-W-03 due to unstable turbidity measurements during previous a sampling event. No other variances or nonconformances in field activities or field conditions from requirements in the groundwater monitoring mini-SAPs (SNL/NM October 2009a and October 2009b) were identified during the fourth quarter of CY2009 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 groundwater monitoring wells LWDS-MW1, TA1-W-06, TA1-W-08, TA2-W-01, or TA2-W-27 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 (4 μg/L) in one of the wells (CYN-MW6) in the perchlorate-screening monitoring-well network.

Table 3
Summary of Perchlorate Screening Analytical Results for the Current Monitoring-Well Network, as of Fourth Quarter CY2009.

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
LWDS-MW1	10-Jun-09	612210	087464-020	ND	4.0	12	NE	U		EPA 314.0	
	15-Sep-09	612368	087662-020	ND	4.0	12	NE	HU	UJ	EPA 314.0	
			087663-020	ND	4.0	12	NE	HU	UJ	EPA 314.0	Duplicate sample
	08-Dec-09	612496	087970-020	ND	4.0	12	NE	U		EPA 314.0	
			087971-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
TA1-W-06	21-Jul-09	612301	087550-020	ND	4.0	12	NE	U		EPA 314.0	
			087551-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	28-Oct-09	612463	087872-020	ND	4.0	12	NE	U		EPA 314.0	
TA1-W-08	22-Jul-09	612302	087553-020	ND	4.0	12	NE	U		EPA 314.0	
	29-Oct-09	612464	087873-020	ND	4.0	12	NE	U		EPA 314.0	
TA2-W-01	30-Jul-09	612306	087562-020	ND	4.0	12	NE	U		EPA 314.0	
	30-Oct-09	612466	087875-020	ND	4.0	12	NE	U		EPA 314.0	
			087876-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
TA2-W-27	03-Aug-09	612308	087566-020	ND	4.0	12	NE	U		EPA 314.0	
			087567-020	ND	4.0	12	NE	U		EPA 314.0	Duplicate sample
	02-Nov-09	612467	087877-020	ND	4.0	12	NE	U		EPA 314.0	

Notes

[a]**Result**
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 the 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.

Table 3 (concluded)
Summary of Perchlorate Screening Analytical Results for the Current Monitoring-Well Network, as of Fourth Quarter CY2009.

Notes (continued)

[e]Lab Qualifier
H = Analytical holding time was exceeded.
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.
UJ = Analyte is absent or below the method detection limit and the associated quantitation limits (MDL and PQL) may be inaccurate or imprecise because the analysis was performed outside method specific hold time requirements.

[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).

DOE/Sandia will continue semiannual monitoring of perchlorate in CYN-MW6 and quarterly monitoring of perchlorate in LWDS-MW1, TA1-W-06, TA1-W-08, TA2-W-01, and TA2-W-27. Well TA1-W-03 will be redeveloped to remove the silt and clay material and then be added to the perchlorate screening well network to be sampled a minimum of four consecutive quarters.

Based on recent requirements (NMED April 2009), DOE/Sandia has prepared and submitted a work plan that describes efforts to characterize the nature and extent of the perchlorate contamination in soils and groundwater in the Burn Site Groundwater study area. Upon NMED approval the activities described in the work plan will be implemented.

6.0 References

EPA (see US Environmental Protection Agency).

New Mexico Environment Department (NMED) April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act 74-4-10: Sandia National Laboratories Consent Order, " New Mexico Environment Department, April 24, 2004.

New Mexico Environment Department (NMED) January 2006. "RE: Monitoring Groundwater for Perchlorate, Report of November 22, 2005. Sandia National Laboratories EPA ID# NM5890110518." Letter to Patty Wagner (SSO/NNSA) and Peter Davies (SNL/NM) from James Bearzi. January 27, 2006.

New Mexico Environment Department (NMED) November 2008. "RE: Perchlorate Issues" Personal Communication (electronic mail) to John Cochran (SNL/NM) from Sid Brandwein (NMED/HWB). November 07, 2008.

New Mexico Environment Department (NMED) April 2009. RE: Perchlorate Contamination in Groundwater, Sandia National Laboratories, EPA ID# NM5890110518." Letter to Kimberly Davis (SSO/NNSA) and Francis Nimick (SNL/NM) from James Bearzi. April 30, 2009.

Sandia National Laboratories, New Mexico (SNL/NM) November 2005. To James Bearzi (NMED), "Letter Report on the Status of Perchlorate Screening in Groundwater at Sandia Monitoring Wells" Sandia National Laboratories, New Mexico Environmental Restoration Project. November 22, 2005.

Table 4
Perchlorate Screening Groundwater Monitoring
Field Water Quality Measurements[a], Fourth Quarter of CY2009

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)
LWDS-MW1	08-Dec-09	14.55	699	273.4	7.35	0.27	70.6	7.19
TA1-W-03	Not Sampled[b]							
TA1-W-06	28-Oct-09	15.04	796	279.9	7.60	0.53	80.0	8.01
TA1-W-08	29-Oct-09	15.98	1790	293.6	7.42	0.46	75.0	7.36
TA2-W-01	30-Oct-09	15.99	582	298.8	7.64	1.38	77.6	7.66
TA2-W-27	02-Nov-09	19.03	785	300.6	7.55	0.31	84.8	7.83

Notes

[a] Field measurements made immediately before the groundwater sample was collected.
[b] Initial sampling of this well is pending redevelopment (see discussion in Section 1).
^{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).

Sandia National Laboratories, New Mexico (SNL/NM) February 2006. “Perchlorate Screening Quarterly Monitoring Report, Fourth Quarter of Calendar Year 2005 (October, November, and December 2005)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. February 24, 2006.

Sandia National Laboratories, New Mexico (SNL/NM) June 2006. “Perchlorate Screening Quarterly Monitoring Report, First Quarter of Calendar Year 2006 (January, February, and March 2006)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. June 7, 2006.

Sandia National Laboratories, New Mexico (SNL/NM) September 2006. “Perchlorate Screening Quarterly Monitoring Report, Second Quarter of Calendar Year 2006 (April, May, and June 2006)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. September 20, 2006.

Sandia National Laboratories, New Mexico (SNL/NM) December 2006. “Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Third Quarter of Calendar Year 2006 (July, August, and September 2006)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. December 2006.

Sandia National Laboratories, New Mexico (SNL/NM) March 2007. “Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Fourth Quarter of Calendar Year 2006 (October, November, and December 2006)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. March 27, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) June 2007. “Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, First Quarter of Calendar Year 2007 (January, February, and March 2007)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. June 27, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) July 2007. Sandia Administrative Operating Procedure 00-03, Revision 2, “Data Validation Procedure for Chemical and Radiochemical Data.” Sandia National Laboratories, New Mexico Sample Management Office. July 16, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) August 2007a. Sandia Field Operating Procedure 05-03, Revision 02 “LTES Groundwater Sampling Equipment Decontamination,” Sandia National Laboratories, New Mexico Long Term Environmental Stewardship, Environmental Management Department. August 16, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) August 2007b. Sandia Field Operating Procedure 05-01, Revision 02 “LTES Groundwater Monitoring Well Sampling and Field Analytical Measurements,” Sandia National Laboratories, New Mexico Long Term Environmental Stewardship, Environmental Management Department. August 16, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) September 2007. “Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Second

Quarter of Calendar Year 2007 (April, May, and June 2007)". Sandia National Laboratories, New Mexico Environmental Restoration Project. September 26, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) December 2007. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Third Quarter of Calendar Year 2007 (July, August, and September 2007)". Sandia National Laboratories, New Mexico Environmental Restoration Project. December 27, 2007.

Sandia National Laboratories, New Mexico (SNL/NM) March 2008. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Fourth Quarter of Calendar Year 2007 (October, November, and December 2007)". Sandia National Laboratories, New Mexico Environmental Restoration Project. March 26, 2008.

Sandia National Laboratories, New Mexico (SNL/NM) June 2008. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, First Quarter of Calendar Year 2008 (January, February, and March 2008)". Sandia National Laboratories, New Mexico Environmental Restoration Project. June 27, 2008.

Sandia National Laboratories, New Mexico (SNL/NM) September 2008. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Second Quarter of Calendar Year 2008 (April, May, and June 2008)". Sandia National Laboratories, New Mexico Environmental Restoration Project. September 23, 2008.

Sandia National Laboratories, New Mexico (SNL/NM) December 2008. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Third Quarter of Calendar Year 2008 (July, August, and September 2008)". Sandia National Laboratories, New Mexico Environmental Restoration Project. December 22, 2008.

Sandia National Laboratories, New Mexico (SNL/NM) June 2009a. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Fourth Quarter of Calendar Year 2008 and First Quarter of Calendar Year 2009 (October 2008 through March 2009)". Sandia National Laboratories, New Mexico Environmental Restoration Project. June 18, 2009.

Sandia National Laboratories, New Mexico (SNL/NM) September 2009. "Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Second Quarter of Calendar Year 2009 (April 2009 through June 2009)". Sandia National Laboratories, New Mexico Environmental Restoration Project. September 30, 2009.

Sandia National Laboratories, New Mexico (SNL/NM) October 2009a. "Tijeras Arroyo Groundwater Investigation, Mini-Sampling and Analysis Plan (SAP) for FY10, 1st Quarter Sampling, October/November 2009". Sandia National Laboratories, New Mexico Environmental Restoration Project. October 19, 2009.

Sandia National Laboratories, New Mexico (SNL/NM) October 2009b. "TA-V Groundwater Monitoring, Mini-Sampling and Analysis Plan (SAP) for First Quarter, Fiscal Year 2010". Sandia National Laboratories, New Mexico Environmental Restoration Project. October 26, 2009.

Sandia National Laboratories, New Mexico (SNL/NM) November 2009. “Burn Site Groundwater Characterization Work Plan , Installation of Groundwater Monitoring Wells CYN-MW9, CYN-MW10, CYN-MW11, Collection of Subsurface Soil Samples, November 2009”. Sandia National Laboratories, New Mexico Environmental Restoration Project. November 23, 2009.

Sandia National Laboratories, New Mexico (SNL/NM) December 2009. “Consolidated Quarterly Report, Section III: Perchlorate Screening Quarterly Monitoring Report, Third Quarter of Calendar Year 2009 (July 2009 through September 2009)”. Sandia National Laboratories, New Mexico Environmental Restoration Project. December 21, 2009.

U.S. Environmental Protection Agency (EPA) November 1999, “Perchlorate in Drinking Water Using Ion Chromatography,” EPA 815/R-00-014. November 1999.

Appendix A

Analytical Laboratory Certificate of Analysis for the Perchlorate Data

200912S7486

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612496

Dept. No./Mail Stop:	4133/1136	Date Samples Shipped:	12-8-09	Project/Task No.	125778.10.11.01
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	1Z 8 23 8 7	SMO Authorization:	
Project Name:	TA-V GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #:	691436
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL		
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		
Service Order No.	CFO# 012-10	Send Report to SMO:	Lorraine Herrera /505-844-3199		
Location	Tech Area				
Building	Room				

5 GB BOTTLE ARRIVE

☐ 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

24245487

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	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
087970-001	LWDS-MW1	513.5	NA	120809/0856	GW	G	3x40 ml	HCL	G	SA	VOC (SW846/8260B)	009 .1
087970-018	LWDS-MW1	513.5	NA	120809/0857	GW	P	250 ml	H2SO4	G	SA	NPN (353.2)	010 .2
087970-020	LWDS-MW1	513.5	NA	120809/0858	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	011 .3
087971-001	LWDS-MW1	513.5	NA	120809/0856	GW	G	3x40 ml	HCL	G	DU	VOC (SW846/8260B)	012 .1
087971-018	LWDS-MW1	513.5	NA	120809/0857	GW	P	250 ml	H2SO4	G	DU	NPN (353.2)	013 .2
087971-020	LWDS-MW1	513.5	NA	120809/0858	GW	P	250 ml	4C	G	DU	Perchlorate (314.0)	014 .3
087972-001	TAV-TB14	NA	NA	120809/0856	DIW	G	3x40 ml	HCL	G	TB	VOC (SW846/8260B)	015 .1

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS.0756/ 284-2547

Last sample taken 1st Qtr. of TA-V

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

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

1.Relinquished by	Alfred Santillanes	Org.	4133	Date	12/8/09	Time	1110	4.Relinquished by		Org.		Date	Time
1. Received by		Org.	4133	Date	12/8/09	Time	1110	4. Received by		Org.		Date	Time
2.Relinquished by		Org.	4133	Date	12/9/09	Time	1230	5.Relinquished by		Org.		Date	Time
2. Received by		Org.	Gel	Date	12-9-09	Time	0800	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

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: December 31, 2009

Client Sample ID: 087970-020
Sample ID: 242454011
Matrix: AQUEOUS
Collect Date: 08-DEC-09 08:58
Receive Date: 09-DEC-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: LWDS-MW1
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 314.0 Perchlorate by IC "As Received"											
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1	12/12/09	0620	931950	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: December 31, 2009

Client Sample ID: 087971-020
Sample ID: 242454014
Matrix: AQUEOUS
Collect Date: 08-DEC-09 08:58
Receive Date: 09-DEC-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: LWDS-MW1
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 314.0 Perchlorate by IC "As Received"											
Perchlorate	U	ND	0.004	0.012	mg/L	1	MAR1	12/12/09	0731	931950	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 1

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612463

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	10/28/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	106978	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CFO# 010-10	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 239954

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	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
087872-020	TA1-W-06	319	NA	102809/0932	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	01

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0756/ 284-2547
*Please list as separate report.

Abnormal Conditions on Receipt
Lab Use

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

1.Relinquished by		Org. 4133	Date 10/28/09	Time 0950	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 4133	Date 10/28/09	Time 0950	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 4133	Date 10/28/09	Time 1055	5.Relinquished by	Org.	Date	Time
2. Received by		Org. OCL	Date 10-29-09	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

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: November 21, 2009

Client Sample ID: 087872-020
Sample ID: 239954001
Matrix: AQUEOUS
Collect Date: 28-OCT-09 09:32
Receive Date: 29-OCT-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA1-W-06
Vol. Recv.:

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	MAR111/17/09	1955	922374	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 314.0 DOE-AL	

200910559(1

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

Internal Lab

Batch No. N/A

SMO Use

AR/COC 612464

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	10/29/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	107024	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SOW BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CFO# 010-10	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 239954

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	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
087873-020	TA1-W-08	320	MA	102909\0924	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	002

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0756/ 284-2547
*Please list as separate report.

Abnormal Conditions on Receipt
Lab Use

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

1.Relinquished by	Alfred Santillanes	Org. 4133	Date 10/29/09	Time 0935	4.Relinquished by		Org.	Date	Time
1. Received by		Org. 4133	Date 10/29/09	Time 0935	4. Received by		Org.	Date	Time
2.Relinquished by		Org. 4133	Date 10/29/09	Time 1100	5.Relinquished by		Org.	Date	Time
2. Received by		Org. GEL	Date 10-30-09	Time 0750	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

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: November 21, 2009

Client Sample ID: 087873-020
Sample ID: 239954002
Matrix: AQUEOUS
Collect Date: 29-OCT-09 09:24
Receive Date: 30-OCT-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA1-W-08
Vol. Recv.:

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 11/17/09	2013	922374	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. N/A

SMO Use

AR/COC 612466

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	11/02/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization -Send preliminary/copy report to:
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	07162	SMO Authorization:	
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	☐ Released by COC No.:
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☑ Validation Required
Logbook Ref. No.:	NA	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 2402487
Service Order No.	CFO# 010-10	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	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
087875-020	TA2-W-01	334	N/A	103009/0942	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	001
087876-020	TA2-W-01	334	↓	103009/0942	GW	P	250 ml	4C	G	DU	Perchlorate (314.0)	002

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT QC inits.

Sample Tracking Smo Use

Date Entered(mm/dd/yy)

Entered by:

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☐ Yes ☑ No

*Send report to:

Tim Jackson/ORG. 4133/MS 0756/ 284-2547

*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		AS	Weston/4133/844-5130/228-0710
	William J. Gibson		WJG	Weston/4133/844-4013/239-7367

1.Relinquished by		Org.	4133	Date	11/2/09	Time	1015	4.Relinquished by	Org.	Date	Time
1. Received by	SMO	Org.	4133	Date	11/2/09	Time	1015	4. Received by	Org.	Date	Time
2.Relinquished by	SMO	Org.	4133	Date	11/2/09	Time	1115	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	GEL	Date	11-3-09	Time	0710	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

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: December 1, 2009

Client Sample ID: 087875-020
Sample ID: 240248001
Matrix: AQUEOUS
Collect Date: 30-OCT-09 09:42
Receive Date: 03-NOV-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA2-W-01
Vol. Recv.:

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	MAR111/17/09	2032	922374	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: December 1, 2009

Client Sample ID: 087876-020
Sample ID: 240248002
Matrix: AQUEOUS
Collect Date: 30-OCT-09 09:42
Receive Date: 03-NOV-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA2-W-01
Vol. Recv.:

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	MAR111/17/09	2129	922374	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

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC 612467

Dept. No./Mail Stop:	4133/1126	Date Samples Shipped:	11/02/09	Project/Task No. 125778.10.11.01	☐ Waste Characterization
Project/Task Manager:	Don Schofield	Carrier/Waybill No.	8216 2	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	TAG-GWM	Lab Contact:	Edie Kent/803-556-8171	Contract #: PO 691436	
Record Center Code:	ER/1306/DAT	Lab Destination:	GEL	SEE BOTTLE ORDER	☐ Released by COC No.:
Logbook Ref. No.:	NA	SMO Contact/Phone:	Pam Puissant/505-844-3185		☑ Validation Required
Service Order No.	CFO# 010-10	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				
Building	Room				

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preservative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
087877-020	TA2-W-27	296	N/A	110209/0957	GW	P	250 ml	4C	G	SA	Perchlorate (314.0)	003

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day

Return Samples By: ☐ Negotiated TAT

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

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☐ Yes ☑ No
*Send report to:
Tim Jackson/ORG. 4133/MS 0756/ 284-2547

*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/4133/844-4013/239-7367

1.Relinquished by		Org. 4133	Date 11/2/09	Time 1019	4.Relinquished by	Org.	Date	Time
1. Received by	SMO	Org. 4133	Date 11/2/09	Time 1019	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 4133	Date 11/2/09	Time 1120	5.Relinquished by	Org.	Date	Time
2. Received by		Org. GEL	Date 11/3/09	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

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: December 1, 2009

Client Sample ID: 087877-020
Sample ID: 240248003
Matrix: AQUEOUS
Collect Date: 02-NOV-09 09:57
Receive Date: 03-NOV-09
Collector: Client

Project: SNLSGWater
Client ID: SNLS003

Client Desc.: TA2-W-27
Vol. Recv.:

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	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	11/17/09	2148	922374	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
505-299-5201
www.aqainc.net

Memorandum

DATE: December 4, 2009

TO: File

FROM: David Schwent

SUBJECT: General Chemistry Data Review and Validation - SNL
Site: TAG GWM
AR/COC: 612463 and 612464
SDG: 239954
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 method EPA 314.0 (perchlorate). No problems were identified with the data package that result in the qualification of data.

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

Holding Times/Preservation

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

Calibration

All initial and continuing calibration QC acceptance criteria were met.

Blanks

No target analytes were detected in the blanks.

Laboratory Control Sample (LCS)

All LCS QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All MS (PS) QC acceptance criteria were met. No MSD (PSD) analysis was performed. The replicate analysis was used as a measure of laboratory precision. No sample data will be qualified as a result. It should be noted that the MS analysis was performed on a SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

Replicates

All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

All detection limits were properly reported. No samples required dilution.

Other QC

All Analyses: No equipment blanks (EBs), field blanks (FBs), or field duplicates (FDs) were submitted on the AR/COCs.

No other specific issues were identified that affect data quality.

Sample Findings Summary

Site: TAG-GWM

AR/COC: 612463 and 612464

Gen Chem

Sample ID	EPA 314.0 (perchlorate):																
	All Acceptance criteria met. No sample data will be qualified.																

Validated By: David Schwandt

Date: 12/04/09

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

Date: December 15, 2009

To: File

From: Kevin Lambert

Subject: Inorganic Data Review and Validation – SNL
Site: TAG GWM
AR/COC: 612465, 612466, 612467, 612468, 612469, 612470, 612471, and 612472
SDG: 240248
Laboratory: GEL
Project/Task: 125778.10.11.01
Analysis: General Chemistry

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

Four samples were prepared and analyzed with accepted procedures using methods EPA 314.0 (perchlorate). One sample was prepared and analyzed with accepted procedures using methods EPA 9056 (Br, Cl, Fl, and SO_4 by Ion Chromatography) and EPA 2320B (alkalinity). Six samples were prepared and analyzed with accepted procedures using methods EPA 353.2 (nitrate/nitrite by Cd reduction). Data were reported for all required analytes. Problems were identified with the data package that result in the qualification of data.

1. Ion Chromatography:
   Sulfate was detected in the method blank (MB) at a concentration ≥ the method detection limit (MDL) but < the practical quantitation limit (PQL). The associated sample result was a detect <5X the MB result and will be **qualified "1.9U,B"** at 5X the MB value.

2. Alkalinity:
   Total alkalinity was detected in the MB at a concentration ≥ the PQL. The associated sample result was a detect and will be **qualified "7.5UJ,B"** at 5X the MB value.

3. Nitrate/Nitrite:
   Sample 240248-009 was diluted 5X for nitrate/nitrite and the relative dilution factor between the field sample and the QC sample was >5. The associated sample result was a detect and will be **qualified "J,MS1,RP1"** due to lack of matrix-specific accuracy and precision data.

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

Holding Times and Preservation

The samples were analyzed within the prescribed holding times and properly preserved.

Calibration

All initial and continuing calibration met QC acceptance criteria.

Blanks

No target analytes were detected in the blanks except as noted above in the summary section and as follows.

Nitrate/Nitrite:
Nitrate/nitrite was detected in the MB at a concentration ≥ the MDL but < the PQL. The associated sample results were detects >5X the MB result and will not be qualified.

Nitrate/nitrite was detected in the equipment blank (EB) associated with samples -016 and -018 at a concentration ≥ the MDL but < the PQL. The associated sample results were detects >5X the EB result and will not be qualified.

Ion Chromatography:
Chloride was detected in the EB at a concentration ≥ the MDL but < the PQL and sulfate was detected in the EB at a concentration ≥ the PQL. However, it should be noted that no associated field samples were submitted on the AR/COC(s) and, thus, no sample data will be qualified.

Alkalinity:
Alkalinity was detected in the EB at a concentration ≥ the PQL. However, it should be noted that no associated field samples were submitted on the AR/COC(s) and, thus, no sample data will be qualified.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Matrix Spike (MS)

All MS recoveries met QC acceptance criteria.

Laboratory Replicate

The replicates met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. Sample -014 was diluted 10X, samples -016 and -018 were diluted 25X, and samples -021 and -006 were diluted 50X for nitrate/nitrite due to high concentrations for this analysis. Sample -009 was diluted 5X for nitrate/nitrite due to matrix interference. It should be noted that except for sample -009 the relative dilution factors between the samples and associated QC samples were <5. No sample data will be qualified as a result.

Other QC

EBs and field duplicate pair were submitted on the AR/COC(s). There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result.

No other specific issues that affect data quality were identified.

Sample Findings Summary

Site: TAG GWM

AR/COC: 612465, 612466, 612467, 612468, 612469, 612470, 612471, 612472

Data Type: Organic, Metals, Gen Chem

	VOC	78-93-3 (2-butanone)	591-78-6 (2-hexanone)	74-87-3 (chloromethane)	ICP-MS metals	7429-90-5 (aluminum)	7440-41-7 (beryllium)	7440-70-2 (calcium)	7440-50-8 (copper)	7439-89-6 (iron)	7439-95-4 (magnesium)	7440-09-7 (potassium)	CVAA Hg	7439-97-6 (mercury)	General Chemistry	14808-79-8 (sulfate)	ALK (alkalinity)	N599 (nitrate/nitrite)
087878-001 TA2-SW1-320		UJ,C3	UJ,C3															
087879-001 TAG-TB1		UJ,C3	UJ,C3															
087880-001 TA2-W-26		UJ,C3	UJ,C3															
087881-001 TAG-TB2		UJ,C3	UJ,C3															
087882-001 TAG-EB2		UJ,C3	UJ,C3	J-,C3														
087884-001 TA2-W-19		UJ,C3	UJ,C3															
087885-001 TA2-W-19		UJ,C3	UJ,C3															
087886-001 TAG-TB4		UJ,C3	UJ,C3															
087887-001 TJA-4		UJ,C3	UJ,C3															
087888-001 TAG-TB5		UJ,C3	UJ,C3															
087882-009 TAG-EB2						UJ,MS1	UJ,B4	0.17U,B	J,D1	UJ,D1	UJ,D1	UJ,MS1, D1		UJ,MS1				
087882-016 TAG-EB2																1.9U,B	7.5UJ,B	
087882-018 TAG-EB2																		J,MS1,RP1
		Perchlorate analysis met QC acceptance criteria. No sample data will be qualified.																

Validated By:

Kevin A. Lambert

Kevin A. Lambert

Date: 12/15/09

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Memorandum

DATE: January 12, 2010

TO: File

FROM: David Schwent

SUBJECT: General Chemistry Data Review and Validation - SNL
Site: TAV GWM
AR/COC: 612494, 612495, and 612496
SDG: 242454
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 EPA 314.0 (perchlorate) and EPA353.2 (nitrate/nitrite by Cd reduction). No problems were identified with the data package that result in the qualification of data.

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

All Analyses: No target analytes were detected in the blanks.

Laboratory Control Sample (LCS)

All Analyses: All LCS QC acceptance criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All Analyses: All MS (PS) QC acceptance criteria were met. No MSD (PSD) analyses were performed. The replicate analyses were used as measures of laboratory precision. No sample data will be qualified as a result.

Replicates

All Analyses: All replicate QC acceptance criteria were met.

Detection Limits/Dilutions

Perchlorate Analysis: All detection limits were properly reported. No samples required dilution.

Nitrate/nitrite Analysis: All detection limits were properly reported. Samples 242454-002, -010, and -013 were diluted 25X for nitrate/nitrite due to high concentration of the target analyte and sample -006 was diluted 5X due to matrix inference. All associated batch QC samples were analyzed at dilution factors that resulted in relative dilution factors to the samples that were ≤5X. No sample data will be qualified as a result.

Other QC

All Analyses: No field blanks (FBs) were submitted on the AR/COCs. All relative percent differences (RPDs) of the field duplicates (FDs) (samples -013 and -014) were <20%. No QC acceptance criteria for the evaluation of FDs are currently in place.

No other specific issues were identified that affect data quality.

Sample Findings Summary

Site: TAV GWM

AR/COC: 612494, 612495, and 612496

Organic, Gen Chem

Sample ID	EPA 8260B (VOCs):	EPA 353.2 (nitrate/nitrite):	EPA 314.0 (perchlorate):										
	All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.	All Acceptance criteria met. No sample data will be qualified.										

Validated By: David Schwartz

Date: 01/12/10