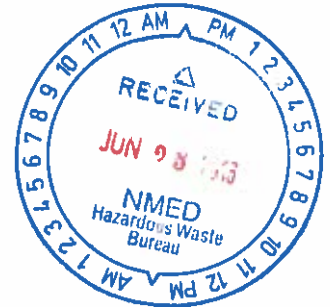




Department of Energy
National Nuclear Security Administration
Sandia Field Office
P.O. Box 5400
Albuquerque, NM 87185



JUN 21 2016



Mr. John E. Kieling
Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Dr. East, Bldg 1
Santa Fe, New Mexico 87505

SUBJECT: Submittal of *Mixed Waste Landfill Annual Long-Term Monitoring & Maintenance Report, April 2015-March 2016*, for Sandia National Laboratories/New Mexico, Environmental Protection Agency Identification Number NM5890110518

Dear Mr. Kieling:

The Department of Energy/National Nuclear Security Administration and Sandia Corporation are submitting the *Mixed Waste Landfill Annual Long-Term Monitoring & Maintenance Report, April 2015-March 2016*, dated June 2016, to the New Mexico Environment Department. This submittal satisfies the requirements of Section 4.8.1 of the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan and includes information for monitoring and inspection activities conducted at the MWL during the annual reporting period of April 2015-March 2016.

If you have questions, please contact David Rast of our staff at (505) 845-5349.

Sincerely,

James W. Todd
Assistant Manager for Engineering

Enclosure

cc: See Page 2

cc w/enclosure:

David Cobrain

NMED/HWB

2905 Rodeo Park Dr. East, Bldg. 1, Santa Fe, NM 87505

Brian Salem

NMED/HWB

121 Tijeras Ave. NE, STE 1000, Albuquerque, NM 87102

Susan Lucas Kamat

NMED/DOE OB

121 Tijeras Ave. NE, STE 1000, Albuquerque, NM 87102

Laurie King

Environmental Protection Agency Region 6

Fountain Place Suite 1200, 1445 Ross Ave., Dallas, TX 75202

Zimmerman Library

MSC05 3020

1 University of New Mexico, Albuquerque, NM 87101-0001

Cynthia Wimberly, SFO Legal

David Rast, SFO/ENG

cc w/o enclosure:

Amy Blumberg, SNL/NM

Natalie Carter, SNL/NM

Michael Hazen, SNL/NM

Jaime Moya, SNL/NM

Pamela Puissant, SNL/NM

Anita Reiser, SNL/NM

Michael Mitchell, SNL/NM

Susan Lacy, SFO/ENG

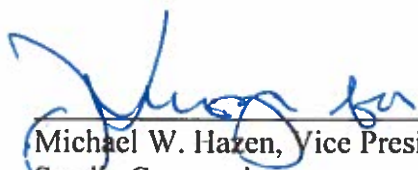
680505

**Submittal of Mixed Waste Landfill
Annual Long-Term Monitoring and Maintenance Report, April 2015-March 2016**

**Sandia National Laboratories
Albuquerque, New Mexico
EPA ID No. NM5890110518**

CERTIFICATION STATEMENT

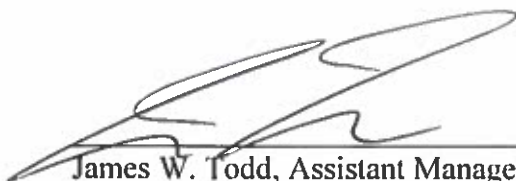
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system,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



Michael W. Hazen, Vice President
Sandia Corporation
Albuquerque, New Mexico
Operator

5/25/16

Date Signed



James W. Todd, Assistant Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Field Office
Owner

17 Jun 2016

Date Signed



**Sandia
National
Laboratories**

**MIXED WASTE LANDFILL
ANNUAL LONG-TERM MONITORING & MAINTENANCE REPORT
APRIL 2015 – MARCH 2016**

**SANDIA NATIONAL LABORATORIES, NEW MEXICO
LONG-TERM STEWARDSHIP**

JUNE 2016



**U.S. DEPARTMENT OF
ENERGY**



**United States Department of Energy
Sandia Field Office**

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

**MIXED WASTE LANDFILL ANNUAL
LONG-TERM MONITORING AND MAINTENANCE REPORT
APRIL 2015–MARCH 2016**

Facility: Mixed Waste Landfill

Location: Sandia National Laboratories
Albuquerque, New Mexico

EPA ID No.: NM5890110518

Permit Basis: Mixed Waste Landfill Long-Term Monitoring and Maintenance Plan,
submitted March 2012, effective January 8, 2014.

Owner: United States Department of Energy
Sandia Field Office
Technical Contact: Mr. David Rast, Long-Term Stewardship
U.S. Department of Energy, Sandia Field Office
P.O. Box 5400/MS 0184
Albuquerque, NM 87185-5400
(505) 845-5349
David.Rast@nnsa.doe.gov

Operator: Sandia Corporation
Technical Contact: Ms. Pamela Puissant, Manager
Analytical Services
Sandia National Laboratories
P.O. Box 5800/MS 1103
Albuquerque, NM 87185-5800
(505) 844-3185
pmpuiss@sandia.gov

TABLE OF CONTENTS

| | |
|--|------|
| LIST OF FIGURES | v |
| LIST OF TABLES..... | vi |
| LIST OF ANNEXES | vii |
| ACRONYMS AND ABBREVIATIONS..... | viii |
| | |
| 1.0 INTRODUCTION..... | 1-1 |
| 1.1 Purpose and Scope | 1-4 |
| 1.2 Report Organization | 1-4 |
| | |
| 2.0 MONITORING AND INSPECTION REQUIREMENTS | 2-1 |
| 2.1 Monitoring Requirements | 2-1 |
| 2.2 Inspection, Maintenance, and Repair Requirements..... | 2-1 |
| 2.2.1 ET Cover Biology Inspection | 2-6 |
| 2.2.2 ET Cover Surface and Physical Controls Inspection | 2-6 |
| 2.2.3 Monitoring Networks and Sampling Equipment..... | 2-10 |
| | |
| 3.0 RADON MONITORING RESULTS | 3-1 |
| 3.1 Radon Sampling Field Activities | 3-1 |
| 3.1.1 Radon Monitoring Detector Deployment and Collection..... | 3-4 |
| 3.1.2 Field Quality Control | 3-4 |
| 3.1.3 Waste Management | 3-4 |
| 3.2 Laboratory Results | 3-4 |
| 3.2.1 Environmental Sample Results | 3-4 |
| 3.2.2 Field Quality Control Sample Results..... | 3-6 |
| 3.2.3 Data Quality | 3-6 |
| 3.2.4 Variances and Non-Conformances | 3-6 |
| 3.3 Data Evaluation and Monitoring Trigger Level | 3-6 |
| | |
| 4.0 TRITIUM SURFACE SOIL MONITORING RESULTS | 4-1 |
| 4.1 Tritium Surface Soil Sampling Field Activities | 4-1 |
| 4.1.1 Field Quality Control | 4-1 |
| 4.1.2 Waste Management | 4-3 |

TABLE OF CONTENTS (Continued)

| | | |
|-------|--|------|
| 4.2 | Laboratory Results | 4-3 |
| 4.2.1 | Environmental Sample Results | 4-3 |
| 4.2.2 | Field Quality Control Sample Results | 4-3 |
| 4.2.3 | Laboratory Quality Control and Data Quality | 4-4 |
| 4.2.4 | Variances and Non-Conformances | 4-4 |
| 4.3 | Data Evaluation and Monitoring Trigger Level | 4-5 |
| 4.4 | Historic Data Evaluation | 4-5 |
| 5.0 | SOIL-VAPOR MONITORING RESULTS | 5-1 |
| 5.1 | Soil-Vapor Sampling Field Activities | 5-1 |
| 5.1.1 | Well Purging | 5-3 |
| 5.1.2 | Field Quality Control | 5-3 |
| 5.1.3 | Waste Management | 5-3 |
| 5.2 | Laboratory Results | 5-4 |
| 5.2.1 | Environmental Sample Results | 5-4 |
| 5.2.2 | Field Quality Control Sample Results | 5-31 |
| 5.2.3 | Laboratory Quality Control and Data Quality | 5-34 |
| 5.2.4 | Variances and Non-Conformances | 5-35 |
| 5.3 | Data Evaluation and Monitoring Trigger Level | 5-35 |
| 6.0 | SOIL-MOISTURE MONITORING RESULTS | 6-1 |
| 6.1 | Soil-Moisture Monitoring Field Activities | 6-1 |
| 6.1.1 | Field Quality Control | 6-1 |
| 6.1.2 | Waste Management | 6-1 |
| 6.2 | Monitoring Results | 6-3 |
| 6.3 | Data Evaluation and Monitoring Trigger Level | 6-3 |
| 7.0 | GROUNDWATER MONITORING RESULTS | 7-1 |
| 7.1 | Environmental Sampling Field Activities | 7-1 |
| 7.1.1 | Well Purging | 7-1 |
| 7.1.2 | Field Quality Control | 7-3 |
| 7.1.3 | Waste Management | 7-4 |

TABLE OF CONTENTS (Continued)

| | | |
|-------|--|------|
| 7.2 | Laboratory Results | 7-4 |
| 7.2.1 | Environmental Sample Results | 7-4 |
| 7.2.2 | Field Quality Control Sample Results | 7-15 |
| 7.2.3 | Laboratory Quality Control and Data Quality | 7-17 |
| 7.2.4 | Variances and Non-Conformances | 7-17 |
| 7.3 | Hydrogeologic Assessment | 7-17 |
| 8.0 | BIOTA MONITORING RESULTS | 8-1 |
| 8.1 | Biota Monitoring Field Activities | 8-1 |
| 8.1.1 | Field Quality Control | 8-1 |
| 8.1.2 | Waste Management | 8-1 |
| 8.2 | Laboratory Results | 8-3 |
| 8.2.1 | Environmental Sample Results | 8-3 |
| 8.2.2 | Field Quality Control Sample Results | 8-3 |
| 8.2.3 | Laboratory Quality Control Data Quality | 8-7 |
| 8.3 | Data Evaluation and Monitoring Trigger Level | 8-8 |
| 9.0 | INSPECTION, MAINTENANCE, AND REPAIR RESULTS | 9-1 |
| 9.1 | Final Cover System | 9-1 |
| 9.1.1 | Biology Inspection | 9-1 |
| 9.1.2 | ET Cover System/Surface Inspection | 9-1 |
| 9.2 | Storm-Water Diversion Structure Inspection | 9-3 |
| 9.3 | Soil-Vapor Monitoring Network Inspection | 9-3 |
| 9.4 | Soil-Moisture Monitoring Network Inspection | 9-4 |
| 9.5 | Groundwater Monitoring Well Network Inspection | 9-4 |
| 9.6 | Security Fence Inspection | 9-4 |
| 9.7 | ET Cover Maintenance and Supplemental Watering | 9-5 |
| 10.0 | REGULATORY ACTIVITIES | 10-1 |
| 10.1 | MWL Regulatory Submittals | 10-1 |
| 10.2 | Class 3 Permit Modification Request for Corrective Action Complete With Controls for the Mixed Waste Landfill | 10-2 |

TABLE OF CONTENTS (Concluded)

| | | |
|------|--|------|
| 11.0 | SUMMARY AND CONCLUSIONS | 11-1 |
| 11.1 | Monitoring Activities | 11-1 |
| 11.2 | Inspections/Maintenance/Repairs Activities | 11-2 |
| 11.3 | Regulatory Activities | 11-3 |
| 11.4 | Conclusions | 11-3 |
| 12.0 | REFERENCES..... | 12-1 |

LIST OF FIGURES

| Figure | | Page |
|--------|--|------|
| 1-1 | Location of the Mixed Waste Landfill with respect to Kirtland Air Force Base and the City of Albuquerque | 1-2 |
| 1-2 | Location of the Mixed Waste Landfill within Technical Area III | 1-3 |
| 2-1 | Schematic Profile of the Mixed Waste Landfill Evapotranspirative Cover Layers | 2-7 |
| 2-2 | Schematic Profile of the Mixed Waste Landfill Evapotranspirative Cover and How it Works | 2-8 |
| 2-3 | Mixed Waste Landfill Engineered Storm-Water Drainage Swale | 2-9 |
| 3-1 | Mixed Waste Landfill Radon Detector Locations..... | 3-2 |
| 3-2 | Mixed Waste Landfill Calendar Year 2015 Quarterly Radon Air Monitoring Results | 3-5 |
| 4-1 | Mixed Waste Landfill Tritium Surface Soil Sampling Locations | 4-2 |
| 5-1 | Mixed Waste Landfill Soil-Vapor Monitoring Well Locations | 5-2 |
| 6-1 | Mixed Waste Landfill Soil-Moisture Monitoring Locations | 6-2 |
| 6-2 | Mixed Waste Landfill MWL-VZ-1 Soil-Moisture Monitoring Results | 6-4 |
| 6-3 | Mixed Waste Landfill MWL-VZ-2 Soil-Moisture Monitoring Results | 6-5 |
| 6-4 | Mixed Waste Landfill MWL-VZ-3 Soil-Moisture Monitoring Results | 6-6 |
| 7-1 | Mixed Waste Landfill Groundwater Monitoring Well Locations | 7-2 |
| 7-2 | Localized Potentiometric Surface of the Basin Fill Aquifer at the Mixed Waste Landfill, October 2015 | 7-19 |
| 8-1 | Mixed Waste Landfill Biota Sampling Locations..... | 8-2 |

LIST OF TABLES

| Table | | Page |
|-------|--|------|
| 2-1 | Mixed Waste Landfill Monitoring Parameters, Frequencies, and Methods..... | 2-2 |
| 2-2 | Mixed Waste Landfill Inspection, Maintenance, and Repair Requirements..... | 2-4 |
| 3-1 | Summary of Radon Results, Mixed Waste Landfill Air Monitoring, Calendar Year 2015..... | 3-3 |
| 4-1 | Summary of Tritium Results (EPA Method 906.0), Mixed Waste Landfill Surface Soil Monitoring, August 2015..... | 4-4 |
| 5-1 | Summary of Detected Volatile Organic Compounds (EPA Method TO-15), Mixed Waste Landfill Soil-Vapor Monitoring, April 2015 | 5-6 |
| 5-2 | Summary of Detected Volatile Organic Compounds (EPA Method TO-15), Mixed Waste Landfill Soil-Vapor Monitoring, October 2015 | 5-18 |
| 5-3 | Summary of Historic, PCE, TCE, and Total VOCs Concentrations, Mixed Waste Landfill Soil-Vapor Monitoring, | 5-30 |
| 5-4 | Summary of Duplicate Samples, Mixed Waste Landfill Soil-Vapor Monitoring, April and October 2015..... | 5-33 |
| 7-1 | Summary of Detected Volatile Organic Compounds (EPA Method 8260B), Mixed Waste Landfill Groundwater Monitoring, April and October 2015 | 7-6 |
| 7-2 | Summary of Method Detection Limits for Volatile Organic Compounds (EPA Method 8260B), Mixed Waste Landfill Groundwater Monitoring, April and October 2015..... | 7-7 |
| 7-3 | Summary of Cadmium, Chromium, Nickel, and Uranium Results (EPA Method 6020), Mixed Waste Landfill Groundwater Monitoring, April and October 2015..... | 7-8 |
| 7-4 | Summary of Gamma Spectroscopy, Gross Alpha, Gross Beta, Tritium, and Radon Results, Mixed Waste Landfill Groundwater Monitoring, April and October 2015 | 7-10 |
| 7-5 | Summary of Field Water Quality Measurements, Mixed Waste Landfill Groundwater Monitoring, April and October 2015 | 7-14 |
| 7-6 | Summary of Duplicate Sample Results, Mixed Waste Landfill Groundwater Monitoring, April and October 2015 | 7-16 |
| 8-1 | Summary of Metals Results (EPA Method 6020/7470), Mixed Waste Landfill Biota Monitoring, August 2015..... | 8-4 |

LIST OF TABLES (Concluded)

| Table | | Page |
|-------|--|------|
| 8-2 | Summary of Gamma Spectroscopy Results (EPA Method 901.1), Mixed Waste Landfill Biota Monitoring, August 2015 | 8-6 |
| 8-3 | Summary of Duplicate Sample Results, Mixed Waste Landfill Biota Monitoring, August 2015..... | 8-7 |
| 9-1 | Inspection Frequency and Dates Performed, Mixed Waste Landfill, April 2015 – March 2016 Reporting Period..... | 9-2 |
| 10-1 | Mixed Waste Landfill Long-Term Monitoring and Maintenance Plan Document Submittal History | 10-1 |

LIST OF ANNEXES

Annex

| | |
|---------|--|
| Annex A | Mixed Waste Landfill Radon Monitoring January – December 2015 |
| Annex B | Mixed Waste Landfill Surface Soil Tritium and Biota Monitoring Forms and Reports April 2015 – March 2016 |
| Annex C | Mixed Waste Landfill Soil-Vapor Monitoring Forms and Reports April 2015 – March 2016 |
| Annex D | Mixed Waste Landfill Soil-Moisture Monitoring Forms April 2015 – March 2016 |
| Annex E | Mixed Waste Landfill Groundwater Monitoring Forms and Reports April 2015 – March 2016 |
| Annex F | Mixed Waste Landfill Inspection Forms April 2015 – March 2016 |
| Annex G | Mixed Waste Landfill Biology Report April 2015 – March 2016 |

ACRONYMS AND ABBREVIATIONS

| | |
|--------|--|
| AOP | Administrative Operating Procedure |
| AR/COC | Analysis Request/Chain-of-Custody |
| bgs | below ground surface |
| CAC | Corrective Action Complete |
| CY | Calendar Year |
| DI | deionized water |
| DO | dissolved oxygen |
| DOE | U.S. Department of Energy |
| DQO | data quality objective |
| EPA | U.S. Environmental Protection Agency |
| ERFO | Environmental Resources Field Office |
| ET | evapotranspirative |
| eV | electron volts |
| FLUTE™ | Flexible Liner Underground Technology, Ltd.™ |
| FOP | Field Operating Procedure |
| GEL | GEL Laboratories LLC |
| gpm | gallons per minute |
| HWB | Hazardous Waste Bureau |
| KAFB | Kirtland Air Force Base |
| LTMM | Long-Term Monitoring and Maintenance |
| LTMMP | Long-Term Monitoring and Maintenance Plan |
| MDA | minimum detectable activity |
| MDL | method detection limit |
| µg/L | micrograms per liter |
| mg/L | milligrams per liter |
| MWL | Mixed Waste Landfill |
| NMED | New Mexico Environment Department |
| NTU | nephelometric turbidity units |
| ORP | oxidation-reduction potential |
| PCE | tetrachloroethene |
| pCi/L | picocuries per liter |
| pH | potential of hydrogen |
| PID | photoionization detector |
| ppbv | parts per billion by volume |
| PPE | personal protective equipment |
| ppmv | parts per million by volume |
| PQL | practical quantitation limit |
| QC | quality control |
| RCRA | Resource Conservation and Recovery Act |
| RL | reporting limit |
| RPD | relative percent difference |

ACRONYMS AND ABBREVIATIONS (Concluded)

| | |
|--------|--|
| SAP | Sampling and Analysis Plan |
| Sandia | Sandia Corporation |
| SC | specific conductance |
| SME | subject matter expert |
| SNL | Sandia National Laboratories |
| SNL/NM | Sandia National Laboratories, New Mexico |
| TA | Technical Area |
| TCE | trichloroethene |
| VOC | volatile organic compound |

This page intentionally left blank.

1.0 INTRODUCTION

Sandia National Laboratories (SNL) is a multi-purpose engineering and science laboratory owned by the U.S. Department of Energy (DOE)/National Nuclear Security Administration. SNL is managed and operated by Sandia Corporation (Sandia), a wholly-owned subsidiary of Lockheed Martin Corporation. Sandia National Laboratories, New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base (KAFB), southeast of the City of Albuquerque in Bernalillo County, New Mexico (Figure 1-1). The Mixed Waste Landfill (MWL) is located 4 miles south of SNL/NM central facilities and 5 miles southeast of Albuquerque International Sunport, in the north-central portion of Technical Area (TA)-III (Figure 1-2).

The MWL disposal area comprises 2.6 acres. During operations, the MWL accepted containerized and other low-level radioactive waste and minor amounts of mixed waste from SNL/NM research facilities and off-site DOE and U.S. Department of Defense generators from March 1959 to December 1988. More specific information regarding the MWL inventory and past disposal practices is presented in the MWL Phase 2 RCRA Facility Investigation Report (Peace et al. September 2002) and the extensive MWL Administrative Record.

All MWL Long-Term Monitoring and Maintenance Plan (LTMMMP) (SNL/NM March 2012) monitoring, inspection, and maintenance/repair requirements have been met for the April 1, 2015 through March 31, 2016 reporting period. This MWL Annual Long-Term Monitoring and Maintenance (LTMM) Report documents all activities and results as required by Section 4.8.1 of the LTMMMP. Based upon monitoring, inspection, and maintenance results, the MWL Evapotranspirative (ET) Cover and all monitoring systems are functioning as designed, and site conditions remain protective of human health and the environment. No monitoring trigger levels were exceeded. Industrial land use is being maintained for the MWL consistent with LTMMMP requirements.

The MWL is a solid waste management unit that underwent corrective action in accordance with the following regulatory criteria:

- New Mexico Secretary of the Environment's Final Order *In the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill* No. HWB 04-11(M) (Curry May 2005)
- Compliance Order on Consent (NMED April 2004)
- Resource Conservation and Recovery Act (RCRA) Facility Operating Permit for Sandia National Laboratories, EPA ID No. NM5890110518 (Permit) (NMED January 2015)

On February 12, 2016, the New Mexico Environment Department (NMED) Secretary Ryan Flynn issued the Final Order *In the Matter of Proposed Permit Modification for Sandia National Laboratories EPA ID No. NM5890110518 to Determine Corrective Action Complete with Controls at the Mixed Waste Landfill*, No. HWB 15-18 (P) (Flynn February 2016). As of March 13, 2016, the February 2016 Final Order became effective, granting the Class 3 Permit Modification to reflect that the MWL is Corrective Action Complete (CAC) with Controls.

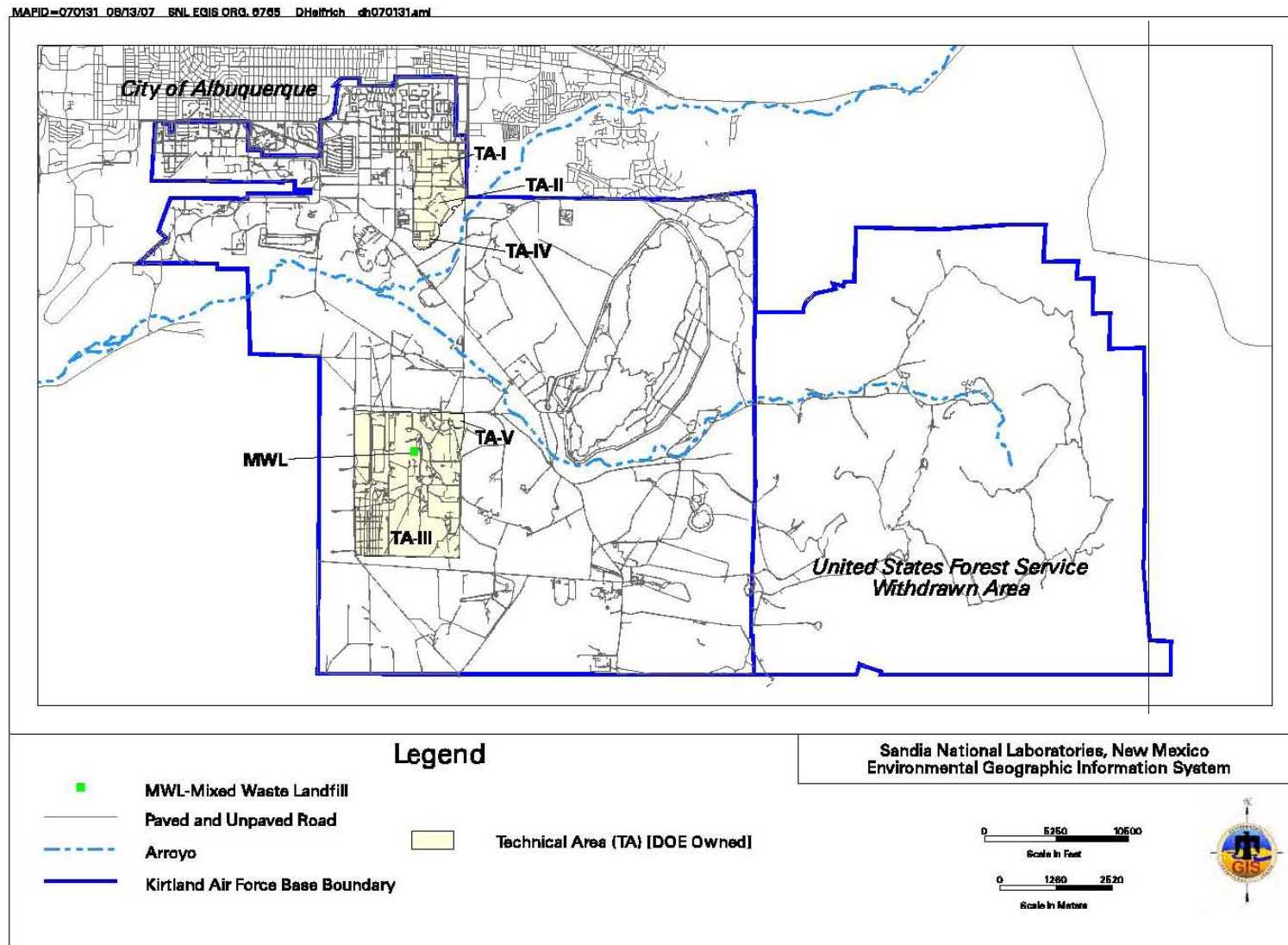


Figure 1-1
Location of the Mixed Waste Landfill with respect to Kirtland Air Force Base and the City of Albuquerque

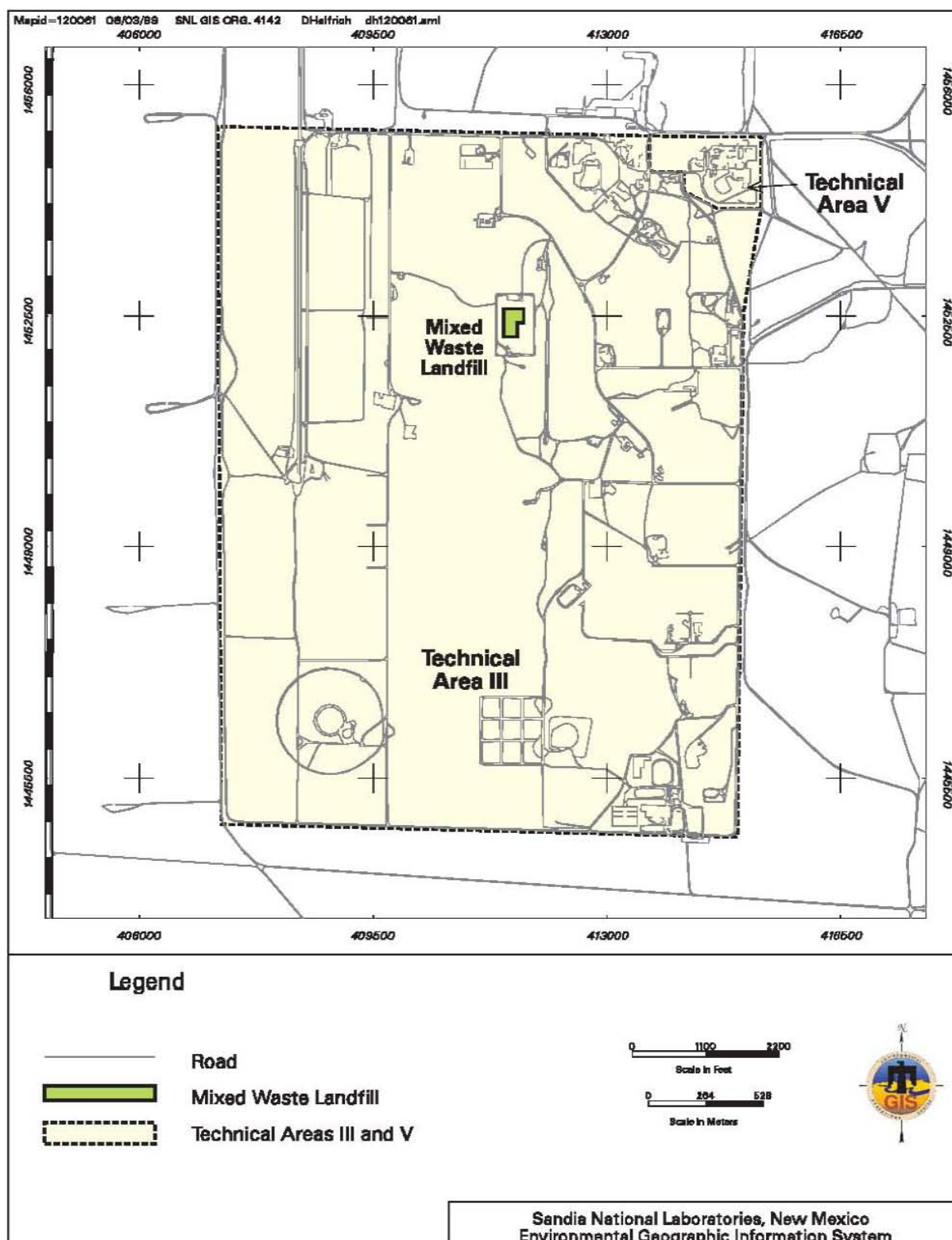


Figure 1-2
Location of the Mixed Waste Landfill within Technical Area III

All controls required for the MWL are defined in the MWL LTMMMP that was approved by NMED on January 8, 2014 (Blaine January 2014) and was included in Attachment M of the SNL RCRA Facility Operating Permit (Kieling February 2016). The MWL LTMMMP (SNL/NM March 2012) defines all long-term monitoring, inspection, maintenance/repair, and reporting requirements that are applicable to the MWL. In addition to an annual report, DOE and Sandia are required to submit various documents as specified in the LTMMMP.

1.1 Purpose and Scope

The purpose of this Annual LTMM Report is to document monitoring, inspection, maintenance, and repair activities conducted during the April 1, 2015 through March 31, 2016 reporting period. This is the third MWL Annual LTMM Report since approval of the MWL LTMMMP on January 8, 2014, and the second report that documents a complete reporting-year period. The LTMMMP includes requirements for documentation of all monitoring, inspection, and maintenance/repair activities conducted during each reporting period.

1.2 Report Organization

This report is organized as follows:

- Chapter 1 presents background information, purpose and scope, and report organization.
- Chapter 2 presents LTMMMP monitoring and inspection requirements.
- Chapter 3 presents radon monitoring activities and results.
- Chapter 4 presents tritium surface soil monitoring activities and results.
- Chapter 5 presents vadose zone soil-vapor monitoring activities and results.
- Chapter 6 presents vadose zone soil-moisture monitoring activities and results.
- Chapter 7 presents groundwater monitoring activities and results.
- Chapter 8 presents biota monitoring activities and results.
- Chapter 9 presents inspection, maintenance, and repair activities and results.
- Chapter 10 summarizes regulatory activities.
- Chapter 11 presents a general summary and conclusions for the reporting period.
- Chapter 12 lists the references cited in this report.

Annexes are included that provide supporting information as follows:

- Annex A – Radon Monitoring Forms
- Annex B – Surface Soil Tritium and Biota Monitoring Forms and Reports
- Annex C – Soil-Vapor Monitoring Forms and Reports
- Annex D – Soil-Moisture Monitoring Forms
- Annex E – Groundwater Monitoring Forms and Reports
- Annex F – Inspection Forms
- Annex G – Biology Report

This page intentionally left blank.

2.0 MONITORING AND INSPECTION REQUIREMENTS

Monitoring, inspection, maintenance, and repair requirements are defined in Chapters 3 and 4 of the MWL LTMMMP and are briefly summarized in this chapter. Monitoring requirements are described in Section 2.1 and generate empirical data that are evaluated to assess site conditions. Inspection requirements are described in Section 2.2 and include requirements to perform maintenance and/or repairs. As a whole, these activities ensure the physical controls at the MWL are maintained, perform as designed, and provide the information needed to assess ET Cover performance.

2.1 Monitoring Requirements

The primary objective of the monitoring activities at the MWL is to ensure that the ET Cover and site conditions are protective of human health and the environment. Monitoring activities include sampling and analysis of air, surface soil, vadose zone (volatile organic compounds [VOCs] in soil vapor and soil-moisture content), groundwater, and biota (surface soil and vegetation). The multi-media monitoring program is summarized in Table 2-1, which details information for each monitoring activity including the sampling media, monitoring parameters, frequency, number of samples, locations, and monitoring methods.

The data quality objective (DQO) of all monitoring activities is to produce representative, accurate, defensible, and comparable analytical results to support the monitoring objective. The DQO is accomplished through implementation of standard operating procedures and analytical procedures/methods, including quality assurance measures, quality control samples, and data evaluation protocols.

Sampling and Analysis Plans (SAPs) for each monitoring activity are included in MWL LTMMMP, Appendices C through G. Results for monitoring activities conducted at the MWL in the subject reporting period are presented in Chapters 3 through 8.

2.2 Inspection, Maintenance, and Repair Requirements

The primary objective of inspection, maintenance, and repair activities at the MWL is to ensure that the ET Cover, other physical controls at the site (i.e., surface-water diversion features, perimeter security fence, and survey monuments), and the monitoring systems (groundwater and vadose zone networks) perform as designed.

Inspection parameters, specifications, frequency, and repair requirements are detailed in Chapter 4 of the MWL LTMMMP and summarized in Table 2-2. Repair work is initiated, as needed, based upon the results of the inspections and tracked to completion on the respective inspection forms. Long-term monitoring inspection checklists/forms are contained in the MWL LTMMMP, Annex I. Results of inspection activities conducted at the MWL in the subject reporting period are presented in Chapter 9. The following sections provide additional background information on MWL inspections and associated maintenance/repairs.

Table 2-1
Mixed Waste Landfill Monitoring Parameters, Frequencies, and Methods

| Sampling Media | Monitoring Parameters ^a / Constituents of Concern | Monitoring Frequency ^a | Number of Samples Per Event | Monitoring Locations | Monitoring Method ^b | Comments |
|----------------|---|--|-----------------------------|---|---|--|
| Air | Radon | Year 1 – Quarterly Year 2 – Quarterly Year 3 – Semiannual Year 4 – Semiannual Year 5 and subsequent years – Annual | 17 | 10 detectors placed at corners and midpoints of perimeter fence 5 detectors placed on completed cover 2 detectors at background locations | Track-etch detectors (at breathing zone height); sampling and analysis per LTMMP Appendix C | Samples are time-weighted average and will be collected over a 3-month period. The first quarterly monitoring period begins in January of each year. |
| Surface Soil | Tritium | Annual | 4 | One sample collected from each corner of the MWL ET Cover. | Grab samples of soil collected; moisture extracted and analyzed for tritium using liquid scintillation per LTMMP Appendix G | Samples collected from the MWL ground surface at the four corners of the ET Cover. |
| Vadose Zone | VOCs in soil vapor | Year 1 – Semiannual Year 2 – Semiannual Year 3 – Semiannual Year 4 and subsequent years – Annual | 17 | Samples collected from 2 single-port soil-vapor monitoring points installed through the ET Cover (MWL-SV01 and MWL-SV02) and 3 perimeter multi-port FLUTE™ wells (MWL-SV03, MWL-SV04, and MWL-SV05) | Sampling and analysis of soil vapor per LTMMP Appendix D | MWL-SV01 and MWL-SV02 have a sampling port approximately 35 ft below the original ground surface. MWL-SV03, MWL-SV04, and MWL-SV05 have sampling ports at depths of approximately 50, 100, 200, 300, and 400 ft bgs. |
| Vadose Zone | Moisture content beneath the ET Cover | Year 1 – Semiannual Year 2 – Semiannual Year 3 and subsequent years – Annual | 171 | 3 soil-moisture monitoring access tubes Measurements obtained at 1-ft increments from 4 ft to 25 ft bgs, then 5-ft increments to total depth of the access tube (200 linear ft) | Soil-moisture monitoring per LTMMP Appendix E | Moisture content in vadose zone beneath the cover is measured using a neutron probe to evaluate moisture infiltration through the ET Cover. |

Refer to footnotes at end of table.

Table 2-1 (Concluded)
Mixed Waste Landfill Monitoring Parameters, Frequencies, and Methods

| Sampling Media | Monitoring Parameters ^a / Constituents of Concern | Monitoring Frequency ^a | Number of Samples Per Event | Monitoring Locations | Monitoring Method ^b | Comments |
|--------------------------|---|-----------------------------------|---------------------------------|---|--|--|
| Groundwater | VOCs, metals ^c , tritium, radon, gamma-emitting radionuclides ^d , and gross alpha/beta activity | Semiannual | 4 | MWL compliance groundwater monitoring well network: MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9 | Sampling and analysis of groundwater samples per LTMMMP Appendix F | Monitoring wells MWL-MW4, MWL-MW5, and MWL-MW6 retained for monitoring groundwater elevation only. |
| Biota – Surface Soil | Metals ^e and gamma-emitting radionuclides ^f | Annual | Up to 4 (2 each, if they exist) | Variable - ant hills and animal burrows on the MWL ET Cover located during ET Cover inspections, if present | Grab sampling and analysis of surface soil at animal burrow and/or ant hill features per LTMMMP Appendix G | If no features are identified, no samples will be collected. |
| Biota – Cover Vegetation | Gamma-emitting radionuclides (short list) in vegetation | Annual | Up to 2 if they exist | Variable - potentially deep-rooted vegetation overlying former disposal areas located during ET Cover inspections, if present | Grab sampling and analysis of vegetation, including the plant and root system per LTMMMP Appendix G | If no potentially deep-rooted plants are present, no samples will be collected. |

Notes:

^aMonitoring parameters and frequency will be reevaluated every five years in the Five-Year Reevaluation Report.

^bSampling and Analysis Plans and sampling requirements in appendices of the MWL LTMMMP (SNL/NM March 2012).

^cRequired metals analyses include cadmium, chromium, nickel, and uranium (SNL/NM March 2012).

^dRadionuclide results reported for groundwater include americium-241, cesium-137, and cobalt-60.

^eRequired metals analyses include RCRA metals plus copper, nickel, vanadium, zinc, cobalt, and beryllium (SNL/NM March 2012).

^fRadionuclide results reported for biota include cesium-137, cobalt-60, radium-226, thorium-232, uranium-235, and uranium-238.

bgs = Below ground surface.

ET = Evapotranspirative.

FLUTETM = Flexible Liner Underground Technologies, Ltd.TM

ft = Foot (feet).

LTMMMP = Long-Term Monitoring and Maintenance Plan.

MWL = Mixed Waste Landfill.

RCRA = Resource Conservation and Recovery Act.

VOC = Volatile organic compound.

Table 2-2
Mixed Waste Landfill Inspection, Maintenance, and Repair Requirements

| MWL System to be Inspected | Inspection Frequency/ Performed by | Inspection Parameters | Maintenance Implementation | Maintenance/Repair Frequency ^a |
|--|---|---|--|--|
| ET Cover Surface Biology Inspection (Cover vegetation and signs of animal activity) | Quarterly until vegetation is established, annually thereafter by a staff biologist ^b | Vegetation Inventory | Soil augmentations and/or reseedings | Within 60 days of discovery of needed repairs. Reseeding repairs may be delayed to await the appropriate growing season. |
| | | Contiguous areas of no vegetation >200 ft ² | Revegetate barren areas that exceed prescribed limits | |
| | | Animal intrusion burrows in excess of 4 inches in diameter | Repair cover system damage that exceeds prescribed limits | |
| ET Cover System (Surface) | Quarterly by a field technician | Settlement of cover surface in excess of 6 inches | Repair cover system damage that exceeds prescribed limits | Within 60 days of discovery of needed repairs. Reseeding repairs may be delayed to await the appropriate growing season. |
| | | Erosion of cover soil in excess of 6 inches deep | | |
| | | Ponding of water on the ET Cover surface in excess of 100 ft ² | | |
| | | Animal intrusion burrows in excess of 4 inches in diameter | | |
| | | Contiguous areas of no vegetation >200 ft ² ^c | Revegetate barren areas that exceed prescribed limits ^c | Within 60 days of discovery of needed repairs. |
| ET Cover Surface-Water (Storm water) Drainage Features | Quarterly by a field technician | Channel or sidewall erosion in excess of 6 inches deep | Repair erosion that exceeds prescribed limits | Within 60 days of discovery of needed repairs. |
| | | Accumulations of sediment in excess of 6 inches deep or debris that blocks more than 1/3 of the channel width | Remove sediment and debris accumulations that exceed prescribed limits | |
| Soil-Vapor Monitoring Wells, Soil-Moisture Monitoring Access Tubes, and Groundwater Monitoring Wells | Groundwater and Vadose Zone Network Components: Field technician to inspect at same frequency/time that monitoring occurs | Concrete pads, stanchions, and protective casings | Maintain, clean, repair, replace, re-label, as appropriate | Within 60 days of discovery of needed repairs. |
| | | Well cover caps and Swagelok [®] (or equivalent) dust caps | | |
| | | Monitoring wells and soil-vapor sampling port labels | | |
| | | Locks | | |
| | | Sampling pumps and tubing Neutron probe and cable system | | |

Refer to footnotes at end of table.

Table 2-2 (Concluded)
Mixed Waste Landfill Inspection, Maintenance, and Repair Requirements

| MWL System to be Inspected | Inspection Frequency/ Performed by | Inspection Parameters | Maintenance Implementation | Maintenance/Repair Frequency ^a |
|----------------------------|---------------------------------------|---|--|--|
| ET Cover Physical Controls | Quarterly by a field technician | Presence of wind-blown plants and debris | Remove wind-blown plants and debris | Within 60 days of discovery of needed repairs. |
| | | Condition of fence wires, posts, gates, gate locks, warning signs, and survey monuments in the local area | Repair broken wire sections and posts, repair/oil gates, clean/replace locks, repair/replace warning signs, clear dirt/debris from monuments | |

Notes:

^aMaintenance/repairs will be performed as necessary, based upon the results of inspections.

^bThe transition from quarterly to annual inspections by a staff biologist is based upon meeting successful revegetation criteria as determined by the staff biologist (SNL/NM March 2012).

^cBarren areas exceeding >200 ft² will not require corrective action after ET Cover vegetation is determined to have met successful revegetation criteria if they are the result of relatively short-term climate stresses (e.g., severe short-term drought), and the staff biologist determines they will naturally fill in over time. However, these areas will be noted and tracked during inspections and reviewed annually by the staff biologist to determine whether action is required based upon comparison to surrounding vegetation.

ET = Evapotranspirative.

ft² = Square feet.

MWL = Mixed Waste Landfill.

2.2.1 ET Cover Biology Inspection

The ET Cover consists of four main layers: Compacted Subgrade, Biointrusion, Compacted Native Soil, and Topsoil Layers (Figure 2-1). A thin soil layer was placed on top of the Biointrusion Layer to fill void space and create an even surface upon which the Native Soil Layer was constructed. The Subgrade varies in thickness from 0 to 3.3 feet and the combined average thickness of the overlying ET Cover layers is 5.37 feet. The Topsoil layer was seeded with native grasses to mitigate surface erosion and promote evapotranspiration. The native grass species were selected based upon biological assessments of TA-III (Sullivan and Knight 1992; Peace et al. November 2004). As shown in Figure 2-1, the as-constructed thickness of the ET Cover layers exceeds as-designed thicknesses, resulting in a more protective ET Cover. A conceptual schematic profile of the ET Cover and how it works is provided in Figure 2-2.

The ET Cover surface slopes gently to the west (2 percent slope) and sheds surface-water runoff to the west and down the side slopes. An engineered drainage swale located immediately east, north, and south of the ET Cover diverts surface run-on from the east (upgradient) side of the ET Cover and run-off from the side slopes around the northern and southern ends of ET Cover to the west (Figure 2-3).

Cover vegetation monitoring was accomplished in two phases. The first phase of quarterly inspections by the staff biologist focused on establishing native vegetation on the ET Cover such that successful revegetation criteria are met as defined in Section 4.1 of the MWL LTMM. The August 2014 Biology Inspection was the last quarterly inspection conducted as part of the first phase. Completion of the first phase initiated transition to the second phase of annual inspections. The second phase annual inspections are performed near the end of the growing season (August–September) to determine the coverage of living plants. The staff biologist continues to document the flora coverage and signs of animal and insect activity during these annual inspections.

Damage to cover vegetation that exceeds the criteria listed in Section 4.2.2 of the LTMM is noted on the Biology Inspection Checklist/Form and appropriate maintenance/repairs must be completed within 60 days of the notation. Reseeding repairs may be delayed until the appropriate time during the growing season (Table 2-2).

At the end of each reporting year, the staff biologist summarized the results of the annual inspection and local climate trends, and presents recommendations in a summary report included in the Annual LTMM Report (Annex G). The annual *Biology Inspection Checklist/Form* is included in the Annual LTMM Report (Annex F).

2.2.2 ET Cover Surface and Physical Controls Inspection

The ET Cover surface, side slopes, and physical controls (i.e., storm-water drainage swale, security fence, locks, gates, signs, and survey monuments) are inspected by a field technician on a quarterly basis. Inspection parameters, specifications, frequency, and required maintenance/repair activities for the ET Cover are summarized in Table 2-2. Documentation of animal burrows in excess of 4 inches in diameter and contiguous areas lacking vegetation in excess of 200 square feet are noted on both the quarterly *Cover Inspection* and annual *Biology Inspection Checklists/Forms*.

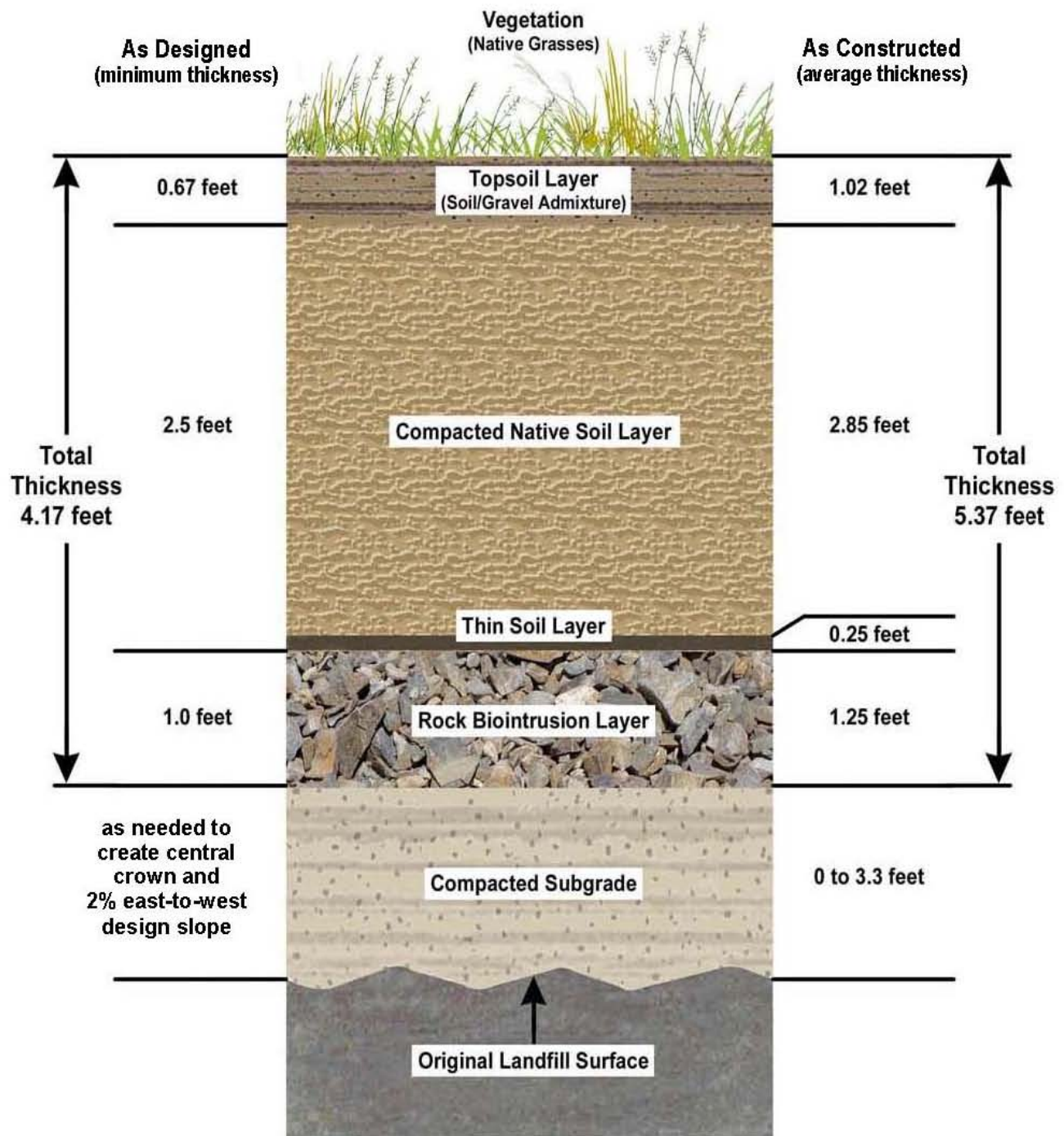


Figure 2-1
Schematic Profile of the Mixed Waste Landfill Evapotranspirative Cover Layers

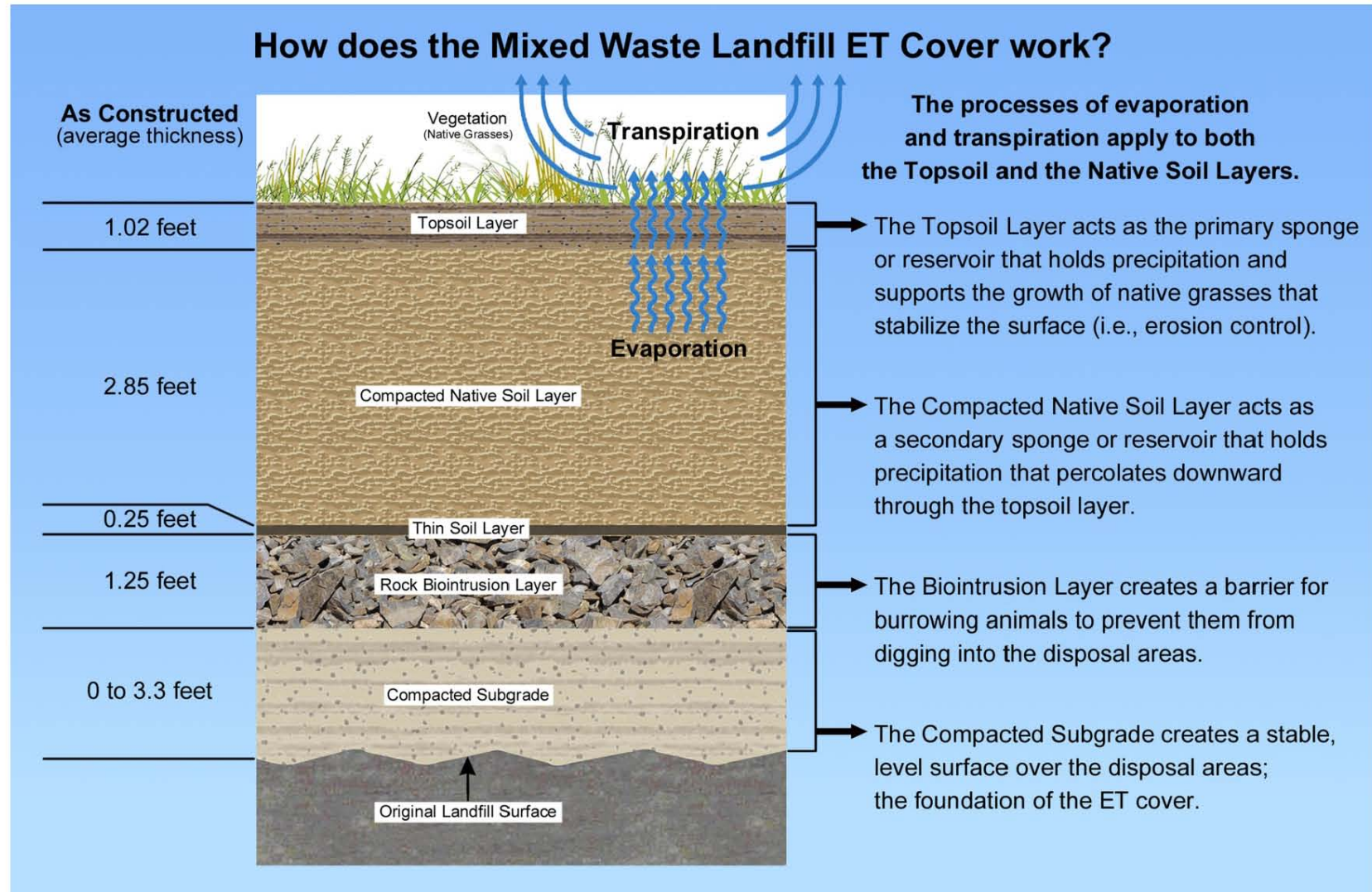


Figure 2-2
Schematic Profile of the Mixed Waste Landfill Evapotranspirative Cover and How it Works

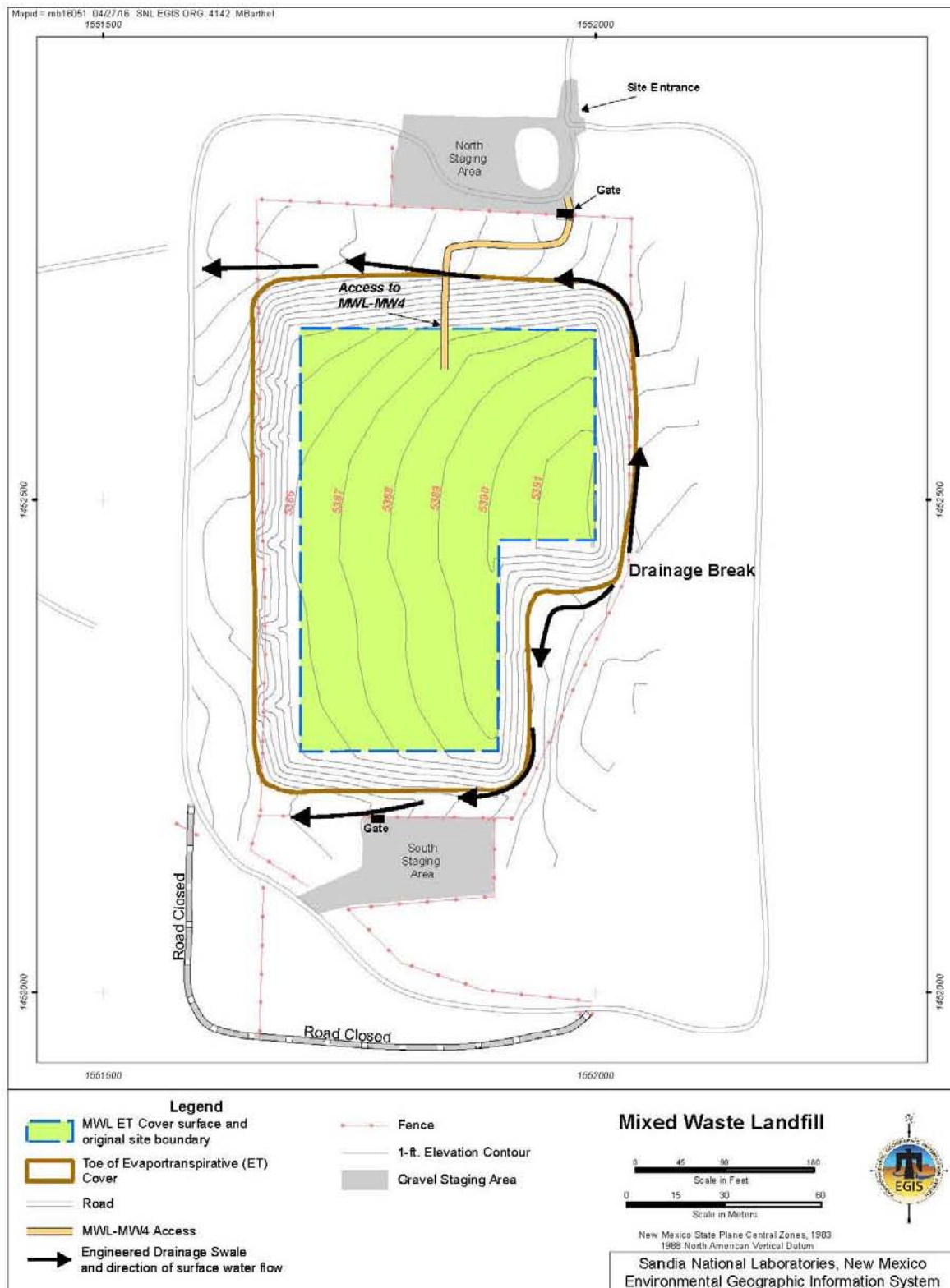


Figure 2-3
Mixed Waste Landfill Engineered Storm-Water Drainage Swale

If inspection item specifications are exceeded they will be noted on the *Cover Inspection Checklist/Form* and appropriate maintenance/repairs will be completed within 60 days of the notation. Reseeding repairs may be delayed until the appropriate time during the growing season (Table 2-2).

2.2.3 Monitoring Networks and Sampling Equipment

Groundwater monitoring wells, soil-vapor monitoring wells, soil-moisture monitoring access tubes, and associated sampling/monitoring equipment are inspected at the same frequency and during the associated monitoring events. All inspection parameters, specifications, and required maintenance/repair activities are detailed in Table 2-2. The inspections and any associated maintenance and repair activities are documented on monitoring network-specific inspection checklists/forms. There is a separate inspection checklist/form for each of the three monitoring networks and associated sampling/monitoring equipment.

If conditions are observed that require maintenance, repair, or replacement they will be noted on the associated *Monitoring Network Inspection Checklist/Form* and appropriate actions will be completed within 60 days (Table 2-2).

3.0 RADON MONITORING RESULTS

This chapter presents radon monitoring activities (i.e., sampling and analysis), analytical results, and data evaluation in accordance with LTMMP Section 3.2.1 and Appendix C (SNL/NM March 2012). The monitoring objective is to collect data to evaluate radon gas flux (i.e., movement) to the atmosphere at the MWL. This monitoring provides an early warning detection system for changing conditions so that timely action can be taken, if necessary. Results from the monitoring stations located along the perimeter security fence (locations RN1 through RN 10) are compared to trigger levels defined in LTMMP Section 5.2.1.

Radon monitoring field activities are described in Section 3.1, analytical laboratory results and a discussion of data quality are presented in Section 3.2, and data evaluation requirements and a comparison of results to the trigger level are presented in Section 3.3. A summary of radon monitoring activities and results is provided in Section 11.1.

3.1 Radon Sampling Field Activities

This section describes radon monitoring activities conducted at the MWL in conformance with LTMMP Appendix C, which describes the procedures, methods, and analytical protocols for deploying, collecting, and analyzing radon monitoring samples.

Four monitoring events were conducted during calendar year (CY) 2015, fulfilling the LTMMP quarterly monitoring requirement. Radon monitoring presented for this April 1, 2015 through March 31, 2016 reporting period covers the CY 2015 period January 1, 2015 through December 31, 2015 due to the time required for laboratory analysis and data review after collection of the detectors in the field (i.e., the January through March 2015 monitoring results are presented in this report, and the January through March 2016 monitoring results will be presented in the next annual report).

In accordance with Chapter 3 of the LTMMP, the radon monitoring frequency will transition to semiannual for the next reporting period. Two years of quarterly radon monitoring have been completed. Detectors will be deployed and collected every six months starting in January 2016.

Radon sampling locations are designated as RN1 through RN17 and are shown in Figure 3-1. Locations RN1 through RN10 are located on the perimeter security fence and are the compliance locations to which the trigger level applies. Locations RN11 through RN15 are located on the ET Cover surface directly above pits and trenches with known sealed radium-226 sources. Radon is generated by the decay radium-226, so results from these locations provide an early warning if sealed sources degrade. Locations RN16 and RN17 are background locations established away from the MWL, but in the general vicinity. Table 3-1 presents the dates of detector deployment and collection for each quarter, location number, quarterly average radon air concentrations in picocuries per liter (pCi/L), and the CY 2015 annual average radon air concentrations.

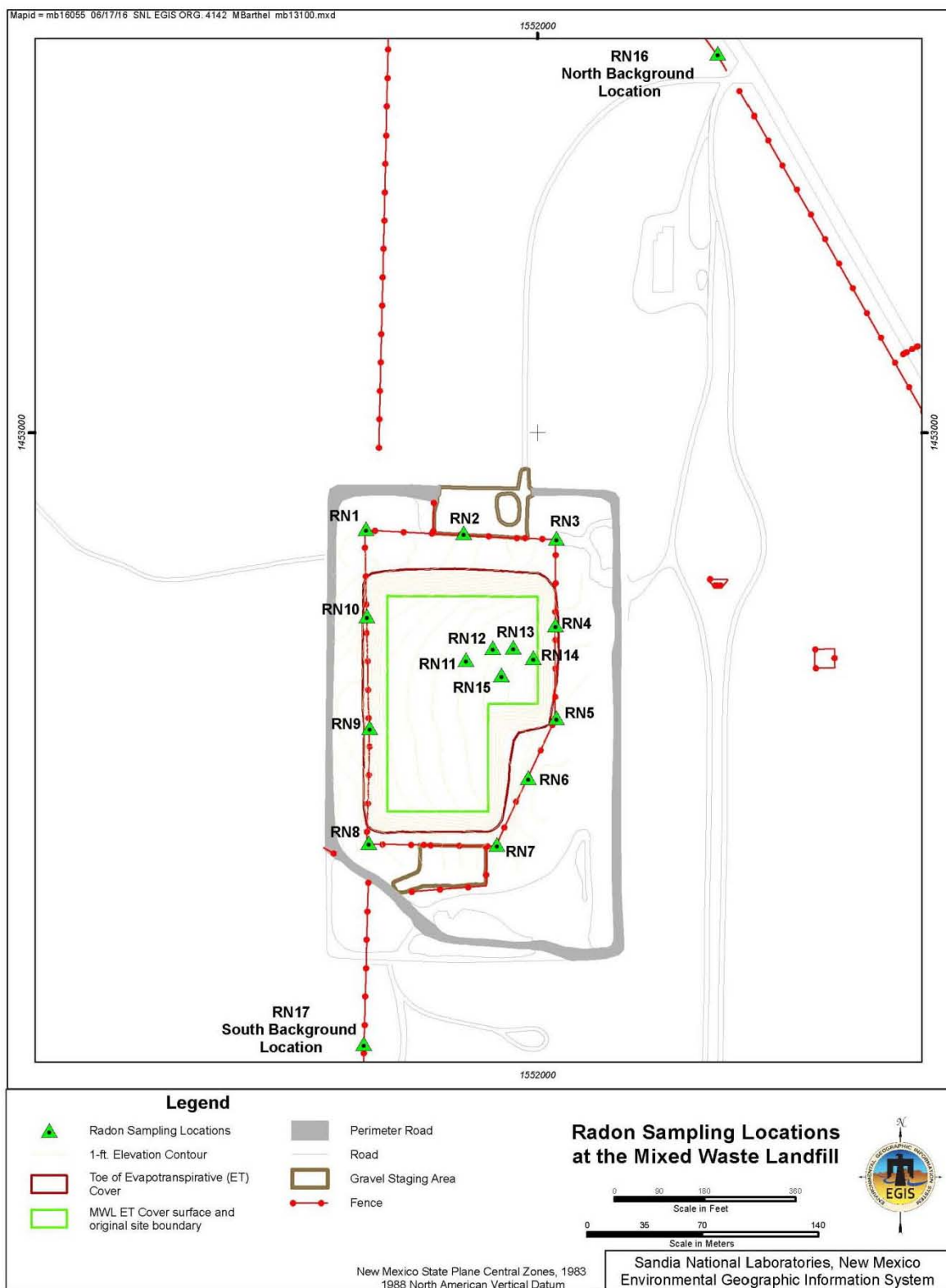


Figure 3-1
Mixed Waste Landfill Radon Detector Locations

Table 3-1
Summary of Radon Results
Mixed Waste Landfill Air Monitoring
Calendar Year 2015

| Sample Location ^a | 1 st Quarter | | 2 nd Quarter | | 3 rd Quarter | | 4 th Quarter | | CY 2015 Average Radon Air Concentration (pCi/L) | Trigger Level (pCi/L) |
|---|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---|-----------------------|
| | Detector Deployment Date | Detector Collection Date | Detector Deployment Date | Detector Collection Date | Detector Deployment Date | Detector Collection Date | Detector Deployment Date | Detector Collection Date | | |
| | 1/7/2015 | 4/2/2015 | 4/2/2015 | 7/2/2015 | 7/2/2015 | 10/5/2015 | 10/5/2015 | 1/7/2016 | | |
| | Quarterly Time-Weighted Average Radon Air Concentration (pCi/L) | | | | | | | | | |
| RN1 | 0.9 | | 0.4 | | 0.6 | | 0.4 | | 0.6 | 4 |
| RN2 | 1.1 | | 0.5 | | 0.5 | | 0.4 | | 0.6 | 4 |
| RN3 | 0.9 | | 0.6 | | 0.4 | | 0.6 | | 0.6 | 4 |
| RN4 | 1.2 | | 0.6 | | 0.6 | | 0.4 | | 0.7 | 4 |
| RN5 | 1.1 | | 0.7 | | 0.4 | | 0.4 | | 0.7 | 4 |
| RN6 | 0.8 | | 0.4 | | 0.6 | | 0.6 | | 0.6 | 4 |
| RN7 | 0.9 | | 0.9 | | 0.5 | | 0.5 | | 0.7 | 4 |
| RN8 | 0.9 | | 0.6 | | 0.4 | | 0.3 | | 0.6 | 4 |
| RN9 | 1.1 | | 0.5 | | 0.5 | | 0.7 | | 0.7 | 4 |
| RN10 | 0.6 | | 0.5 | | 0.5 | | 0.5 | | 0.5 | 4 |
| RN11 | 1.0 | | 0.4 | | 0.6 | | 0.9 | | 0.7 | NA |
| RN12 | 0.8 | | 0.6 | | 0.5 | | 0.4 | | 0.6 | NA |
| RN13 | 1.0 | | 0.7 | | 0.5 | | 0.4 | | 0.7 | NA |
| RN14 | 0.9 | | 0.5 | | 0.4 | | 0.6 | | 0.6 | NA |
| RN15 | 0.7 | | 0.6 | | 0.4 | | 0.8 | | 0.6 | NA |
| Background Locations and Quality Control | | | | | | | | | | |
| RN16 | 0.6 | | 0.5 | | 0.7 | | 0.6 | | 0.6 | NA |
| RN17 | 0.7 | | 0.8 | | 0.6 | | 0.7 | | 0.7 | NA |
| RNTB | <0.4 ^b | | <0.3 ^b | | <0.3 ^b | | <0.3 ^b | | <0.3 ^b | NA |

Notes:

^aBolded sample locations are the locations where the trigger level applies.

^bNot detected, result is less than the minimum detectable activity.

CY = Calendar year.

NA = Not applicable.

pCi/L = Picocuries per liter.

RNTB = Trip blank.

Quarterly monitoring results are reviewed and evaluated by an SNL/NM radiological subject matter expert (SME). The data evaluation letter reports prepared by the SME also include the corresponding laboratory data sheets, Analysis Request/Chain-of-Custody forms (AR/COCs), and pictures of the radon monitoring station equipment and configuration. They are provided in Annex A.

3.1.1 Radon Monitoring Detector Deployment and Collection

Radtrak[®] radon detectors were deployed and collected at the 17 sampling locations as shown in Table 3-1 and Figure 3-1. During the months in between deployment and collection, inspections were conducted to ensure the deployed detectors were in good condition. All detectors were found in good condition during the monitoring period at the times of collection.

3.1.2 Field Quality Control

Field quality control (QC) measures associated with each quarterly monitoring event include two types of samples, a field control sample (trip blank) and two field background samples. The trip blank analysis is used to confirm detectors were not contaminated during storage and shipment to the analytical laboratory. Two field background samples (RN16 and RN17) were collected during each sampling event at areas outside of the MWL, but within TA-III, to confirm natural radon activities in the vicinity of the MWL (Figure 3-1). The two field background sample results are compared to the sample detectors results that characterize radon activities immediately above the disposal areas (RN11 through RN15) and around the perimeter (RN1 through RN10).

3.1.3 Waste Management

No waste is generated during radon monitoring field activities. After analysis radon detectors are disposed of by the analytical laboratory.

3.2 Laboratory Results

This section summarizes quarterly radon air monitoring results for CY 2015. The radon air measurements were obtained using Radtrak[®] radon detectors. Radtrak[®] is an alpha-track radon gas detector designed to monitor radon exposure for three months to one year to obtain a long-term average activity over time. The detectors were submitted to Landauer[®] Incorporated for analysis. Analytical laboratory reports, including the analytical method, dates of analyses, results of QC analyses, and contract verification reviews are filed in the SNL/NM Record Center.

3.2.1 Environmental Sample Results

The compiled quarterly monitoring results are presented in Table 3-1. Figure 3-2 shows the tabulated data in graphical form along with the trigger level of 4 pCi/L. No sample locations exceeded the trigger level of 4 pCi/L. The CY 2015 average radon activity at locations RN1 through RN15 ranged from 0.5 to 0.7 pCi/L. The CY 2015 average radon activity at background

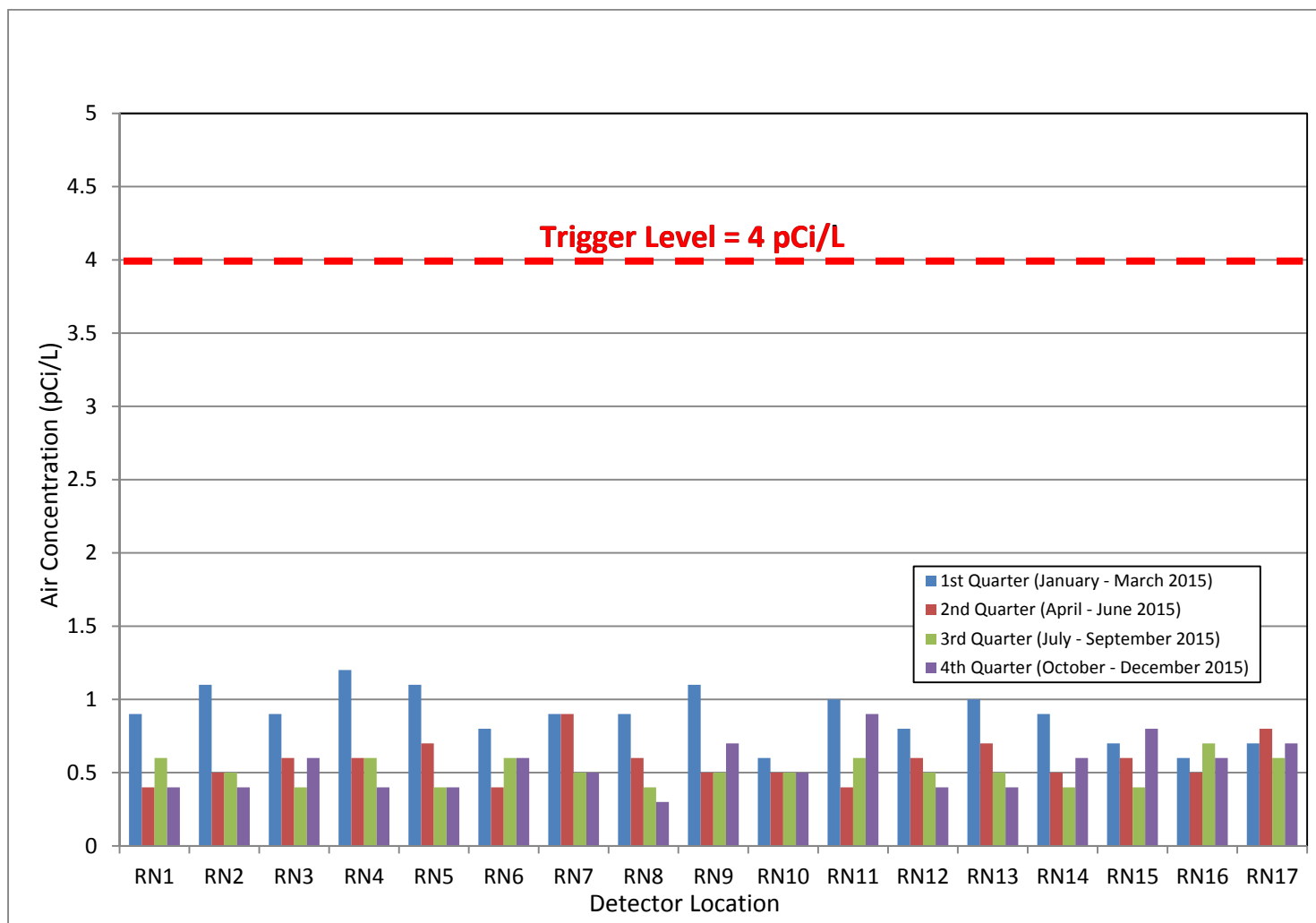


Figure 3-2
Mixed Waste Landfill
Calendar Year 2015 Quarterly Air Monitoring Results

locations RN16 and RN17 ranged from 0.6 to 0.7 pCi/L, respectively. The individual CY 2015 detected activity ranged from 0.3 pCi/L at location RN8 (4th Quarter results) to 1.2 pCi/L at location RN4 (1st Quarter results).

3.2.2 Field Quality Control Sample Results

A trip blank (designated as RNTB in Table 3-1) was submitted with the detectors collected during each quarterly sampling event. The results from analysis of the trip blanks confirmed there was no contamination during storage and shipment of detectors RN1 through RN17 to the analyzing laboratory.

The two field background sample results (RN16 and RN17) for each quarter are compared to the quarterly sample results for detectors RN1 through RN15 and are shown in Figure 3-2. These background sample results show that conditions at the MWL are essentially equivalent to background conditions.

3.2.3 Data Quality

There were no data quality issues associated with CY 2015 radon monitoring. The radon results are acceptable and met the DQOs.

3.2.4 Variances and Non-Conformances

There were no variances or non-conformances for radon sampling.

3.3 Data Evaluation and Monitoring Trigger Level

The trigger level for radon in air is 4 pCi/L, which applies to the detectors RN1 through RN10 located on the perimeter fence. The trigger level of 4 pCi/L is the same as the U.S. Environmental Protection Agency (EPA)-recommended action level for radon in households. There was no exceedance of the 4.0 pCi/L trigger level at any of the radon sampling locations during CY 2015.

4.0 TRITIUM SURFACE SOIL MONITORING RESULTS

This chapter presents monitoring activities for tritium-in-surface soil (i.e., sampling and analysis), analytical results, and data evaluation in accordance with LTMMMP Section 3.3 and Appendix G (SNL/NM March 2012). The monitoring objective is to collect data to evaluate tritium flux (i.e., movement) to the atmosphere from soil moisture in surface soil at the MWL. This monitoring provides an early warning detection system for changing conditions so that timely action can be taken, if necessary. Results are compared to trigger levels defined in LTMMMP Section 5.2.2.1.

Tritium surface soil monitoring field activities are described in Section 4.1 and analytical laboratory results and a discussion of data quality are presented in Section 4.2. Data evaluation and a comparison of results to the trigger level are presented in Section 4.3 and Section 4.4 presents historic data evaluation. A summary of tritium surface soil monitoring activities and results is provided in Section 11.1.

4.1 Tritium Surface Soil Sampling Field Activities

This section describes activities conducted in conformance with LTMMMP Appendix G, which describes the procedures, methods, and analytical protocols for collecting and analyzing tritium surface soil samples. The August 2015 results are presented in the following sections.

Surface soil samples were collected at the four ET Cover corner monitoring locations on August 4, 2015 fulfilling the annual monitoring requirement (Figure 4-1). Samples were collected during the New Mexico monsoon season to ensure adequate soil moisture for analysis.

Quarterly monitoring results are reviewed and evaluated by an SNL/NM radiological SME. Annex B contains the AR/COC forms and the data evaluation memo prepared by the radiological SME that includes an evaluation and summary of the data.

4.1.1 Field Quality Control

A field QC sample (duplicate soil sample) was collected as part of the August 4, 2015 tritium sampling event in accordance with the Tritium and Biota SAP (Appendix G, Table G-4.2-1 of the LTMMMP), which requires that one duplicate sample pair be collected for every twenty environmental samples. The environmental-duplicate sample pair for the August 2015 sampling event was collected at the southeast corner of the ET Cover, tritium monitoring location MWL TS-2SE (Figure 4-1).

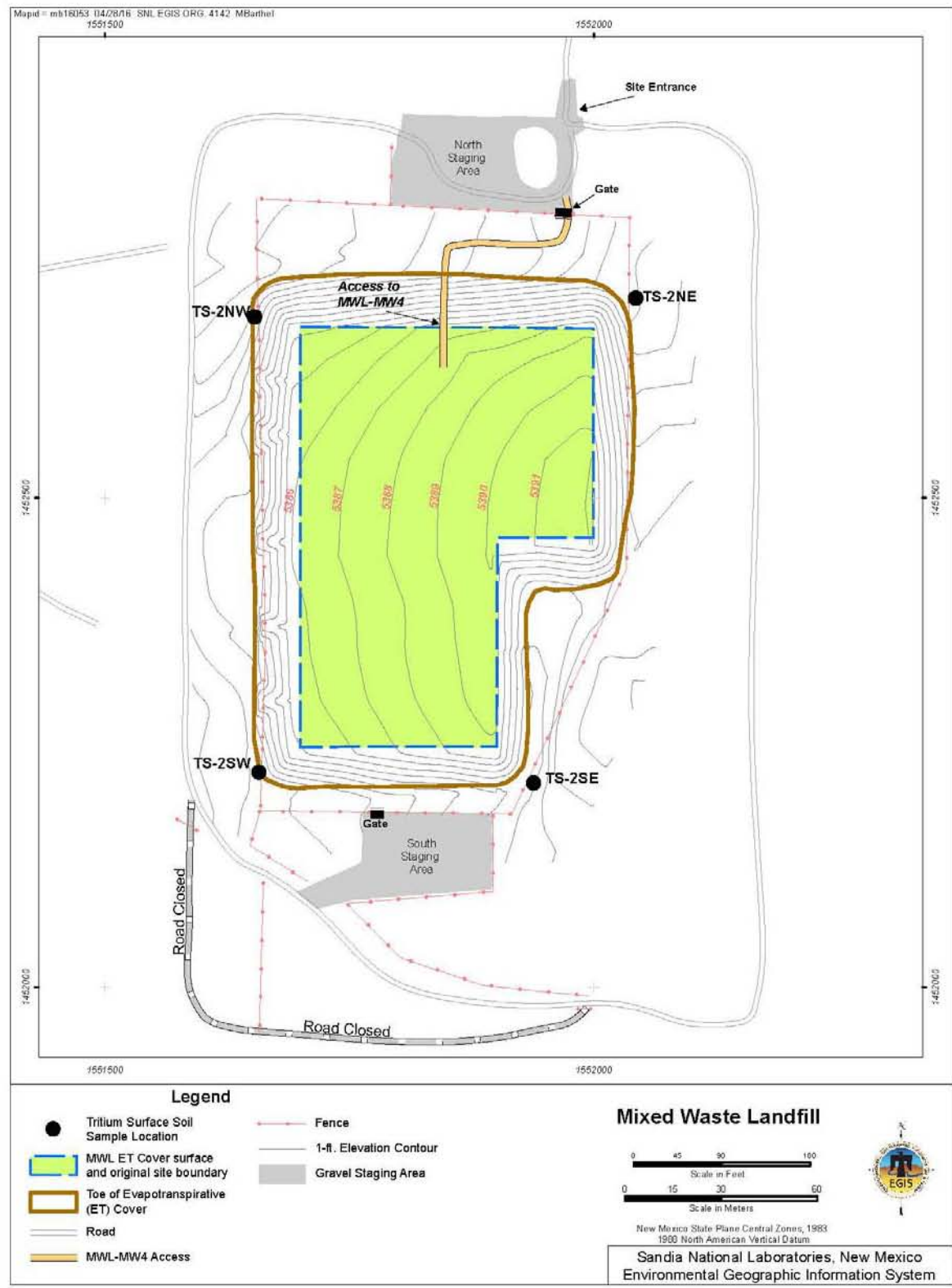


Figure 4-1
Mixed Waste Landfill Tritium Surface Soil Sampling Locations

4.1.2 Waste Management

Waste generated during sampling activities included personal protective equipment (PPE) (i.e. gloves) and decontamination wipes. Waste was managed in accordance with all applicable requirements. Analytical data collected from the sampling event was used to characterize the waste; it was determined to be non-hazardous and non-radioactive and was managed as solid waste.

4.2 Laboratory Results

Soil samples and field QC samples were submitted to GEL Laboratories LLC (GEL) for analyses. Samples were analyzed by liquid scintillation analysis, in accordance with EPA Method 906.0. Tritium activity is determined in the moisture extracted from the soil sample, so results are sensitive to in-situ moisture content of the soil collected. Analytical results that are below the minimum detectable activity (MDA) are qualified with a “U” and are designated as below detection. Analytical laboratory reports, including certificates of analyses, analytical methods, sample results, dates of analyses, results of QC analyses, and data validation reports are filed in the SNL/NM Record Center.

4.2.1 Environmental Sample Results

Table 4-1 summarizes the tritium surface soil results for the August 2015 sampling event. Tritium activity was detected above the MDA in all samples at very low activities, ranging from 269 pCi/L (southeast ET Cover corner location, MWL TS-2SE duplicate sample) to 719 pCi/L (northwest ET Cover corner location, MWL TS-2NW). All results were less than three times the MDA, except for the MWL TS-2NW result of 719 pCi/L. These results are consistent with the January 2015 results from the previous LTMM reporting period, which ranged from 1,010 pCi/L to 1,830 pCi/L. All results are below the trigger level of 20,000 pCi/L.

4.2.2 Field Quality Control Sample Results

The relative percent difference (RPD) between the environmental sample and corresponding duplicate results is calculated using the following formula.

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

where: R_1 = Analysis result.
 R_2 = Duplicate analysis result.

Table 4-1
Summary of Tritium Results (EPA Method 906.0^a)
Mixed Waste Landfill Surface Soil Monitoring
August 2015

| Sample Location | Result (pCi/L) | Percent Soil Moisture | MDA (pCi/L) | Laboratory Qualifier ^b | Validation Qualifier ^b | Trigger Level (pCi/L) |
|------------------------|----------------|-----------------------|-------------|-----------------------------------|-----------------------------------|-----------------------|
| | August 2015 | | | | | |
| MWL TS-2NW | 719 ± 171 | 1.92 | 197 | -- | -- | 20,000 |
| MWL TS-2SW | 527 ± 152 | 2.51 | 198 | -- | J | |
| MWL TS-2SE | 369 ± 136 | 2.60 | 195 | -- | J | |
| MWL TS-2SE (Duplicate) | 269 ± 131 | 2.78 | 200 | -- | J | |
| MWL TS-2NE | 550 ± 153 | 2.33 | 196 | -- | J | |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

^bLaboratory/Validation Qualifier: If cell is blank (--), then all quality control samples met acceptance criteria with respect to submitted samples. "J" indicates the associated value is an estimated quantity; result is greater than the MDA, but less than 3 times the MDA.

EPA = U.S. Environmental Protection Agency.

MDA = Minimum detectable activity.

MWL = Mixed Waste Landfill.

pCi/L = Picocuries per liter.

The RPD value for the environmental-duplicate sample pair collected at MWL TS-2SE in August 2015 shows good agreement, with a calculated value of 31. RPD values less than or equal to 35 are considered acceptable per Section 2.3 in Appendix G of the LTMMMP.

4.2.3 Laboratory Quality Control and Data Quality

Field QC sample results validated the field sampling procedures and protocol. Internal laboratory QC samples were analyzed concurrently with all environmental samples in accordance with laboratory procedures and EPA methods. These included laboratory control samples, method blanks, and matrix spike samples. The results were used to evaluate potential contamination associated with the laboratory analytical process and to determine the accuracy and precision of the analytical methods. All radiochemical data were reviewed and qualified in accordance with SNL/NM Administrative Operating Procedure (AOP) AOP 00-03, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM June 2014a).

Based upon the data validation and review criteria, all tritium results were determined acceptable and met the DQOs. Reported QC sample results were in compliance with analytical method and laboratory procedure requirements. Data Validation Reports and Contract Verification Review forms are provided in Annex B.

4.2.4 Variances and Non-Conformances

There were no variances or non-conformances for tritium surface soil sampling.

4.3 Data Evaluation and Monitoring Trigger Level

The trigger level for tritium as measured in soil moisture from surface soil samples is 20,000 pCi/L, as specified in LTMMP Section 5.2.2.1 (SNL/NM March 2012). No sample results from August 2015 exceeded the trigger level.

4.4 Historic Data Evaluation

Tritium surface soil sampling has been conducted at the MWL since August 1985 at various locations around the MWL perimeter. The tritium sampling being performed under the LTMMP is a continuation of this monitoring effort. Historic tritium data from 1985 through 1999 did not go through the same rigorous data quality review process as data collected since June 2000, but the earlier data do provide useful information regarding tritium levels over time.

Trend plots are not presented in this Annual LTMM Report because the factors that affect tritium results in surface soil samples at these very low activities (e.g., soil-moisture content and barometric conditions) overwhelm the subtle changes in actual, measurable tritium flux. The data collected in August 2015 are consistent with the historical data and demonstrate consistent, tritium activity at very low levels that are close to the laboratory MDA. The results are consistent with no new releases from the disposal areas.

This page intentionally left blank.

5.0 SOIL-VAPOR MONITORING RESULTS

This chapter presents soil-vapor monitoring activities (i.e., sampling and analysis), analytical results, and data evaluation in accordance with LTMMP Sections 3.4.1 and Appendix D (SNL/NM March 2012). The soil-vapor monitoring objective is to provide spatial and temporal concentration data for VOCs in the soil vapor at various depths throughout the approximately 500-foot-thick vadose zone beneath the MWL (i.e., unsaturated soil and sediments above the regional groundwater aquifer). These monitoring data serve as an early warning detection system for the protection of groundwater so that timely action can be taken, if necessary. Results from the deepest sampling ports of the deepest soil-vapor wells are compared to trigger levels defined in LTMMP Section 5.2.3.1.

Soil-vapor monitoring field activities are described in Section 5.1, analytical laboratory results and a discussion of data quality are presented in Section 5.2, and data evaluation and comparison of results to monitoring trigger levels are presented in Section 5.3. A summary of soil-vapor monitoring activities and results is provided in Section 11.1.

5.1 Soil-Vapor Sampling Field Activities

This section describes soil-vapor monitoring activities conducted at the MWL in conformance with the MWL Soil-Vapor SAP, LTMMP Appendix D, which describes the procedures, methods, and analytical protocols for collecting and analyzing soil-vapor samples. Field forms and documentation that address calibration of equipment, well evacuation, purge volumes, and vacuum pressure readings for each sample container are provided in Annex C.

Wells MWL-SV01 and MWL-SV02 are single-sampling-port wells installed through the ET Cover; each well has one sampling port at depths 42.5 and 41.5 feet below ground surface (bgs), respectively. Wells MWL-SV03, MWL-SV04, and MWL-SV05 are Flexible Liner Underground Technology, Ltd.TM (FLUTETM) multi-sampling-port wells (i.e., each has 5 sampling ports at depths of approximately 50, 100, 200, 300, 400 feet bgs), and are installed around the ET Cover perimeter. The well locations are shown in Figure 5-1.

Two soil-vapor monitoring events were conducted during the April 1, 2015 through March 31, 2016 reporting period fulfilling the LTMMP semiannual monitoring requirement. The two soil-vapor monitoring events are described as follows.

- The first sampling event was conducted on April 14 and 15, 2015. Soil-vapor samples were collected from all monitoring wells (MWL-SV01, MWL-SV02, MWL-SV03, MWL-SV04, and MWL-SV05). Duplicate samples were collected from two MWL-SV03 sample ports (50 and 200-foot bgs).
- The second sampling event was conducted on October 8, 2015. Soil-vapor samples were collected from all monitoring wells and duplicate samples were collected from MWL-SV01 and MWL-SV02 (sample ports located at 42.5 and 41.5 feet bgs, respectively).

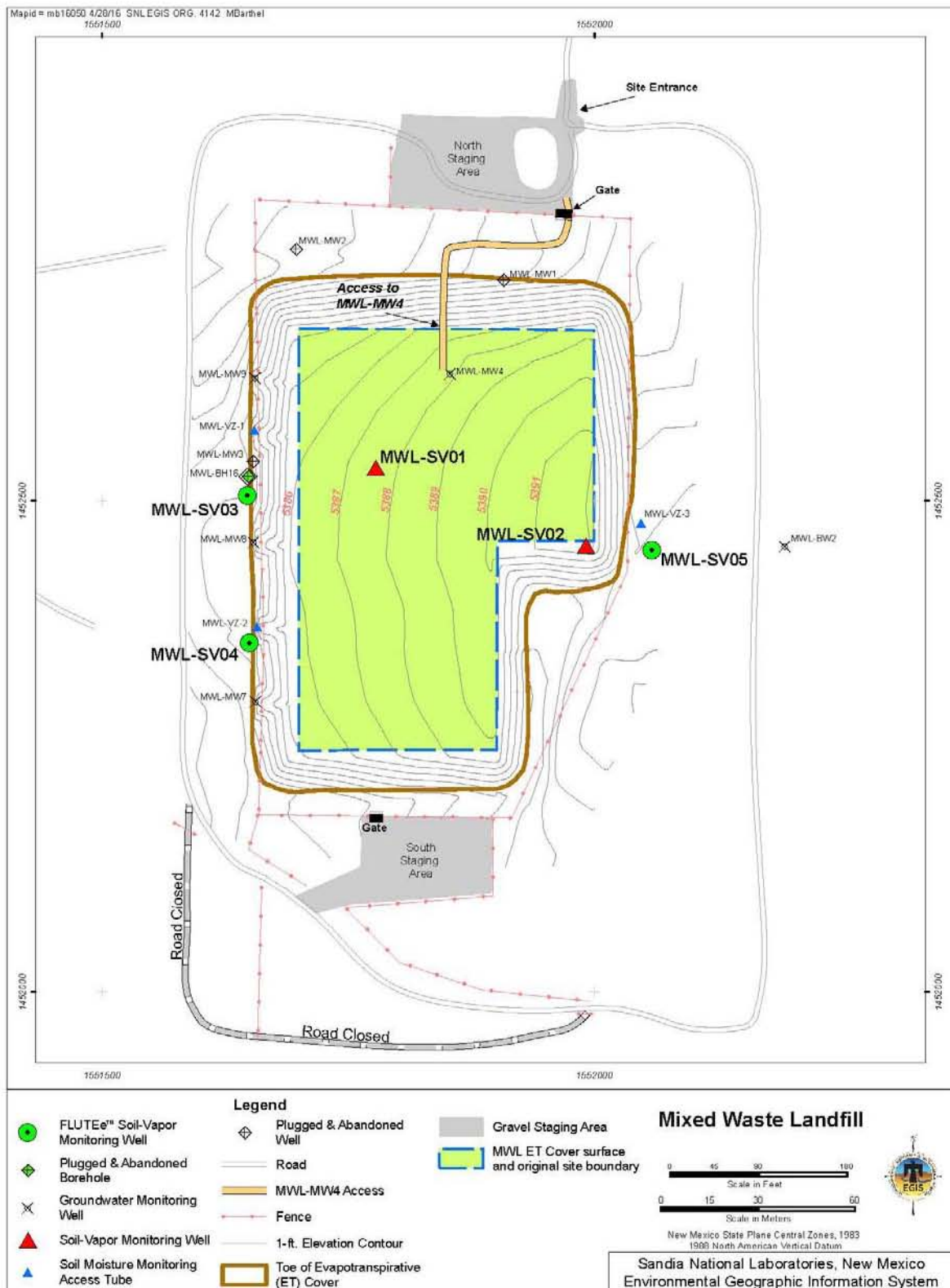


Figure 5-1
Mixed Waste Landfill Soil-Vapor Monitoring Well Locations

5.1.1 Well Purging

Purging removes stagnant air from each monitoring port and associated sample tubing, and draws representative soil vapor from the soil pore space surrounding the sampling port in the subsurface. All wells were purged to remove a minimum of three tubing volumes of air, and until VOC levels stabilized (i.e., 3 photoionization detector [PID] measurements after purging 3 tubing volumes within plus or minus 10 percent), in accordance with procedures described in field operating procedure (FOP) FOP 08-22, "Soil-Vapor Sampling," (SNL/NM June 2014b), and LTMMMP Appendix D. All wells were purged using a dedicated (to the MWL) vacuum pump. Real time continuous VOC screening was performed with a PID to determine VOC stabilization during the purging process. After achieving stabilization, PID VOC concentrations ranged from 0.0 to 0.6 parts per million by volume (ppmv) for all wells and sampling ports.

5.1.2 Field Quality Control

Field QC samples include duplicate samples (minimum of two per semiannual monitoring event) and field blank samples. Field QC samples were submitted for analysis with the soil-vapor samples and analytical results are presented in Section 5.2.2 and Annex C. Two environmental-duplicate sample pairs were collected from each sample port selected for the collection of duplicate samples. One environmental-duplicate sample pair was collected simultaneously with a new sample manifold system (i.e., both samples collected at the same time), and a second environmental-duplicate sample pair was collected in series, with the duplicate sample collected immediately after the environmental sample (method previously used). Both methods are performed in a manner to reduce variability caused by time and/or sampling mechanics. These sample results were used to evaluate the new manifold system equipment, as well as the reproducibility of the sampling and analytical processes. The new sample manifold system was developed and tested to evaluate its potential as an improvement to the soil-vapor monitoring process.

Field blank samples were prepared in the field during sampling activities by collecting an ultra-pure grade nitrogen gas sample at each monitoring well. Results were used to assess whether contamination of the samples may have resulted from ambient field conditions.

The field QC sampling protocol for the April and October 2015 sampling events included the collection of two environmental-duplicate sample pairs from the sample ports located at 50 feet bgs and 200 feet bgs at monitoring well MWL-SV03 in April, and from monitoring well MWL-SV01 (sample port located at 42.5 feet bgs) and MWL-SV02 (sample port located at 41.5 feet bgs) in October. A total of five QC field blank samples were submitted for analysis for each of the events. Field QC sample results are presented in Section 5.2.2 for the April and October 2015 sampling events.

5.1.3 Waste Management

A small volume of solid waste (e.g., PPE) was generated during the two soil-vapor monitoring events. This waste was combined with the solid waste generated during groundwater monitoring activities and managed in accordance with all applicable requirements.

5.2 Laboratory Results

Environmental and field QC soil-vapor samples were submitted to Test America Laboratories, Inc. for analyses. Samples were analyzed in accordance with EPA Method TO-15. Analytical laboratory reports, including certificates of analyses, analytical methods, method detection limits (MDLs), reporting limits (RLs), dates of analyses, and data validation reports are filed in the SNL/NM Record Center.

5.2.1 Environmental Sample Results

This section summarizes soil-vapor monitoring results for the April 1, 2015 through March 31, 2016 reporting period. A summary of compounds detected in each event is provided below, along with a discussion of soil-vapor trigger levels defined in LTMMMP Section 5.2.3.1.

First Semiannual Sampling Event – April 14 and 15, 2015

A total of 19 compounds were detected above laboratory MDLs in April 2015 samples. Of the 19 detected VOCs, only 2-hexanone was not detected in the October samples.

| | |
|-------------------------|---------------------------------------|
| Acetone | cis-1,2-Dichloroethene |
| Benzene | 2-Hexanone |
| 2-Butanone | Methylene Chloride |
| Carbon Disulfide | Tetrachloroethene (PCE) |
| Carbon Tetrachloride | Toluene |
| Chloroform | Trichloroethene (TCE) |
| Chloromethane | Trichlorofluoromethane |
| Dichlorodifluoromethane | 1,1,1-Trichloroethane |
| 1,1-Dichloroethane | 1,1,2-Trichloro-1,2,2-trifluoroethane |
| 1,1-Dichloroethene | |

Tetrachloroethene (PCE) and trichloroethene (TCE) are the primary VOCs of concern, exhibited the highest concentrations, and were reported in all environmental samples. PCE was detected at concentrations ranging from 0.055 to 0.460 ppmv, and TCE concentrations ranged from 0.060 to 0.290 ppmv. Other VOCs detected in all samples, generally at lower concentrations, include acetone, dichlorodifluoromethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1,1-trichloroethane, and trichlorofluoromethane. The maximum VOC concentration was 0.460 ppmv PCE from MWL-SV01-42.5.

Second Semiannual Sampling Event – October, 2015

A total of 19 compounds were detected above laboratory MDLs in October 2015 samples. Of the 19 detected VOCs, only vinyl acetate was not detected in the April samples.

| | |
|---------|------------------------|
| Acetone | cis-1,2-Dichloroethene |
| Benzene | Methylene Chloride |

| | |
|-------------------------|---------------------------------------|
| 2-Butanone | Tetrachloroethene (PCE) |
| Carbon Disulfide | Toluene |
| Carbon Tetrachloride | Trichloroethene (TCE) |
| Chloroform | Trichlorofluoromethane |
| Chloromethane | 1,1,1-Trichloroethane |
| Dichlorodifluoromethane | 1,1,2-Trichloro-1,2,2-trifluoroethane |
| 1,1-Dichloroethane | Vinyl Acetate |
| 1,1-Dichloroethene | |

PCE and TCE exhibited the highest concentrations, and were reported in all environmental samples. PCE was detected at concentrations ranging from 0.040 ppmv to 0.470 ppmv. TCE concentrations ranged from 0.052 ppmv to 0.350 ppmv. Other VOCs detected in all samples, generally at lower concentrations, included chloroform, dichlorodifluoromethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1,1-trichloroethane, and trichlorofluoromethane. The maximum VOC concentration was 0.470 ppmv PCE from MWL-SV01-42.5.

Table 5-1 and Table 5-2 summarize detected VOCs results for the April 2015 and October 2015 sampling events, respectively. Table 5-3 provides results for PCE, TCE, and Total VOCs (i.e., the sum of validated detected VOCs) for the four semiannual monitoring events conducted since implementation of the LTMMP in 2014. The following general points summarize key points from the evaluation of the 2014 and 2015 soil-vapor monitoring results.

- In general, 2015 results for all monitoring well sampling ports are all low concentrations (i.e., less 0.500 ppmv) and consistent with the 2014 results.
- The soil-vapor monitoring results are consistent with an old source (i.e., disposal period of 1958 through 1988) that has slowly dissipated throughout the vadose zone.
- The distribution of VOC concentrations beneath the MWL indicates the soil-vapor plume is stable with no new releases from the disposal area.
- 2014 and 2015 results for the shallower sampling depths closer to the disposal areas (i.e., sample port depths ranging from 41.5 to 100 feet bgs at all five monitoring wells) reflect lower concentrations than were measured during the Phase 2 RFI in 1994 (Peace et al. September 2002) and 2008 VOC Soil-Vapor Investigation (SNL/NM August 2008).
- All results for the three deepest sampling ports of MWL-SV03 through MWL-SV05 (400 feet bgs) are similar to the results from the 100 foot and 200 foot depths, and more than 25 times less than the associated trigger level.

The variation in PCE and TCE concentrations over the four sampling events conducted in 2014 and 2015 is less than 0.100 ppmv for all sampling ports except MWL-SV01-42.5 (PCE variation was 0.160 ppmv between the September and October 2014 results). Although the PCE concentrations have increased at MWL-SV03-400 since September 2014, the overall increase is very small, only 0.060 ppmv. The 42.5 foot bgs sample port of MWL-SV01 has consistently

Table 5-1
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|-----------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV01-42.5 15-Apr-15 | Acetone | 0.006 | 2.1 | 59 | J, * | J |
| | Chloroform | 0.014 | 1.1 | 3.5 | -- | -- |
| | Dichlorodifluoromethane | 0.130 | 1.7 | 4.7 | -- | -- |
| | 1,1-Dichloroethane | 0.0036 | 0.85 | 3.5 | -- | -- |
| | 1,1-Dichloroethene | 0.010 | 1.5 | 9.4 | * | J |
| | cis-1,2-Dichloroethene | 0.0011 | 1.1 | 4.7 | J | -- |
| | Tetrachloroethene | 0.460 | 0.60 | 4.7 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.099 | 1.9 | 4.7 | -- | -- |
| | 1,1,1-Trichloroethane | 0.054 | 0.77 | 3.5 | -- | -- |
| | Trichloroethene | 0.099 | 1.2 | 4.7 | -- | -- |
| | Trichlorofluoromethane | 0.240 | 2.3 | 4.7 | -- | -- |
| | Total Organics ^d | 1.1167 | NA | NA | NA | NA |
| MWL-SV02-41.5 15-Apr-15 | Acetone | 0.0062 | 1.4 | 38 | J, * | J |
| | 2-Butanone | 0.0023 | 1.5 | 6.1 | J, * | J |
| | Chloroform | 0.0032 | 0.73 | 2.3 | -- | -- |
| | Dichlorodifluoromethane | 0.110 | 1.1 | 3.1 | -- | -- |
| | 1,1-Dichloroethane | 0.0022 | 0.55 | 2.3 | J | -- |
| | 1,1-Dichloroethene | 0.011 | 0.99 | 6.1 | * | J |
| | cis-1,2-Dichloroethene | 0.00080 | 0.68 | 3.1 | J | -- |
| | Tetrachloroethene | 0.075 | 0.39 | 3.1 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.050 | 1.3 | 3.1 | -- | -- |
| | 1,1,1-Trichloroethane | 0.077 | 0.50 | 2.3 | -- | -- |
| | Trichloroethene | 0.067 | 0.81 | 3.1 | -- | -- |
| | Trichlorofluoromethane | 0.360 | 1.5 | 3.1 | -- | -- |
| | Total Organics ^d | 0.7647 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-50 Manifold 14-Apr-15 | Acetone | 0.006 | 1.1 | 30 | J | J |
| | Benzene | 0.0018 | 0.47 | 2.4 | J | -- |
| | Chloroform | 0.0015 | 0.57 | 1.8 | J | -- |
| | Dichlorodifluoromethane | 0.024 | 0.87 | 2.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0025 | 0.43 | 1.8 | -- | -- |
| | 1,1-Dichloroethene | 0.0092 | 0.77 | 4.8 | -- | J |
| | cis-1,2-Dichloroethene | 0.0014 | 0.53 | 2.4 | J | -- |
| | Methylene Chloride | 0.00067 | 0.43 | 2.4 | J | J |
| | Tetrachloroethene | 0.140 | 0.30 | 2.4 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.051 | 0.97 | 2.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0053 | 0.39 | 1.8 | -- | -- |
| | Trichloroethene | 0.092 | 0.63 | 2.4 | -- | -- |
| | Trichlorofluoromethane | 0.023 | 1.2 | 2.4 | -- | -- |
| | Total Organics ^a | 0.35837 | NA | NA | NA | NA |
| MWL-SV03-50 Manifold 14-Apr-15 (Duplicate) | Acetone | 0.0069 | 0.88 | 25 | J | J |
| | Benzene | 0.0016 | 0.39 | 2.0 | J | -- |
| | Chloroform | 0.0013 | 0.47 | 1.5 | J | -- |
| | Dichlorodifluoromethane | 0.021 | 0.71 | 2.0 | -- | -- |
| | 1,1-Dichloroethane | 0.002 | 0.35 | 1.5 | -- | -- |
| | 1,1-Dichloroethene | 0.0079 | 0.63 | 3.9 | -- | J |
| | cis-1,2-Dichloroethene | 0.0011 | 0.44 | 2.0 | J | -- |
| | Methylene Chloride | 0.00067 | 0.35 | 2.0 | J | J |
| | Tetrachloroethene | 0.120 | 0.25 | 2.0 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.045 | 0.80 | 2.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0044 | 0.32 | 1.5 | -- | -- |
| | Trichloroethene | 0.080 | 0.52 | 2.0 | -- | -- |
| | Trichlorofluoromethane | 0.020 | 0.96 | 2.0 | -- | -- |
| | Total Organics ^a | 0.31187 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-50 14-Apr-15 | Acetone | 0.0040 | 0.87 | 24 | J | J |
| | Benzene | 0.0019 | 0.39 | 2.0 | J | -- |
| | Chloroform | 0.0013 | 0.46 | 1.5 | J | -- |
| | Dichlorodifluoromethane | 0.022 | 0.71 | 2.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0021 | 0.35 | 1.5 | -- | -- |
| | 1,1-Dichloroethene | 0.0081 | 0.63 | 3.9 | -- | J |
| | cis-1,2-Dichloroethene | 0.0011 | 0.43 | 2.0 | J | -- |
| | Methylene Chloride | 0.00063 | 0.35 | 2.0 | J | J |
| | Tetrachloroethene | 0.130 | 0.25 | 2.0 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.046 | 0.80 | 2.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0047 | 0.32 | 1.5 | -- | -- |
| | Trichloroethene | 0.085 | 0.51 | 2.0 | -- | -- |
| | Trichlorofluoromethane | 0.020 | 0.96 | 2.0 | -- | -- |
| | Total Organics ^d | 0.32683 | NA | NA | NA | NA |
| MWL-SV03-50 14-Apr-15 (Duplicate) | Acetone | 0.0021 | 1.1 | 30 | J | J |
| | Benzene | 0.0021 | 0.47 | 2.4 | J | -- |
| | Carbon disulfide | 0.00052 | 0.46 | 4.7 | J | J |
| | Chloroform | 0.0016 | 0.56 | 1.8 | J | -- |
| | Dichlorodifluoromethane | 0.026 | 0.86 | 2.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0023 | 0.43 | 1.8 | -- | -- |
| | 1,1-Dichloroethene | 0.0087 | 0.76 | 4.7 | -- | J |
| | cis-1,2-Dichloroethene | 0.0013 | 0.53 | 2.4 | J | -- |
| | Methylene Chloride | 0.00074 | 0.43 | 2.4 | J | J |
| | Tetrachloroethene | 0.150 | 0.30 | 2.4 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.050 | 0.97 | 2.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0054 | 0.39 | 1.8 | -- | -- |
| | Trichloroethene | 0.097 | 0.62 | 2.4 | -- | -- |
| | Trichlorofluoromethane | 0.023 | 1.2 | 2.4 | -- | -- |
| | Total Organics ^d | 0.37076 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-100 14-Apr-15 | Acetone | 0.0042 | 1.3 | 37 | J | J |
| | Chloroform | 0.0024 | 0.71 | 2.2 | -- | -- |
| | Dichlorodifluoromethane | 0.049 | 1.1 | 3.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0058 | 0.54 | 2.2 | -- | -- |
| | 1,1-Dichloroethene | 0.025 | 0.96 | 6.0 | -- | J |
| | cis-1,2-Dichloroethene | 0.0037 | 0.66 | 3.0 | -- | -- |
| | Methylene Chloride | 0.0021 | 0.54 | 3.0 | J | J |
| | Tetrachloroethene | 0.240 | 0.38 | 3.0 | -- | -- |
| | Toluene | 0.00046 | 0.38 | 3.0 | J | 3.0U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.120 | 1.2 | 3.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0067 | 0.48 | 2.2 | -- | -- |
| | Trichloroethene | 0.200 | 0.78 | 3.0 | -- | -- |
| | Trichlorofluoromethane | 0.036 | 1.5 | 3.0 | -- | -- |
| MWL-SV03-200 Manifold 14-Apr-15 | Total Organics ^d | 0.6949 | NA | NA | NA | NA |
| | Acetone | 0.0037 | 1.8 | 50 | J | J |
| | Carbon disulfide | 0.0023 | 0.78 | 8.0 | J | J |
| | Chloroform | 0.0021 | 0.95 | 3.0 | J | -- |
| | Dichlorodifluoromethane | 0.070 | 1.4 | 4.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0083 | 0.72 | 3.0 | -- | -- |
| | 1,1-Dichloroethene | 0.041 | 1.3 | 8.0 | -- | J |
| | cis-1,2-Dichloroethene | 0.0048 | 0.89 | 4.0 | -- | -- |
| | Methylene Chloride | 0.0041 | 0.72 | 4.0 | -- | J |
| | Tetrachloroethene | 0.290 | 0.51 | 4.0 | -- | -- |
| | Toluene | 0.00091 | 0.51 | 4.0 | J | 4.0U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.180 | 1.6 | 4.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0029 | 0.65 | 3.0 | J | -- |
| | Trichloroethene | 0.270 | 1.0 | 4.0 | -- | -- |
| | Trichlorofluoromethane | 0.034 | 2.0 | 4.0 | -- | -- |
| | Total Organics ^d | 0.9132 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-200 Manifold 14-Apr-15 (Duplicate) | Acetone | 0.0040 | 1.8 | 51 | J | J |
| | Chloroform | 0.0021 | 0.96 | 3.0 | J | -- |
| | Dichlorodifluoromethane | 0.074 | 1.5 | 4.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0086 | 0.73 | 3.0 | -- | -- |
| | 1,1-Dichloroethene | 0.043 | 1.3 | 8.1 | -- | J |
| | cis-1,2-Dichloroethene | 0.0054 | 0.90 | 4.0 | -- | -- |
| | Methylene Chloride | 0.0043 | 0.73 | 4.0 | -- | J |
| | Tetrachloroethene | 0.300 | 0.52 | 4.0 | -- | -- |
| | Toluene | 0.00092 | 0.52 | 4.0 | J | 4.0U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.190 | 1.6 | 4.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0031 | 0.66 | 3.0 | -- | -- |
| | Trichloroethene | 0.290 | 1.1 | 4.0 | -- | -- |
| | Trichlorofluoromethane | 0.035 | 2.0 | 4.0 | -- | -- |
| | Total Organics ^d | 0.9595 | NA | NA | NA | NA |
| MWL-SV03-200 14-Apr-15 | Acetone | 0.0029 | 1.7 | 49 | J | J |
| | Chloroform | 0.0020 | 0.92 | 2.9 | J | -- |
| | Dichlorodifluoromethane | 0.077 | 1.4 | 3.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0087 | 0.70 | 2.9 | -- | -- |
| | 1,1-Dichloroethene | 0.044 | 1.3 | 7.8 | -- | J |
| | cis-1,2-Dichloroethene | 0.0047 | 0.86 | 3.9 | -- | -- |
| | Methylene Chloride | 0.0042 | 0.70 | 3.9 | -- | J |
| | Tetrachloroethene | 0.310 | 0.49 | 3.9 | -- | -- |
| | Toluene | 0.00090 | 0.49 | 3.9 | J | 3.9U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.200 | 1.6 | 3.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0030 | 0.63 | 2.9 | -- | -- |
| | Trichloroethene | 0.290 | 1.0 | 3.9 | -- | -- |
| | Trichlorofluoromethane | 0.037 | 1.9 | 3.9 | -- | -- |
| | Total Organics ^d | 0.9835 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-200 14-Apr-15 (Duplicate) | Acetone | 0.0048 | 1.5 | 43 | J, * | J |
| | Carbon tetrachloride | 0.00056 | 0.55 | 6.9 | J | -- |
| | Chloroform | 0.0021 | 0.82 | 2.6 | J | -- |
| | Dichlorodifluoromethane | 0.070 | 1.2 | 3.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0091 | 0.62 | 2.6 | -- | -- |
| | 1,1-Dichloroethene | 0.045 | 1.1 | 6.9 | * | J |
| | cis-1,2-Dichloroethene | 0.0052 | 0.77 | 3.4 | -- | -- |
| | Methylene Chloride | 0.0044 | 0.62 | 3.4 | * | J |
| | Tetrachloroethene | 0.310 | 0.44 | 3.4 | -- | -- |
| | Toluene | 0.00099 | 0.44 | 3.4 | J | 3.4U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.210 | 1.4 | 3.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0030 | 0.56 | 2.6 | -- | -- |
| | Trichloroethene | 0.290 | 0.91 | 3.4 | -- | -- |
| | Trichlorofluoromethane | 0.036 | 1.7 | 3.4 | -- | -- |
| | Total Organics ^d | 0.99016 | NA | NA | NA | NA |
| MWL-SV03-300 14-Apr-15 | Acetone | 0.0070 | 1.6 | 46 | J, * | J |
| | Carbon disulfide | 0.0054 | 0.72 | 7.4 | J, * | J |
| | Dichlorodifluoromethane | 0.029 | 1.3 | 3.7 | -- | -- |
| | 1,1-Dichloroethane | 0.0018 | 0.66 | 2.8 | J | -- |
| | 1,1-Dichloroethene | 0.014 | 1.2 | 7.4 | * | J |
| | cis-1,2-Dichloroethene | 0.0015 | 0.82 | 3.7 | J | -- |
| | Methylene Chloride | 0.00086 | 0.66 | 3.7 | J, * | J |
| | Tetrachloroethene | 0.290 | 0.47 | 3.7 | -- | -- |
| | Toluene | 0.0023 | 0.47 | 3.7 | J | 3.7U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.065 | 1.5 | 3.7 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0011 | 0.60 | 2.8 | J | -- |
| | Trichloroethene | 0.170 | 0.96 | 3.7 | -- | -- |
| | Trichlorofluoromethane | 0.0094 | 1.8 | 3.7 | -- | -- |
| | Total Organics ^d | 0.59506 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|----------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-400 14-Apr-15 | Acetone | 0.0040 | 1.7 | 49 | J, * | J |
| | Chloroform | 0.0012 | 0.92 | 2.9 | J | -- |
| | Dichlorodifluoromethane | 0.032 | 1.4 | 3.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0026 | 0.70 | 2.9 | J | -- |
| | 1,1-Dichloroethene | 0.025 | 1.3 | 7.8 | * | J |
| | cis-1,2-Dichloroethene | 0.0020 | 0.86 | 3.9 | J | -- |
| | Methylene Chloride | 0.0012 | 0.70 | 3.9 | J, * | J |
| | Tetrachloroethene | 0.420 | 0.50 | 3.9 | -- | -- |
| | Toluene | 0.0029 | 0.50 | 3.9 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.091 | 1.6 | 3.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0016 | 0.63 | 2.9 | J | -- |
| | Trichloroethene | 0.260 | 1.0 | 3.9 | -- | -- |
| | Trichlorofluoromethane | 0.016 | 1.9 | 3.9 | -- | -- |
| | Total Organics ^d | 0.8595 | NA | NA | NA | NA |
| MWL-SV04-50 14-Apr-15 | Acetone | 0.0090 | 0.18 | 5.0 | -- | -- |
| | Benzene | 0.00093 | 0.079 | 0.40 | -- | -- |
| | 2-Butanone | 0.0017 | 0.20 | 0.80 | -- | -- |
| | Carbon disulfide | 0.00015 | 0.078 | 0.80 | J | -- |
| | Carbon tetrachloride | 0.00020 | 0.064 | 0.80 | J | -- |
| | Chloroform | 0.0019 | 0.095 | 0.30 | -- | -- |
| | Chloromethane | 0.00077 | 0.20 | 0.80 | J | -- |
| | Dichlorodifluoromethane | 0.020 | 0.15 | 0.40 | -- | -- |
| | 1,1-Dichloroethane | 0.0015 | 0.072 | 0.30 | -- | -- |
| | 1,1-Dichloroethene | 0.0072 | 0.13 | 0.80 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00064 | 0.089 | 0.40 | -- | -- |
| | 2-Hexanone | 0.00012 | 0.087 | 0.40 | J | -- |
| | Methylene Chloride | 0.00013 | 0.072 | 0.40 | J | -- |
| | Tetrachloroethene | 0.076 | 0.095 | 0.74 | -- | -- |
| | Toluene | 0.00019 | 0.051 | 0.40 | J | 0.4U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.065 | 0.30 | 0.74 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0070 | 0.065 | 0.30 | -- | -- |
| | Trichloroethene | 0.060 | 0.20 | 0.74 | -- | -- |
| | Trichlorofluoromethane | 0.023 | 0.20 | 0.40 | -- | -- |
| | Total Organics ^d | 0.28424 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|----------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV04-100 14-Apr-15 | Acetone | 0.0041 | 0.93 | 26 | J | -- |
| | Benzene | 0.00058 | 0.41 | 2.1 | J | -- |
| | Carbon disulfide | 0.00072 | 0.41 | 4.2 | J | -- |
| | Carbon tetrachloride | 0.00035 | 0.33 | 4.2 | J | -- |
| | Chloroform | 0.0019 | 0.49 | 1.6 | -- | -- |
| | Dichlorodifluoromethane | 0.034 | 0.76 | 2.1 | -- | -- |
| | 1,1-Dichloroethane | 0.0031 | 0.38 | 1.6 | -- | -- |
| | 1,1-Dichloroethene | 0.018 | 0.67 | 4.2 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0017 | 0.46 | 2.1 | J | -- |
| | Methylene Chloride | 0.00061 | 0.38 | 2.1 | J | -- |
| | Tetrachloroethene | 0.120 | 0.27 | 2.1 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.100 | 0.85 | 2.1 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0054 | 0.34 | 1.6 | -- | -- |
| | Trichloroethene | 0.120 | 0.55 | 2.1 | -- | -- |
| | Trichlorofluoromethane | 0.033 | 1.0 | 2.1 | -- | -- |
| | Total Organics ^d | 0.44346 | NA | NA | NA | NA |
| MWL-SV04-200 14-Apr-15 | Acetone | 0.0039 | 1.5 | 43 | J | -- |
| | Carbon disulfide | 0.0036 | 0.68 | 6.9 | J | -- |
| | Chloroform | 0.0012 | 0.82 | 2.6 | J | -- |
| | Dichlorodifluoromethane | 0.049 | 1.3 | 3.5 | -- | -- |
| | 1,1-Dichloroethane | 0.0048 | 0.62 | 2.6 | -- | -- |
| | 1,1-Dichloroethene | 0.033 | 1.1 | 6.9 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0030 | 0.77 | 3.5 | J | -- |
| | Methylene Chloride | 0.0015 | 0.62 | 3.5 | J | -- |
| | Tetrachloroethene | 0.170 | 0.44 | 3.5 | -- | -- |
| | Toluene | 0.00070 | 0.44 | 3.5 | J | 3.5U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.150 | 1.4 | 3.5 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0024 | 0.56 | 2.6 | J | -- |
| | Trichloroethene | 0.190 | 0.91 | 3.5 | -- | -- |
| | Trichlorofluoromethane | 0.031 | 1.7 | 3.5 | -- | -- |
| | Total Organics ^d | 0.6434 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|----------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV04-300 14-Apr-15 | Acetone | 0.0045 | 0.68 | 19 | J | -- |
| | Benzene | 0.00039 | 0.30 | 1.5 | J | -- |
| | Carbon disulfide | 0.00091 | 0.30 | 3.1 | J | -- |
| | Dichlorodifluoromethane | 0.019 | 0.56 | 1.5 | -- | -- |
| | 1,1-Dichloroethane | 0.00073 | 0.28 | 1.1 | J | -- |
| | 1,1-Dichloroethene | 0.0084 | 0.49 | 3.1 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00048 | 0.34 | 1.5 | J | -- |
| | Methylene Chloride | 0.00031 | 0.28 | 1.5 | J | -- |
| | Tetrachloroethene | 0.110 | 0.20 | 1.5 | -- | -- |
| | Toluene | 0.00093 | 0.20 | 1.5 | J | 1.5U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.055 | 0.62 | 1.5 | -- | -- |
| | 1,1,1-Trichloroethane | 0.00063 | 0.25 | 1.1 | J | -- |
| | Trichloroethene | 0.064 | 0.40 | 1.5 | -- | -- |
| | Trichlorofluoromethane | 0.0091 | 0.75 | 1.5 | -- | -- |
| | Total Organics ^d | 0.27345 | NA | NA | NA | NA |
| MWL-SV04-400 14-Apr-15 | Acetone | 0.0087 | 0.90 | 25 | J | -- |
| | Benzene | 0.0011 | 0.40 | 2.0 | J | -- |
| | 2-Butanone | 0.0019 | 1.0 | 4.0 | J | -- |
| | Carbon disulfide | 0.0054 | 0.39 | 4.0 | -- | -- |
| | Dichlorodifluoromethane | 0.014 | 0.73 | 2.0 | -- | -- |
| | 1,1-Dichloroethane | 0.00048 | 0.36 | 1.5 | J | -- |
| | 1,1-Dichloroethene | 0.0054 | 0.65 | 4.0 | -- | -- |
| | Tetrachloroethene | 0.120 | 0.26 | 2.0 | -- | -- |
| | Toluene | 0.00066 | 0.26 | 2.0 | J | 2.0U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.043 | 0.82 | 2.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.00044 | 0.33 | 1.5 | J | -- |
| | Trichloroethene | 0.060 | 0.53 | 2.0 | -- | -- |
| | Trichlorofluoromethane | 0.0066 | 0.99 | 2.0 | -- | -- |
| | Total Organics ^d | 0.26702 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|----------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV05-50 14-Apr-15 | Acetone | 0.0051 | 0.53 | 15 | J | -- |
| | Benzene | 0.00038 | 0.23 | 1.2 | J | -- |
| | 2-Butanone | 0.00073 | 0.59 | 2.4 | J | -- |
| | Carbon tetrachloride | 0.00034 | 0.19 | 2.4 | J | -- |
| | Chloroform | 0.0014 | 0.28 | 0.89 | -- | -- |
| | Dichlorodifluoromethane | 0.041 | 0.43 | 1.2 | -- | -- |
| | 1,1-Dichloroethane | 0.0018 | 0.21 | 0.89 | -- | -- |
| | 1,1-Dichloroethene | 0.011 | 0.38 | 2.4 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00068 | 0.26 | 1.2 | J | -- |
| | Methylene Chloride | 0.00047 | 0.21 | 1.2 | J | -- |
| | Tetrachloroethene | 0.055 | 0.15 | 1.2 | -- | -- |
| | Toluene | 0.00055 | 0.15 | 1.2 | J | 1.2U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.046 | 0.48 | 1.2 | -- | -- |
| | 1,1,1-Trichloroethane | 0.013 | 0.19 | 0.89 | -- | -- |
| | Trichloroethene | 0.064 | 0.31 | 1.2 | -- | -- |
| | Trichlorofluoromethane | 0.099 | 0.58 | 1.2 | -- | -- |
| | Total Organics ^d | 0.3399 | NA | NA | NA | NA |
| MWL-SV05-100 14-Apr-15 | Acetone | 0.0035 | 1.1 | 31 | J | -- |
| | Carbon tetrachloride | 0.00059 | 0.40 | 5.0 | J | -- |
| | Chloroform | 0.0021 | 0.59 | 1.9 | -- | -- |
| | Dichlorodifluoromethane | 0.067 | 0.91 | 2.5 | -- | -- |
| | 1,1-Dichloroethane | 0.0037 | 0.45 | 1.9 | -- | -- |
| | 1,1-Dichloroethene | 0.024 | 0.81 | 5.0 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0016 | 0.56 | 2.5 | J | -- |
| | Methylene Chloride | 0.0012 | 0.45 | 2.5 | J | -- |
| | Tetrachloroethene | 0.100 | 0.32 | 2.5 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.095 | 1.0 | 2.5 | -- | -- |
| | 1,1,1-Trichloroethane | 0.013 | 0.41 | 1.9 | -- | -- |
| | Trichloroethene | 0.130 | 0.66 | 2.5 | -- | -- |
| | Trichlorofluoromethane | 0.130 | 1.2 | 2.5 | -- | -- |
| | Total Organics ^d | 0.57169 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|----------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV05-200 14-Apr-15 | Acetone | 0.0080 | 1.7 | 49 | J | -- |
| | Carbon tetrachloride | 0.0011 | 0.63 | 7.8 | J | -- |
| | Chloroform | 0.0019 | 0.93 | 2.9 | J | -- |
| | Dichlorodifluoromethane | 0.068 | 1.4 | 3.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0053 | 0.70 | 2.9 | -- | -- |
| | 1,1-Dichloroethene | 0.045 | 1.3 | 7.8 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0025 | 0.87 | 3.9 | J | -- |
| | Methylene Chloride | 0.0033 | 0.70 | 3.9 | J | -- |
| | Tetrachloroethene | 0.150 | 0.50 | 3.9 | -- | -- |
| | Toluene | 0.00072 | 0.50 | 3.9 | J | 3.9U |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.160 | 1.6 | 3.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0037 | 0.64 | 2.9 | -- | -- |
| | Trichloroethene | 0.210 | 1.0 | 3.9 | -- | -- |
| | Trichlorofluoromethane | 0.078 | 1.9 | 3.9 | -- | -- |
| | Total Organics ^d | 0.7368 | NA | NA | NA | NA |
| MWL-SV05-300 14-Apr-15 | Acetone | 0.011 | 0.55 | 16 | J | -- |
| | Benzene | 0.00026 | 0.25 | 1.2 | J | -- |
| | 2-Butanone | 0.0014 | 0.62 | 2.5 | J | -- |
| | Carbon tetrachloride | 0.00078 | 0.20 | 2.5 | J | -- |
| | Chloroform | 0.00050 | 0.30 | 0.93 | J | -- |
| | Chloromethane | 0.0035 | 0.61 | 2.5 | -- | -- |
| | Dichlorodifluoromethane | 0.024 | 0.45 | 1.2 | -- | -- |
| | 1,1-Dichloroethane | 0.0011 | 0.22 | 0.93 | -- | -- |
| | 1,1-Dichloroethene | 0.019 | 0.40 | 2.5 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00054 | 0.28 | 1.2 | J | -- |
| | Methylene Chloride | 0.00067 | 0.22 | 1.2 | J | -- |
| | Tetrachloroethene | 0.097 | 0.16 | 1.2 | -- | -- |
| | Toluene | 0.0011 | 0.16 | 1.2 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.075 | 0.51 | 1.2 | -- | -- |
| | 1,1,1-Trichloroethane | 0.00091 | 0.20 | 0.93 | J | -- |
| | Trichloroethene | 0.082 | 0.33 | 1.2 | -- | -- |
| | Trichlorofluoromethane | 0.017 | 0.61 | 1.2 | -- | -- |
| | Total Organics ^d | 0.33576 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-1 (Concluded)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
April 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV05-400 14-Apr-15 | Acetone | 0.0059 | 0.50 | 14 | J | -- |
| | Benzene | 0.00040 | 0.22 | 1.1 | J | -- |
| | 2-Butanone | 0.00059 | 0.56 | 2.2 | J | -- |
| | Carbon disulfide | 0.00026 | 0.22 | 2.2 | J | -- |
| | Carbon tetrachloride | 0.00035 | 0.18 | 2.2 | J | -- |
| | Chloroform | 0.00038 | 0.27 | 0.84 | J | -- |
| | Chloromethane | 0.00097 | 0.55 | 2.2 | J | -- |
| | Dichlorodifluoromethane | 0.013 | 0.40 | 1.1 | -- | -- |
| | 1,1-Dichloroethane | 0.00098 | 0.20 | 0.84 | -- | -- |
| | 1,1-Dichloroethene | 0.0071 | 0.36 | 2.2 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00036 | 0.25 | 1.1 | J | -- |
| | Methylene Chloride | 0.00049 | 0.20 | 1.1 | J | -- |
| | Tetrachloroethene | 0.080 | 0.14 | 1.1 | -- | -- |
| | Toluene | 0.029 | 0.14 | 1.1 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.033 | 0.45 | 1.1 | -- | -- |
| | 1,1,1-Trichloroethane | 0.00097 | 0.18 | 0.84 | -- | -- |
| | Trichloroethene | 0.066 | 0.29 | 1.1 | -- | -- |
| | Trichlorofluoromethane | 0.011 | 0.55 | 1.1 | -- | -- |
| | Total Organics ^d | 0.25075 | NA | NA | NA | NA |

Notes:

^aU.S. Environmental Protection Agency, 1999, "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition, Compendium Method TO-15" Center for Environmental Research Information, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio.

^bResults are reported in ppmv. MDL and RL are reported in ppbv.

^cLaboratory/Validation Qualifier: If cell is blank (--), then all quality control samples met acceptance criteria with respect to submitted samples.

* = Laboratory control samples outside acceptance limits.

J = Estimated value.

U = The analyte was reported as a detection by the laboratory but was qualified during data validation as not detected. The associated numerical value is the revised sample quantitation limit in units of ppbv, in accordance with the data validation process.

^dTotal Organics -- Sum of validated detected organic analytes (i.e., results for analytes reported as detections by the laboratory but qualified during data validation as not detected are not included in the Total Organics value).

EPA = U.S. Environmental Protection Agency.

MDL = Method detection limit. The minimum concentration that can be measured and reported with 99% confidence that the analyte is present (i.e., greater than zero).

NA = Not applicable.

ppbv = parts per billion, by volume basis.

ppmv = parts per million, by volume basis.

RL = Reporting limit. Minimum concentration that can be reported with a statistically established degree of confidence.

Table 5-2
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV01-42.5 Manifold 8-Oct-15 | Acetone | 0.010 | 4.6 | 130 | J | -- |
| | Chloroform | 0.013 | 2.5 | 7.8 | -- | -- |
| | Dichlorodifluoromethane | 0.098 | 3.8 | 10 | -- | -- |
| | 1,1-Dichloroethene | 0.0071 | 3.4 | 21 | J | -- |
| | Tetrachloroethene | 0.400 | 1.3 | 10 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.084 | 4.2 | 10 | -- | -- |
| | 1,1,1-Trichloroethane | 0.042 | 1.7 | 7.8 | -- | -- |
| | Trichloroethene | 0.089 | 2.7 | 10 | -- | -- |
| | Trichlorofluoromethane | 0.180 | 5.1 | 10 | -- | -- |
| | Total Organics ^a | 0.9231 | NA | NA | NA | NA |
| MWL-SV01-42.5 Manifold 8-Oct-15 (Duplicate) | Acetone | 0.043 | 4.6 | 130 | J | -- |
| | Chloroform | 0.013 | 2.5 | 7.8 | -- | -- |
| | Dichlorodifluoromethane | 0.097 | 3.8 | 10 | -- | -- |
| | 1,1-Dichloroethane | 0.0027 | 1.9 | 7.8 | J | -- |
| | 1,1-Dichloroethene | 0.0072 | 3.4 | 21 | J | -- |
| | Tetrachloroethene | 0.410 | 1.3 | 10 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.082 | 4.2 | 10 | -- | -- |
| | 1,1,1-Trichloroethane | 0.041 | 1.7 | 7.8 | -- | -- |
| | Trichloroethene | 0.088 | 2.7 | 10 | -- | -- |
| | Trichlorofluoromethane | 0.180 | 5.1 | 10 | -- | -- |
| | Total Organics ^a | 0.9639 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV01-42.5 8-Oct-15 | Acetone | 0.0059 | 3.0 | 84 | J | -- |
| | Chloroform | 0.013 | 1.6 | 5.0 | -- | -- |
| | Dichlorodifluoromethane | 0.098 | 2.4 | 6.7 | -- | -- |
| | 1,1-Dichloroethane | 0.0027 | 1.2 | 5.0 | J | -- |
| | 1,1-Dichloroethene | 0.0067 | 2.2 | 13 | J | -- |
| | Tetrachloroethene | 0.420 | 0.85 | 6.7 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.083 | 2.7 | 6.7 | -- | -- |
| | 1,1,1-Trichloroethane | 0.041 | 1.1 | 5.0 | -- | -- |
| | Trichloroethene | 0.098 | 1.8 | 6.7 | -- | -- |
| | Trichlorofluoromethane | 0.180 | 3.3 | 6.7 | -- | -- |
| | Total Organics ^d | 0.9483 | NA | NA | NA | NA |
| MWL-SV01-42.5 8-Oct-15 (Duplicate) | Chloroform | 0.014 | 1.8 | 5.7 | -- | -- |
| | Dichlorodifluoromethane | 0.110 | 2.7 | 7.6 | -- | -- |
| | 1,1-Dichloroethane | 0.0029 | 1.4 | 5.7 | J | -- |
| | 1,1-Dichloroethene | 0.0073 | 2.4 | 15 | J | -- |
| | Tetrachloroethene | 0.470 | 0.96 | 7.6 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.089 | 3.1 | 7.6 | -- | -- |
| | 1,1,1-Trichloroethane | 0.043 | 1.2 | 5.7 | -- | -- |
| | Trichloroethene | 0.110 | 2.0 | 7.6 | -- | -- |
| | Trichlorofluoromethane | 0.190 | 3.7 | 7.6 | -- | -- |
| | Total Organics ^d | 1.0362 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV02-41.5 Manifold 8-Oct-15 | Acetone | 0.015 | 1.8 | 51 | J | -- |
| | 2-Butanone | 0.0035 | 2.0 | 8.1 | J | -- |
| | Chloroform | 0.0027 | 0.96 | 3.0 | J | -- |
| | Dichlorodifluoromethane | 0.093 | 1.5 | 4.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0024 | 0.73 | 3.0 | J | -- |
| | 1,1-Dichloroethene | 0.0096 | 1.3 | 8.1 | -- | -- |
| | Tetrachloroethene | 0.065 | 0.52 | 4.0 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.050 | 1.6 | 4.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.070 | 0.66 | 3.0 | -- | -- |
| | Trichloroethene | 0.061 | 1.1 | 4.0 | -- | -- |
| | Trichlorofluoromethane | 0.300 | 2.0 | 4.0 | -- | -- |
| | Vinyl acetate | 0.0075 | 1.5 | 8.1 | J | -- |
| | Total Organics ^a | 0.6797 | NA | NA | NA | NA |
| MWL-SV02-41.5 Manifold 8-Oct-15 (Duplicate) | Acetone | 0.0074 | 1.8 | 51 | J | -- |
| | 2-Butanone | 0.0030 | 2.0 | 8.1 | J | -- |
| | Chloroform | 0.0028 | 0.96 | 3.0 | J | -- |
| | Dichlorodifluoromethane | 0.095 | 1.5 | 4.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0024 | 0.73 | 3.0 | J | -- |
| | 1,1-Dichloroethene | 0.010 | 1.3 | 8.1 | -- | -- |
| | Tetrachloroethene | 0.066 | 0.52 | 4.0 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.052 | 1.6 | 4.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.072 | 0.66 | 3.0 | -- | -- |
| | Trichloroethene | 0.063 | 1.1 | 4.0 | -- | -- |
| | Trichlorofluoromethane | 0.310 | 2.0 | 4.0 | -- | -- |
| | Vinyl acetate | 0.0079 | 1.5 | 8.1 | J | -- |
| | Total Organics ^a | 0.6915 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV02-41.5 8-Oct-15 | Acetone | 0.0061 | 1.9 | 53 | J | -- |
| | Chloroform | 0.0028 | 1.0 | 3.2 | J | -- |
| | Dichlorodifluoromethane | 0.091 | 1.5 | 4.2 | -- | -- |
| | 1,1-Dichloroethane | 0.0023 | 0.76 | 3.2 | J | -- |
| | 1,1-Dichloroethene | 0.0096 | 1.4 | 8.4 | -- | -- |
| | Tetrachloroethene | 0.065 | 0.54 | 4.2 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.051 | 1.7 | 4.2 | -- | -- |
| | 1,1,1-Trichloroethane | 0.071 | 0.68 | 3.2 | -- | -- |
| | Trichloroethene | 0.062 | 1.1 | 4.2 | -- | -- |
| | Trichlorofluoromethane | 0.300 | 2.1 | 4.2 | -- | -- |
| | Vinyl acetate | 0.0076 | 1.5 | 8.4 | J | -- |
| | Total Organics ^d | 0.6684 | NA | NA | NA | NA |
| MWL-SV02-41.5 8-Oct-15 (Duplicate) | Chloroform | 0.0028 | 0.99 | 3.1 | J | -- |
| | Dichlorodifluoromethane | 0.091 | 1.5 | 4.2 | -- | -- |
| | 1,1-Dichloroethane | 0.0023 | 0.75 | 3.1 | J | -- |
| | 1,1-Dichloroethene | 0.0096 | 1.3 | 8.3 | -- | -- |
| | Tetrachloroethene | 0.068 | 0.53 | 4.2 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.050 | 1.7 | 4.2 | -- | -- |
| | 1,1,1-Trichloroethane | 0.070 | 0.68 | 3.1 | -- | -- |
| | Trichloroethene | 0.065 | 1.1 | 4.2 | -- | -- |
| | Trichlorofluoromethane | 0.300 | 2.0 | 4.2 | -- | -- |
| | Vinyl acetate | 0.0074 | 1.5 | 8.3 | J | -- |
| | Total Organics ^d | 0.6661 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-50 8-Oct-15 | Acetone | 0.0027 | 0.61 | 17 | J | -- |
| | Benzene | 0.0011 | 0.27 | 1.4 | J | -- |
| | Chloroform | 0.0014 | 0.33 | 1.0 | -- | -- |
| | Dichlorodifluoromethane | 0.021 | 0.50 | 1.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0021 | 0.25 | 1.0 | -- | -- |
| | 1,1-Dichloroethene | 0.0076 | 0.44 | 2.7 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0011 | 0.31 | 1.4 | J | -- |
| | Methylene Chloride | 0.00073 | 0.25 | 1.4 | J | -- |
| | Tetrachloroethene | 0.110 | 0.17 | 1.4 | -- | -- |
| | Toluene | 0.0014 | 0.17 | 1.4 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.052 | 0.56 | 1.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0043 | 0.22 | 1.0 | -- | -- |
| | Trichloroethene | 0.080 | 0.36 | 1.4 | -- | -- |
| | Trichlorofluoromethane | 0.022 | 0.67 | 1.4 | -- | -- |
| MWL-SV03-100 8-Oct-15 | Total Organics ^d | 0.30743 | NA | NA | NA | NA |
| | Acetone | 0.0034 | 1.1 | 30 | J | -- |
| | Chloroform | 0.0027 | 0.58 | 1.8 | -- | -- |
| | Dichlorodifluoromethane | 0.070 | 0.88 | 2.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0069 | 0.44 | 1.8 | -- | -- |
| | 1,1-Dichloroethene | 0.030 | 0.78 | 4.8 | -- | -- |
| | Methylene Chloride | 0.0023 | 0.44 | 2.4 | J | -- |
| | Tetrachloroethene | 0.220 | 0.31 | 2.4 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.150 | 0.99 | 2.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0089 | 0.39 | 1.8 | -- | -- |
| | Trichloroethene | 0.200 | 0.64 | 2.4 | -- | -- |
| | Trichlorofluoromethane | 0.050 | 1.2 | 2.4 | -- | -- |
| | Total Organics ^d | 0.7442 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-200 8-Oct-15 | Acetone | 0.0029 | 1.3 | 38 | J | -- |
| | Chloroform | 0.0023 | 0.72 | 2.3 | -- | -- |
| | Dichlorodifluoromethane | 0.061 | 1.1 | 3.0 | -- | -- |
| | 1,1-Dichloroethane | 0.0084 | 0.55 | 2.3 | -- | -- |
| | 1,1-Dichloroethene | 0.033 | 0.98 | 6.1 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0049 | 0.67 | 3.0 | -- | -- |
| | Methylene Chloride | 0.0041 | 0.55 | 3.0 | -- | -- |
| | Tetrachloroethene | 0.290 | 0.39 | 3.0 | -- | -- |
| | Toluene | 0.00050 | 0.39 | 3.0 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.180 | 1.2 | 3.0 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0032 | 0.49 | 2.3 | -- | -- |
| | Trichloroethene | 0.310 | 0.80 | 3.0 | -- | -- |
| | Trichlorofluoromethane | 0.032 | 1.5 | 3.0 | -- | -- |
| | Total Organics ^d | 0.9323 | NA | NA | NA | NA |
| MWL-SV03-300 8-Oct-15 | Acetone | 0.0054 | 1.7 | 49 | J | -- |
| | Chloroform | 0.0012 | 0.93 | 2.9 | J | -- |
| | Dichlorodifluoromethane | 0.038 | 1.4 | 3.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0037 | 0.70 | 2.9 | -- | -- |
| | 1,1-Dichloroethene | 0.021 | 1.3 | 7.8 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0025 | 0.87 | 3.9 | J | -- |
| | Methylene Chloride | 0.0019 | 0.70 | 3.9 | J | -- |
| | Tetrachloroethene | 0.370 | 0.50 | 3.9 | -- | -- |
| | Toluene | 0.00080 | 0.50 | 3.9 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.110 | 1.6 | 3.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0017 | 0.63 | 2.9 | J | -- |
| | Trichloroethene | 0.260 | 1.0 | 3.9 | -- | -- |
| | Trichlorofluoromethane | 0.015 | 1.9 | 3.9 | -- | -- |
| | Total Organics ^d | 0.8312 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV03-400 8-Oct-15 | Acetone | 0.0038 | 1.9 | 53 | J | -- |
| | Chloroform | 0.0014 | 1.0 | 3.2 | J | -- |
| | Dichlorodifluoromethane | 0.021 | 1.5 | 4.2 | -- | -- |
| | 1,1-Dichloroethane | 0.0037 | 0.76 | 3.2 | -- | -- |
| | 1,1-Dichloroethene | 0.022 | 1.4 | 8.4 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0027 | 0.93 | 4.2 | J | -- |
| | Tetrachloroethene | 0.450 | 0.54 | 4.2 | -- | -- |
| | Toluene | 0.0017 | 0.54 | 4.2 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.085 | 1.7 | 4.2 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0019 | 0.68 | 3.2 | J | -- |
| | Trichloroethene | 0.350 | 1.1 | 4.2 | -- | -- |
| | Trichlorofluoromethane | 0.016 | 2.1 | 4.2 | -- | -- |
| MWL-SV04-50 8-Oct-15 | Total Organics ^a | 0.9592 | NA | NA | NA | NA |
| | Acetone | 0.0046 | 0.52 | 15 | J | -- |
| | Benzene | 0.00065 | 0.23 | 1.2 | J | -- |
| | Chloroform | 0.0019 | 0.28 | 0.87 | -- | -- |
| | Dichlorodifluoromethane | 0.020 | 0.42 | 1.2 | -- | -- |
| | 1,1-Dichloroethane | 0.0013 | 0.21 | 0.87 | -- | -- |
| | 1,1-Dichloroethene | 0.0064 | 0.37 | 2.3 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00047 | 0.26 | 1.2 | J | -- |
| | Tetrachloroethene | 0.074 | 0.15 | 1.2 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.072 | 0.47 | 1.2 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0070 | 0.19 | 0.87 | -- | -- |
| | Trichloroethene | 0.066 | 0.30 | 1.2 | -- | -- |
| | Trichlorofluoromethane | 0.028 | 0.57 | 1.2 | -- | -- |
| | Total Organics ^a | 0.28232 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV04-100 8-Oct-15 | Acetone | 0.0036 | 0.64 | 18 | J | -- |
| | Benzene | 0.00042 | 0.29 | 1.4 | J | -- |
| | Carbon tetrachloride | 0.00031 | 0.23 | 2.9 | J | -- |
| | Chloroform | 0.0019 | 0.34 | 1.1 | -- | -- |
| | Dichlorodifluoromethane | 0.035 | 0.52 | 1.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0031 | 0.26 | 1.1 | -- | -- |
| | 1,1-Dichloroethene | 0.017 | 0.47 | 2.9 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0015 | 0.32 | 1.4 | -- | -- |
| | Methylene Chloride | 0.00072 | 0.26 | 1.4 | J | -- |
| | Tetrachloroethene | 0.120 | 0.18 | 1.4 | -- | -- |
| | Toluene | 0.00021 | 0.18 | 1.4 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.110 | 0.59 | 1.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0054 | 0.24 | 1.1 | -- | -- |
| | Trichloroethene | 0.130 | 0.38 | 1.4 | -- | -- |
| | Trichlorofluoromethane | 0.037 | 0.71 | 1.4 | -- | -- |
| | Total Organics ^a | 0.46616 | NA | NA | NA | NA |
| MWL-SV04-200 8-Oct-15 | Acetone | 0.0044 | 0.86 | 24 | J | -- |
| | Carbon tetrachloride | 0.00048 | 0.31 | 3.9 | J | -- |
| | Chloroform | 0.0014 | 0.46 | 1.5 | J | -- |
| | Dichlorodifluoromethane | 0.049 | 0.70 | 1.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0049 | 0.35 | 1.5 | -- | -- |
| | 1,1-Dichloroethene | 0.031 | 0.63 | 3.9 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0027 | 0.43 | 1.9 | -- | -- |
| | Methylene Chloride | 0.0019 | 0.35 | 1.9 | -- | -- |
| | Tetrachloroethene | 0.150 | 0.25 | 1.9 | -- | -- |
| | Toluene | 0.00062 | 0.25 | 1.9 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.150 | 0.79 | 1.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0022 | 0.32 | 1.5 | -- | -- |
| | Trichloroethene | 0.200 | 0.51 | 1.9 | -- | -- |
| | Trichlorofluoromethane | 0.033 | 0.95 | 1.9 | -- | -- |
| | Total Organics ^a | 0.6316 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV04-300 8-Oct-15 | Acetone | 0.0061 | 0.64 | 18 | J | -- |
| | Benzene | 0.00032 | 0.28 | 1.4 | J | -- |
| | Carbon tetrachloride | 0.00025 | 0.23 | 2.9 | J | -- |
| | Chloroform | 0.00055 | 0.34 | 1.1 | J | -- |
| | Dichlorodifluoromethane | 0.022 | 0.52 | 1.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0012 | 0.26 | 1.1 | -- | -- |
| | 1,1-Dichloroethene | 0.012 | 0.46 | 2.9 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00073 | 0.32 | 1.4 | J | -- |
| | Methylene Chloride | 0.00044 | 0.26 | 1.4 | J | -- |
| | Tetrachloroethene | 0.120 | 0.18 | 1.4 | -- | -- |
| | Toluene | 0.00050 | 0.18 | 1.4 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.072 | 0.59 | 1.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0011 | 0.23 | 1.1 | -- | -- |
| | Trichloroethene | 0.093 | 0.38 | 1.4 | -- | -- |
| | Trichlorofluoromethane | 0.015 | 0.71 | 1.4 | -- | -- |
| | Total Organics ^d | 0.34519 | NA | NA | NA | NA |
| MWL-SV04-400 8-Oct-15 | Acetone | 0.0050 | 0.77 | 22 | J | -- |
| | Benzene | 0.00085 | 0.34 | 1.7 | J | -- |
| | Chloroform | 0.00055 | 0.41 | 1.3 | J | -- |
| | Chloromethane | 0.0011 | 0.85 | 3.5 | J | -- |
| | Dichlorodifluoromethane | 0.018 | 0.63 | 1.7 | -- | -- |
| | 1,1-Dichloroethane | 0.0012 | 0.31 | 1.3 | J | -- |
| | 1,1-Dichloroethene | 0.0094 | 0.56 | 3.5 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00070 | 0.39 | 1.7 | J | -- |
| | Methylene Chloride | 0.00042 | 0.31 | 1.7 | J | -- |
| | Tetrachloroethene | 0.140 | 0.22 | 1.7 | -- | -- |
| | Toluene | 0.00042 | 0.22 | 1.7 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.065 | 0.71 | 1.7 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0011 | 0.28 | 1.3 | J | -- |
| | Trichloroethene | 0.097 | 0.45 | 1.7 | -- | -- |
| | Trichlorofluoromethane | 0.013 | 0.85 | 1.7 | -- | -- |
| | Total Organics ^d | 0.35374 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV05-50 | Acetone | 0.0016 | 0.75 | 21 | J | -- |
| | Chloroform | 0.0012 | 0.40 | 1.3 | J | -- |
| | Dichlorodifluoromethane | 0.040 | 0.61 | 1.7 | -- | -- |
| | 1,1-Dichloroethane | 0.0016 | 0.30 | 1.3 | -- | -- |
| | 1,1-Dichloroethene | 0.0096 | 0.54 | 3.4 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00051 | 0.37 | 1.7 | J | -- |
| | Methylene Chloride | 0.00035 | 0.30 | 1.7 | J | -- |
| | Tetrachloroethene | 0.040 | 0.21 | 1.7 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.043 | 0.68 | 1.7 | -- | -- |
| | 1,1,1-Trichloroethane | 0.011 | 0.27 | 1.3 | -- | -- |
| | Trichloroethene | 0.052 | 0.44 | 1.7 | -- | -- |
| | Trichlorofluoromethane | 0.100 | 0.82 | 1.7 | -- | -- |
| | Vinyl acetate | 0.0032 | 0.61 | 3.4 | J | -- |
| | Total Organics ^d | 0.30406 | NA | NA | NA | NA |
| MWL-SV05-100 | Acetone | 0.0031 | 0.86 | 24 | J | -- |
| | Carbon tetrachloride | 0.00038 | 0.31 | 3.9 | J | -- |
| | Chloroform | 0.0020 | 0.46 | 1.4 | -- | -- |
| | Dichlorodifluoromethane | 0.066 | 0.70 | 1.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0033 | 0.35 | 1.4 | -- | -- |
| | 1,1-Dichloroethene | 0.022 | 0.62 | 3.9 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0014 | 0.43 | 1.9 | J | -- |
| | Methylene Chloride | 0.0010 | 0.35 | 1.9 | J | -- |
| | Tetrachloroethene | 0.077 | 0.25 | 1.9 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.090 | 0.79 | 1.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.012 | 0.31 | 1.4 | -- | -- |
| | Trichloroethene | 0.120 | 0.51 | 1.9 | -- | -- |
| | Trichlorofluoromethane | 0.130 | 0.95 | 1.9 | -- | -- |
| | Vinyl acetate | 0.0043 | 0.70 | 3.9 | -- | -- |
| | Total Organics ^d | 0.53248 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Continued)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|---------------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV05-200 8-Oct-15 | Acetone | 0.0028 | 1.3 | 36 | J | -- |
| | Carbon tetrachloride | 0.0010 | 0.46 | 5.8 | J | -- |
| | Chloroform | 0.0020 | 0.68 | 2.2 | J | -- |
| | Dichlorodifluoromethane | 0.074 | 1.0 | 2.9 | -- | -- |
| | 1,1-Dichloroethane | 0.0042 | 0.52 | 2.2 | -- | -- |
| | 1,1-Dichloroethene | 0.038 | 0.93 | 5.8 | -- | -- |
| | cis-1,2-Dichloroethene | 0.0025 | 0.64 | 2.9 | J | -- |
| | Methylene Chloride | 0.0026 | 0.52 | 2.9 | J | -- |
| | Tetrachloroethene | 0.120 | 0.37 | 2.9 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.130 | 1.2 | 2.9 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0040 | 0.47 | 2.2 | -- | -- |
| | Trichloroethene | 0.200 | 0.75 | 2.9 | -- | -- |
| | Trichlorofluoromethane | 0.076 | 1.4 | 2.9 | -- | -- |
| | Vinyl acetate | 0.0012 | 1.0 | 5.8 | J | -- |
| | Total Organics ^d | 0.6583 | NA | NA | NA | NA |
| MWL-SV05-300 8-Oct-15 | Acetone | 0.0079 | 0.71 | 20 | J | -- |
| | Benzene | 0.00037 | 0.32 | 1.6 | J | -- |
| | Carbon disulfide | 0.00032 | 0.31 | 3.2 | J | -- |
| | Carbon tetrachloride | 0.00092 | 0.26 | 3.2 | J | -- |
| | Chloroform | 0.00069 | 0.38 | 1.2 | J | -- |
| | Dichlorodifluoromethane | 0.040 | 0.58 | 1.6 | -- | -- |
| | 1,1-Dichloroethane | 0.0018 | 0.29 | 1.2 | -- | -- |
| | 1,1-Dichloroethene | 0.026 | 0.52 | 3.2 | -- | -- |
| | cis-1,2-Dichloroethene | 0.00075 | 0.36 | 1.6 | J | -- |
| | Methylene Chloride | 0.00098 | 0.29 | 1.6 | J | -- |
| | Tetrachloroethene | 0.110 | 0.20 | 1.6 | -- | -- |
| | Toluene | 0.00043 | 0.20 | 1.6 | J | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.097 | 0.65 | 1.6 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0022 | 0.26 | 1.2 | -- | -- |
| | Trichloroethene | 0.120 | 0.42 | 1.6 | -- | -- |
| | Trichlorofluoromethane | 0.034 | 0.79 | 1.6 | -- | -- |
| | Total Organics ^d | 0.44336 | NA | NA | NA | NA |

Refer to footnotes at end of table.

Table 5-2 (Concluded)
Summary of Detected Volatile Organic Compounds (EPA Method TO-15^a)
Mixed Waste Landfill Soil-Vapor Monitoring
October 2015

| Well ID/Sample Port | Analyte | Result ^b (ppmv) | MDL ^b (ppbv) | RL ^b (ppbv) | Laboratory Qualifier ^c | Validation Qualifier ^c |
|--------------------------|---------------------------------------|-------------------------------|----------------------------|---------------------------|--------------------------------------|--------------------------------------|
| MWL-SV05-400 8-Oct-15 | Acetone | 0.0055 | 0.62 | 18 | J | -- |
| | Benzene | 0.00043 | 0.28 | 1.4 | J | -- |
| | Carbon tetrachloride | 0.00056 | 0.22 | 2.8 | J | -- |
| | Chloroform | 0.00077 | 0.33 | 1.1 | J | -- |
| | Chloromethane | 0.0010 | 0.69 | 2.8 | J | -- |
| | Dichlorodifluoromethane | 0.020 | 0.51 | 1.4 | -- | -- |
| | 1,1-Dichloroethane | 0.0016 | 0.25 | 1.1 | -- | -- |
| | 1,1-Dichloroethene | 0.017 | 0.45 | 2.8 | -- | -- |
| | Methylene Chloride | 0.00089 | 0.25 | 1.4 | J | -- |
| | Tetrachloroethene | 0.120 | 0.18 | 1.4 | -- | -- |
| | Toluene | 0.0051 | 0.18 | 1.4 | -- | -- |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.074 | 0.57 | 1.4 | -- | -- |
| | 1,1,1-Trichloroethane | 0.0021 | 0.23 | 1.1 | -- | -- |
| | Trichloroethene | 0.120 | 0.37 | 1.4 | -- | -- |
| | Trichlorofluoromethane | 0.034 | 0.69 | 1.4 | -- | -- |
| | Total Organics ^d | 0.40295 | NA | NA | NA | NA |

Notes:

^aU.S. Environmental Protection Agency, 1999, "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition, Compendium Method TO-15," Center for Environmental Research Information, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio.

^bResults are reported in ppmv. MDL and RL are reported in ppbv.

^cLaboratory/Validation Qualifier: If cell is blank (--), then all quality control samples met acceptance criteria with respect to submitted samples.

J = Estimated value, the analyte concentration is greater than the MDL but less than the RL.

^dTotal Organics -- Sum of validated detected organic analytes (i.e., results for analytes reported as detections by the laboratory but qualified during data validation as not detected are not included in the Total Organics value).

EPA = U.S. Environmental Protection Agency.

MDL = Method detection limit. The minimum concentration that can be measured and reported with 99% confidence that the analyte is present (i.e., greater than zero).

NA = Not applicable.

ppbv = Parts per billion, by volume basis.

ppmv = Parts per million, by volume basis.

RL = Reporting limit. Minimum concentration that can be reported with a statistically established degree of confidence.

Table 5-3
Summary of Historic PCE, TCE, and Total VOCs Concentrations
Mixed Waste Landfill Soil-Vapor Monitoring

| Well ID & Sample Port Depth ^b | PCE ^a | | PCE ^a | |
|--|-----------------------|---------------------|-------------------|---------------------|
| | September 2014 (ppmv) | October 2014 (ppmv) | April 2015 (ppmv) | October 2015 (ppmv) |
| MWL-SV01-42.5 | 0.560 | 0.400 | 0.460 | 0.470 |
| MWL-SV02-41.5 | 0.086 | 0.067 | 0.075 | 0.068 |
| MWL-SV03-50 | 0.140 | 0.120 | 0.150 | 0.110 |
| MWL-SV03-100 | 0.210 | 0.230 | 0.240 | 0.220 |
| MWL-SV03-200 | 0.300 | 0.320 | 0.310 | 0.290 |
| MWL-SV03-300 | 0.290 | 0.320 | 0.290 | 0.370 |
| MWL-SV03-400 | 0.390 | 0.400 | 0.420 | 0.450 |
| MWL-SV04-50 | 0.072 | 0.076 | 0.076 | 0.074 |
| MWL-SV04-100 | 0.130 | 0.120 | 0.120 | 0.120 |
| MWL-SV04-200 | 0.180 | 0.180 | 0.170 | 0.150 |
| MWL-SV04-300 | 0.110 | 0.130 | 0.110 | 0.120 |
| MWL-SV04-400 | 0.110 | 0.140 | 0.120 | 0.140 |
| MWL-SV05-50 | 0.052 | 0.048 | 0.055 | 0.040 |
| MWL-SV05-100 | 0.092 | 0.096 | 0.100 | 0.077 |
| MWL-SV05-200 | 0.140 | 0.170 | 0.150 | 0.120 |
| MWL-SV05-300 | 0.090 | 0.120 | 0.097 | 0.110 |
| MWL-SV05-400 | 0.100 | 0.110 | 0.080 | 0.120 |
| Well ID & Sample Port Depth ^b | TCE ^a | | TCE ^a | |
| | September 2014 (ppmv) | October 2014 (ppmv) | April 2015 (ppmv) | October 2015 (ppmv) |
| MWL-SV01-42.5 | 0.110 | 0.090 | 0.099 | 0.110 |
| MWL-SV02-41.5 | 0.075 | 0.058 | 0.067 | 0.065 |
| MWL-SV03-50 | 0.100 | 0.082 | 0.097 | 0.080 |
| MWL-SV03-100 | 0.190 | 0.190 | 0.200 | 0.200 |
| MWL-SV03-200 | 0.300 | 0.300 | 0.290 | 0.310 |
| MWL-SV03-300 | 0.190 | 0.210 | 0.170 | 0.260 |
| MWL-SV03-400 | 0.290 | 0.280 | 0.260 | 0.350 |
| MWL-SV04-50 | 0.061 | 0.059 | 0.060 | 0.066 |
| MWL-SV04-100 | 0.130 | 0.120 | 0.120 | 0.130 |
| MWL-SV04-200 | 0.210 | 0.210 | 0.190 | 0.200 |
| MWL-SV04-300 | 0.076 | 0.091 | 0.064 | 0.093 |
| MWL-SV04-400 | 0.075 | 0.096 | 0.060 | 0.097 |
| MWL-SV05-50 | 0.067 | 0.061 | 0.064 | 0.052 |
| MWL-SV05-100 | 0.140 | 0.130 | 0.130 | 0.120 |
| MWL-SV05-200 | 0.200 | 0.240 | 0.210 | 0.200 |
| MWL-SV05-300 | 0.100 | 0.130 | 0.082 | 0.120 |
| MWL-SV05-400 | 0.094 | 0.100 | 0.066 | 0.120 |

Refer to footnotes at end of table.

Table 5-3 (Concluded)
Summary of Historic PCE, TCE, and Total VOCs Concentrations
Mixed Waste Landfill Soil-Vapor Monitoring

| Well ID & Sample Port Depth ^b | Total VOCs ^a | | Total VOCs ^a | |
|--|-------------------------|---------------------|-------------------------|---------------------|
| | September 2014 (ppmv) | October 2014 (ppmv) | April 2015 (ppmv) | October 2015 (ppmv) |
| MWL-SV01-42.5 | 1.14010 | 1.0087 | 1.1167 | 1.0362 |
| MWL-SV02-41.5 | 0.71822 | 0.6788 | 0.7647 | 0.6915 |
| MWL-SV03-50 | 0.36957 | 0.3175 | 0.37076 | 0.30743 |
| MWL-SV03-100 | 0.61151 | 0.6382 | 0.6949 | 0.7442 |
| MWL-SV03-200 | 0.91906 | 0.94754 | 0.99016 | 0.9323 |
| MWL-SV03-300 | 0.64917 | 0.67835 | 0.59506 | 0.8312 |
| MWL-SV03-400 | 0.87270 | 0.8141 | 0.8595 | 0.9592 |
| MWL-SV04-50 | 0.25949 | 0.26359 | 0.28424 | 0.28232 |
| MWL-SV04-100 | 0.45631 | 0.42879 | 0.44346 | 0.46616 |
| MWL-SV04-200 | 0.68361 | 0.66935 | 0.6434 | 0.6316 |
| MWL-SV04-300 | 0.26624 | 0.32355 | 0.27345 | 0.34519 |
| MWL-SV04-400 | 0.25031 | 0.3246 | 0.26702 | 0.35374 |
| MWL-SV05-50 | 0.36547 | 0.31833 | 0.3399 | 0.30406 |
| MWL-SV05-100 | 0.56578 | 0.54556 | 0.57169 | 0.53248 |
| MWL-SV05-200 | 0.70237 | 0.82115 | 0.7368 | 0.6583 |
| MWL-SV05-300 | 0.35628 | 0.42371 | 0.33576 | 0.44336 |
| MWL-SV05-400 | 0.54096 | 0.39521 | 0.25075 | 0.45245 |

Notes:

All concentrations are not rounded so they exactly match the reported concentrations in corresponding data tables.

^aIf a duplicate sample was collected, the maximum concentration of the environmental-duplicate sample pair is shown.

^bPort depth is the last number in the Well ID, and is in feet below ground surface.

PCE = Tetrachloroethene.
ppmv = Parts per million by volume.
TCE = Trichloroethene.
VOCs = Volatile organic compounds.

shown the highest VOC concentration (PCE ranging from 0.400 to 0.560 ppmv) and Total VOCs concentration (1.0087 to 1.14010 ppmv). For the combined 2014 - 2015 data sets, PCE concentrations ranged from 0.040 ppmv (October 2015, MWL-SV05-50) to 0.560 ppmv (September 2014, MWL-SV01-42.5), TCE concentrations ranged from 0.052 ppmv (October 2015, MWL-SV05-50) to 0.350 ppmv (October 2015, MWL-SV03-400), and Total VOC concentrations ranged from 0.25031 ppmv (September 2014, MWL-SV04-400) to 1.14010 ppmv (September 2014, MWL-SV01-42.5).

5.2.2 Field Quality Control Sample Results

As described in Section 5.1.2, the field QC sampling protocol for the April and October 2015 sampling events included the collection and analysis of environmental-duplicate sample pairs and field blank samples. Field QC sample results met the sampling DQOs and validated the field sampling procedures and protocol. The analytical results for each field QC sample type are presented in this section.

Table 5-4 summarizes results of environmental-duplicate sample pair analyses and the calculated RPD values for the April and October 2015 environmental-duplicate sample pairs. An RPD was calculated when compounds were reported in both environmental and duplicate samples at concentrations greater than or equal to five times the RL. The designation in Table 5-4 of “with manifold” after the monitoring well identification indicates a sample pair that was collected simultaneously; no designation indicates the samples were collected in series, with the duplicate sample collected immediately after the environmental sample. The environmental-duplicate sample pair results and QC field blank results are discussed by sampling event below.

First Semiannual Sampling Event – April 14 and 15, 2015

The four environmental-duplicate sample pairs collected during the April sampling event were analyzed for all analytical parameters. The calculated RPDs show good agreement for all April environmental-duplicate sample pairs. The RPD values for the duplicate pairs collected simultaneously with the manifold system ranged from 3 to 15. The RPD values for the duplicate pairs collected in series ranged from <1 to 17. Both sets of duplicate sample results demonstrate good precision and reproducibility, indicating both duplicate sample collection methods are effective. An RPD of 50 or less demonstrates acceptable reproducibility of the sampling and analytical processes as previously demonstrated during soil-vapor monitoring at the SNL/NM Chemical Waste Landfill (NMED October 2009 and subsequent revisions).

A total of five QC field blank samples were submitted for analysis with the April 2015 samples. VOCs detected above laboratory MDLs in QC field blanks included acetone (2 samples), methylene chloride (2 samples), toluene (5 samples), and PCE (1 sample). As a result, 12 low-concentration toluene environmental sample results (out of 15 total toluene detections) were qualified during data validation as not detected. These qualified results were less than 10 times the associated QC field blank concentration. No corrective action was required for acetone and methylene chloride since all associated environmental sample results were greater than ten times the QC field blank concentration. No corrective action was required for PCE since all associated environmental sample results were greater than five times the QC field blank concentration. Acetone, methylene chloride, and toluene are all common laboratory contaminants.

Second Semiannual Sampling Event – October 8 and 9, 2015

The four environmental-duplicate sample pairs collected during the October sampling event were analyzed for all analytical parameters. The calculated RPDs show good agreement for all October environmental-duplicate sample pairs. The RPD values for the duplicate pairs collected simultaneously with the manifold system ranged from <1 to 4. The RPD values for the duplicate pairs collected in series ranged from <1 to 12. Both sets of duplicate sample results demonstrate good precision and reproducibility, indicating both duplicate sample collection methods are effective.

Table 5-4
Summary of Duplicate Samples
Mixed Waste Landfill Soil-Vapor Monitoring
April and October 2015

| Well ID/Parameter | Environmental Sample (R ₁) | Duplicate Sample (R ₂) | RPD ^a (%) |
|--|--|------------------------------------|----------------------|
| | (ppmv) | | |
| April 2015 Environmental-Duplicate Sample Pair Results | | | |
| MWL-SV03-50 (with manifold) | | | |
| Dichlorodifluoromethane | 0.024 | 0.021 | 13 |
| Tetrachloroethene | 0.140 | 0.120 | 15 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.051 | 0.045 | 13 |
| Trichloroethene | 0.092 | 0.080 | 14 |
| Trichlorofluoromethane | 0.023 | 0.020 | 14 |
| MWL-SV03-50 | | | |
| Dichlorodifluoromethane | 0.022 | 0.026 | 17 |
| Tetrachloroethene | 0.130 | 0.150 | 14 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.046 | 0.050 | 8 |
| Trichloroethene | 0.085 | 0.097 | 13 |
| Trichlorofluoromethane | 0.020 | 0.023 | 14 |
| MWL-SV03-200 (with manifold) | | | |
| Dichlorodifluoromethane | 0.070 | 0.074 | 6 |
| 1,1-Dichloroethene | 0.041 | 0.043 | 5 |
| Tetrachloroethene | 0.290 | 0.300 | 3 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.180 | 0.190 | 5 |
| Trichloroethene | 0.270 | 0.290 | 7 |
| Trichlorofluoromethane | 0.034 | 0.035 | 3 |
| MWL-SV03-200 | | | |
| Dichlorodifluoromethane | 0.077 | 0.070 | 10 |
| 1,1-Dichloroethene | 0.044 | 0.045 | 2 |
| Tetrachloroethene | 0.310 | 0.310 | <1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.200 | 0.210 | 5 |
| Trichloroethene | 0.290 | 0.290 | <1 |
| Trichlorofluoromethane | 0.037 | 0.036 | 3 |
| October 2015 Environmental-Duplicate Sample Pair Results | | | |
| MWL-SV01-42.5 (with manifold) | | | |
| Dichlorodifluoromethane | 0.098 | 0.097 | 1 |
| Tetrachloroethene | 0.400 | 0.410 | 2 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.084 | 0.082 | 2 |
| 1,1,1-Trichloroethane | 0.042 | 0.041 | 2 |
| Trichloroethene | 0.089 | 0.088 | 1 |
| Trichlorofluoromethane | 0.180 | 0.180 | <1 |
| MWL-SV01-42.5 | | | |
| Dichlorodifluoromethane | 0.098 | 0.110 | 12 |
| Tetrachloroethene | 0.420 | 0.470 | 11 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.083 | 0.089 | 7 |
| 1,1,1-Trichloroethane | 0.041 | 0.043 | 5 |
| Trichloroethene | 0.098 | 0.110 | 12 |
| Trichlorofluoromethane | 0.180 | 0.190 | 5 |

Refer to footnotes at end of table.

Table 5-4 (Concluded)
Summary of Duplicate Samples
Mixed Waste Landfill Soil-Vapor Monitoring
April and October 2015

| Well ID/Parameter | Environmental Sample (R ₁) | Duplicate Sample (R ₂) | RPD ^a (%) |
|--|--|------------------------------------|----------------------|
| | (ppmv) | | |
| October 2015 Environmental-Duplicate Sample Pair Results (continued) | | | |
| MWL-SV02-42.5 (with manifold) | | | |
| Dichlorodifluoromethane | 0.093 | 0.095 | 2 |
| Tetrachloroethene | 0.065 | 0.066 | 2 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.050 | 0.052 | 4 |
| 1,1,1-Trichloroethane | 0.070 | 0.072 | 3 |
| Trichloroethene | 0.061 | 0.063 | 3 |
| Trichlorofluoromethane | 0.300 | 0.310 | 3 |
| MWL-SV02-42.5 | | | |
| Dichlorodifluoromethane | 0.091 | 0.091 | < 1 |
| Tetrachloroethene | 0.065 | 0.068 | 5 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 0.051 | 0.050 | 2 |
| 1,1,1-Trichloroethane | 0.071 | 0.070 | 1 |
| Trichloroethene | 0.062 | 0.065 | 5 |
| Trichlorofluoromethane | 0.300 | 0.300 | < 1 |

Notes:

^aRPD = Relative percent difference is calculated with the following equation and rounded to nearest whole number.

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

where: R₁ = Analysis result.
R₂ = Duplicate analysis result.

ppmv = Parts per million by volume basis.

Based on these results, the new manifold system will be used in future sampling events as the preferred method for the collection of duplicate soil-vapor samples.

A total of five QC field blank samples were submitted for analysis with the October 2015 samples. VOCs detected above laboratory MDLs in QC field blanks included methylene chloride (1 sample) and PCE (1 sample). No corrective action was required since all associated environmental sample results were not detected for methylene chloride, and PCE results were greater than 5 times the field QC sample concentration.

5.2.3 Laboratory Quality Control and Data Quality

Internal laboratory QC samples were analyzed concurrently with all environmental samples in accordance with laboratory procedures and EPA methods. These samples included laboratory control samples, method blanks, matrix spike and matrix spike duplicate samples, surrogate spike samples, and replicate samples. The results were used to evaluate potential contamination associated with the laboratory analytical process and to determine the accuracy

and precision of the analytical methods. All laboratory control sample results for both sampling events met the accuracy (i.e., % recovery) requirement of 50 to 130% for detected compounds (Section 2.2 of LTMMP Appendix D). Minor issues associated with laboratory QC samples documented during the data validation process are summarized below.

For the April sampling event, the RPD for acetone, methylene chloride, 1,1-dichloroethene, 2-butanone, carbon disulfide, and vinyl acetate for one laboratory control sample and associated duplicate were greater than acceptance criteria. Associated environmental samples with detections of these compounds were qualified as estimated values (i.e., “J” data validation qualifiers in Table 5-1).

Based upon the data validation and review criteria, all April and October analytical data were determined acceptable and met the DQOs. Reported QC sample results were in compliance with analytical method and laboratory procedure requirements. Data Validation Reports, Contract Verification Review forms, and Certificates of Analysis are provided in Annex C.

5.2.4 Variances and Non-Conformances

One variance from requirements in the LTMMP was identified for the April and October 2015 soil-vapor monitoring activities. This variance is considered minor because it has no adverse impact on data quality. During the purging process, a PID with an 11.7 electron volts (eV) lamp was used instead of an 11.8 eV lamp as specified in Section 3.3 in Appendix D of the LTMMP. 11.8 eV lamps are not currently available from the manufacturer or the distributors.

5.3 Data Evaluation and Monitoring Trigger Level

Trigger levels for VOCs in soil vapor at the MWL are 20 ppmv for PCE and TCE (i.e., the trigger level of 20 ppmv applies to both PCE and TCE) and 25 ppmv for Total VOCs as defined in the LTMMP Section 5.2.3.1 (SNL/NM March 2012). The trigger levels apply only to samples collected from the deepest sampling port (i.e., 400 feet bgs) in each of the three FLUTE™ multi-port soil-vapor monitoring wells (MWL-SV03, MWL-SV04, and MWL-SV05). No results from the three deepest sampling ports exceeded the trigger levels. The results for the 400-foot bgs sampling ports for wells MWL-SV03, MWL-SV04, and MWL-SV05 are summarized below.

For the April 2015 results, the PCE concentrations ranged from 0.080 ppmv (MWL-SV05-400) to 0.420 ppmv (MWL-SV03-400). TCE concentrations ranged from 0.060 ppmv (MWL-SV04-400) to 0.260 ppmv (MWL-SV03-400). Total VOCs concentrations ranged from 0.25075 ppmv (MWL-SV05-400) to 0.8595 ppmv (MWL-SV03-400).

For the October 2015 results, the PCE concentrations ranged from 0.120 ppmv (MWL-SV05-400) to 0.450 ppmv (MWL-SV03-400). TCE concentrations ranged from 0.097 ppmv (MWL-SV04-400) to 0.350 ppmv (MWL-SV03-400). Total VOCs concentrations ranged from 0.35374 ppmv (MWL-SV04-400) to 0.9592 ppmv (MWL-SV03-400).

In summary, all VOC concentrations for the three deepest sampling ports are well below the trigger levels. The maximum Total VOCs concentration of 0.9592 ppmv from MWL-SV03-400 (October sample) is less than 4% of the Total VOCs trigger level of 25 ppmv (i.e., 25 times lower than the trigger level). The maximum PCE concentration of 0.450 ppmv from MWL-SV03-400 (October sample) is less than 2.5% of the PCE trigger level of 25 ppmv (i.e., 44 times less than the trigger level). Soil-vapor monitoring results indicate a relatively uniform distribution of low concentration VOCs distributed throughout the 500-foot thick vadose zone that are not a threat to groundwater.

6.0 SOIL-MOISTURE MONITORING RESULTS

This chapter presents soil-moisture monitoring activities (i.e., data collection and analysis) in accordance with LTMMMP Sections 3.4.2 and Appendix E (SNL/NM March 2012). The monitoring objective is to establish soil-moisture trends in the vadose zone beneath the MWL to evaluate ET Cover performance. The soil-moisture monitoring system functions as an early warning detection system for water percolation and infiltration through the ET Cover so that timely action can be taken, if necessary. Results for the depth range of 8.7 to 86.6 feet bgs for each soil-moisture access tube are compared to the trigger level defined in LTMMMP Section 5.2.3.2.

Soil-moisture monitoring field activities and results are described in Sections 6.1 and 6.2, respectively. Data evaluation and comparison of results to the monitoring trigger level are presented in Section 6.3. A summary of soil-moisture monitoring activities and results is provided in Section 11.1.

6.1 Soil-Moisture Monitoring Field Activities

Two semiannual soil-moisture monitoring events were conducted during the April 1, 2015 through March 31, 2016 reporting period fulfilling the LTMMMP semiannual monitoring requirement. The first monitoring event was conducted on April 21 and April 23, 2015. The second monitoring event was conducted on October 8, 2015. Figure 6-1 shows the soil-moisture monitoring locations MWL-VZ-1, MWL-VZ-2, and MWL-VZ-3. Soil-moisture monitoring field forms and tables that compare soil-moisture content values to baseline values for the three access tubes are provided in Annex D.

Neutron count data collected in the field were correlated to percent soil-moisture content by volume as described in LTMMMP Section 3.4.2 and Appendix E (SNL/NM March 2012). A baseline for soil-moisture content was determined for each access tube prior to deployment of the ET Cover subgrade work in September 2006. The baseline was determined by averaging data collected during ten monitoring events between May 27, 2004 and August 8, 2006.

6.1.1 Field Quality Control

The CPN 503DR neutron probe was operated in accordance with the field operating procedure and the manufacturer's operating manual. A standard count was taken once daily during each monitoring event prior to the moisture logging to ensure the instrument was functioning properly and to confirm measurement accuracy. The results of the standard counts are provided on the MWL neutron logging data field form provided in Annex D.

6.1.2 Waste Management

No wastes were generated from soil-moisture monitoring activities.



Figure 6-1
Mixed Waste Landfill Soil-Moisture Monitoring Locations

6.2 Monitoring Results

Soil-moisture monitoring data for this reporting period are presented in Figures 6-2, 6-3, and 6-4 for MW-VZ-1, MWLVZ-2, and MWL-VZ-3, respectively. The results for April and October are plotted on these figures along with the baseline soil-moisture content and the trigger level for comparison. Results track very closely with the established soil-moisture baseline for the three access tubes. Soil moisture content by volume is generally consistent with depth, with some slight increases above 5% at depths below 80 feet bgs. The April and October data are consistent with the baseline data and indicate a dry vadose zone.

6.3 Data Evaluation and Monitoring Trigger Level

Soil-moisture data collected during the reporting period were compared to the trigger level, which is 23 percent soil moisture by volume, and applies to the shallow depth range beneath the ET Cover of 8.7 to 86.6 feet bgs for each monitoring location as specified in LTMMMP Section 5.2.3.2 (SNL/NM March 2012). This comparison is shown graphically in Figures 6-2, 6-3, and 6-4.

During this reporting period, the soil-moisture content measurements for the shallow trigger level depth interval at MWL-VZ-1 ranged from 1.4 to 5.2 percent, compared to 1.7 to 5.6 percent baseline. At MWL-VZ-2 the soil-moisture content ranged from 2.0 to 4.8 percent, compared to 2.1 to 5.5 percent baseline. At MWL-VZ-3 the soil-moisture content ranged from 1.4 to 5.1 percent, compared to 1.8 to 4.5 percent baseline.

In summary, all values are below the 23 percent soil-moisture content trigger level and track closely to baseline soil-moisture values, indicating the ET Cover is performing as designed.

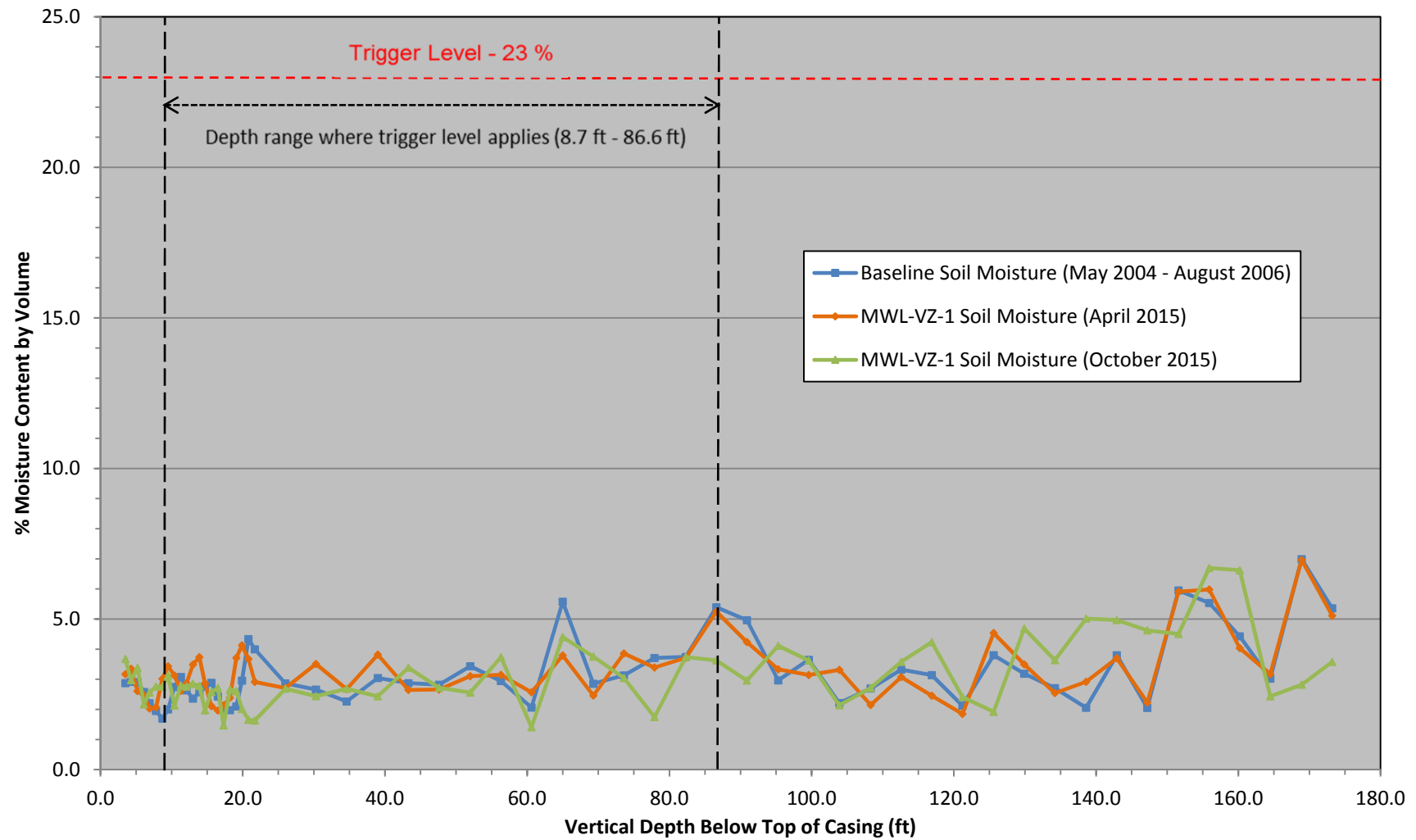


Figure 6-2
Mixed Waste Landfill MWL-VZ-1 Soil-Moisture Monitoring Results

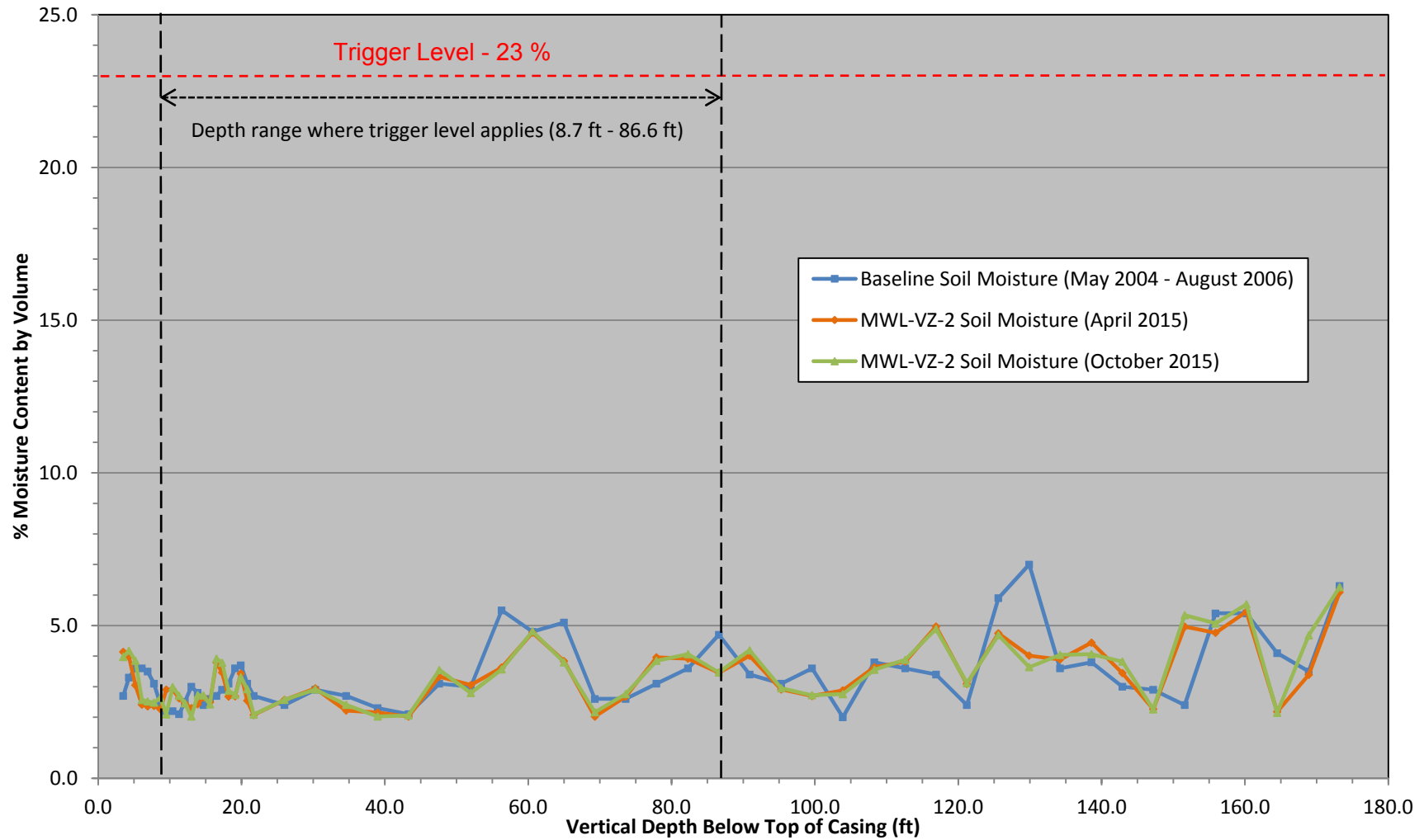


Figure 6-3
Mixed Waste Landfill MWL-VZ-2 Soil-Moisture Monitoring Results

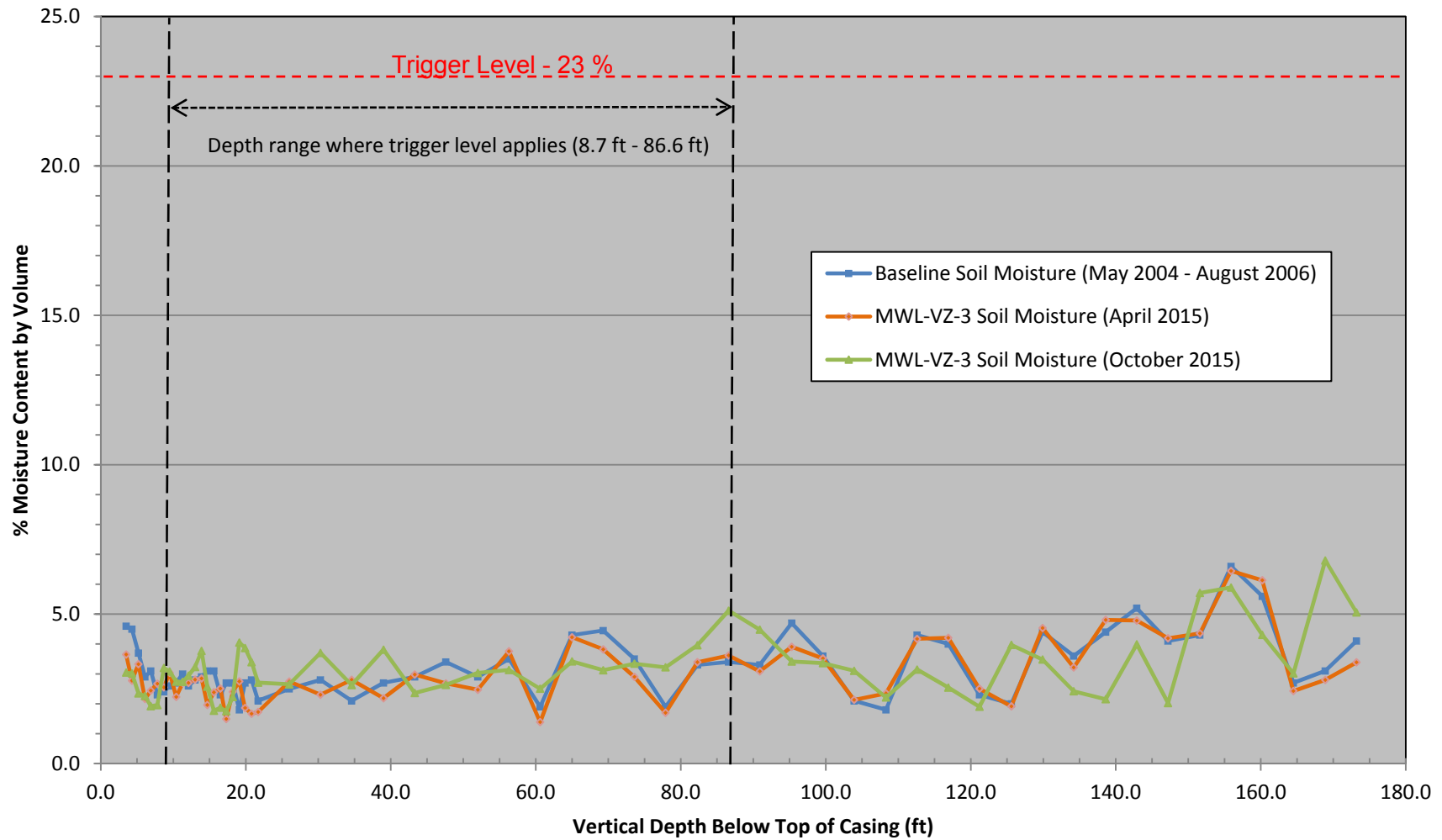


Figure 6-4
Mixed Waste Landfill MWL-VZ-3 Soil-Moisture Monitoring Results

7.0 GROUNDWATER MONITORING RESULTS

This chapter presents groundwater monitoring activities (i.e., sampling and analysis), analytical results, and data evaluation in accordance with LTMMP Sections 3.5 and Appendix F (SNL/NM March 2012). The monitoring objective is to assess concentrations of hazardous constituents in the groundwater in the uppermost part of the aquifer beneath the MWL and compare them to the trigger levels defined in Table 5.2.4-1 of the MWL LTMMP. Groundwater monitoring combined with soil-vapor monitoring functions as an early warning detection system for changing conditions so that timely action can be taken, if necessary.

Groundwater sampling field activities are described in Section 7.1, analytical laboratory results are presented and compared to trigger levels in Section 7.2, followed by a discussion of data quality. Hydrogeologic information on the regional aquifer is presented in Section 7.3. A summary of groundwater monitoring activities and results is provided in Section 11.1.

7.1 Environmental Sampling Field Activities

Two semiannual environmental sampling events were conducted during the April 1, 2015 through March 31, 2016 reporting period fulfilling the LTMMP semiannual monitoring requirement. Groundwater samples were collected from monitoring wells MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9. Well locations are shown in Figure 7-1. The samples were analyzed for VOCs, metals (cadmium, chromium, nickel, and uranium), specific radionuclides, gross alpha and beta, tritium, and radon-222. Field forms and documentation that address calibration of equipment, well purging and water quality measurements, and equipment decontamination activities are provided in Annex E.

The first sampling event was conducted between April 6 and 13, 2015. An environmental-duplicate sample pair was collected from MWL-MW9.

The second sampling event was conducted between October 12 and 15, 2015. An environmental-duplicate sample pair was collected from MWL-MW8. MWL-MW7 was originally sampled on October 13, 2015, but was resampled for radon-222 only on December 14, 2015 due to a hold time issue with the October environmental sample.

7.1.1 Well Purging

Purging removes stagnant water from the well so that a representative environmental sample can be obtained. In accordance with LTMMP Appendix F, the minimum purge requirement for a portable piston pump is one saturated screen volume. Purging continued until four stable field measurements for temperature, specific conductance (SC), potential of hydrogen (pH), and turbidity were obtained. Field measurements for water quality parameters were collected using an YSITM Model EXO1 Water Quality Meter, and a HACHTM Model 2100Q portable turbidity meter. Additional water quality measurements included oxidation-reduction potential (ORP) and dissolved oxygen (DO).

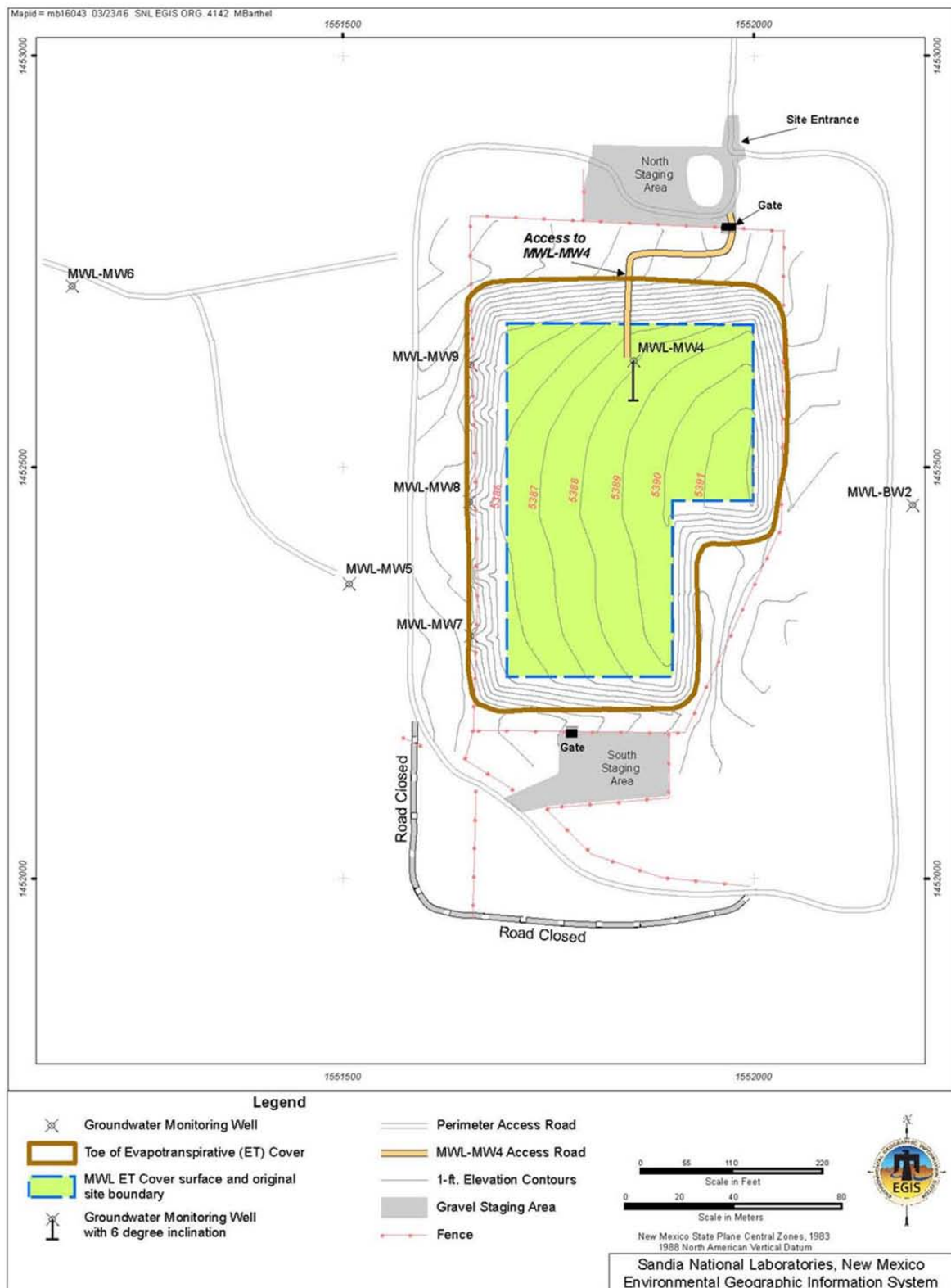


Figure 7-1
Mixed Waste Landfill Groundwater Monitoring Well Locations

A portable Bennett™ groundwater sampling system was used to collect environmental samples from all wells. Purge requirements were satisfied at all monitoring wells. In accordance with LTMMF Appendix F requirements designed to decrease the purging flow rate as low as possible for wells that potentially purge dry, the portable Bennett™ groundwater sampling system was equipped with a flow meter valve located along the discharge line and with small diameter tubing (3/8-inch outer diameter and 1/4-inch inner diameter). The average flow rates ranged from 0.098 gallons per minute (gpm) at MWL-MW7 to 0.262 gpm at MWL-BW2 for the April 2015 sampling event. The average flow rates ranged from 0.12 gpm at MWL-MW9 to 0.31 gpm at MWL-BW2 for the October 2015 sampling event.

7.1.2 Field Quality Control

Field QC samples were collected as part of each sampling event and included duplicate, equipment blank, field blank, and trip blank samples. The sampling pump and tubing bundle used to collect environmental samples were decontaminated prior to sampling each monitoring well.

Duplicate samples were collected and analyzed to evaluate the overall precision and reproducibility of the sampling and analytical process. The duplicate samples were collected immediately after the original groundwater sample to reduce variability caused by time and/or sampling mechanics. Duplicate samples were analyzed for the same constituents as the groundwater samples.

Equipment blank (also referred to as rinsate blank) samples were collected after equipment decontamination to verify the decontamination process. Equipment blank samples consisted of deionized (DI) water that was pumped through the sampling system and analyzed for the same constituents as the groundwater samples.

Field blank samples were collected and analyzed for VOCs to detect any potential sample contamination resulting from ambient field conditions. The field blanks were prepared by pouring DI water into sample containers at the sample point (i.e., inside the sampling truck at each monitoring well) to simulate the transfer of environmental samples from the sampling system to the sample container. Additional field blank samples were collected at the Environmental Resources Field Office (ERFO) during the decontamination process to assess the DI water and ERFO ambient conditions. The DI water is provided by Culligan® in 5-gallon sealed plastic containers that are stored at ERFO.

Trip blank samples consist of laboratory reagent-grade water with hydrochloric acid preservative. They are prepared by the analytical laboratory and accompany the sample containers from the laboratory, through sampling activities, and are shipped back to the laboratory with the environmental samples. Trip blank samples were submitted with groundwater samples collected for VOC analysis to assess whether contamination of the samples occurred during sampling, transportation, analysis, and/or storage.

The field QC samples were submitted for analysis with the environmental samples. A brief explanation of the field QC sampling protocol for the April and October sampling events is provided below. Analytical results are presented in Section 7.2.

First Semiannual Sampling Event – April 6-13, 2015

One equipment blank sample was collected prior to sampling monitoring well MWL-MW9. One duplicate sample was collected at MWL-MW9. Five field blank samples were collected; one at ERFO and four at the site (one at each monitoring well). Five trip blank samples were also submitted for analysis with VOC groundwater samples.

Second Semiannual Sampling Event – October 12-15, 2015

One equipment blank sample was collected prior to sampling MWL-MW8. One duplicate sample was collected at MWL-MW8. Five field blank samples were collected; one at ERFO, and four at the site (one at each monitoring well). Five trip blank samples were also submitted for analysis with VOC groundwater samples.

7.1.3 Waste Management

Purge and decontamination wastewater generated from sampling activities was collected in 55-gallon containers and stored at the ERFO waste accumulation area. All wastewater was managed as “non-hazardous” waste based upon historical sample results and process knowledge of monitoring well locations. All wastewater was discharged to the sanitary sewer in accordance with Albuquerque Bernalillo County Water Utility Authority requirements after characterization data were compared to discharge limits. Approximately 207 gallons of wastewater were generated during the April 2015 groundwater sampling event and approximately 272 gallons were generated during the October and December 2015 sampling event.

PPE and other solid waste generated during April, October, and December 2015 monitoring activities were managed in accordance with all applicable requirements. Analytical data collected from the sampling event was used to supplement the waste management process. All solid waste was managed as non-hazardous solid waste.

7.2 Laboratory Results

Environmental and field QC samples were submitted to GEL for analyses. Samples were analyzed in accordance with applicable EPA analytical methods. For comparison, trigger levels are included in the analytical results tables in this report. Both analytical laboratory and data validation qualifiers are included in the groundwater data tables presented in this section. Analytical laboratory reports, including certificates of analyses, analytical methods, MDLs, practical quantitation limits (PQLs), dates of analyses, results of QC analyses, and data validation reports are filed in the SNL/NM Record Center.

7.2.1 Environmental Sample Results

This section summarizes groundwater monitoring results for the reporting period. Groundwater monitoring results were compared to historical MWL groundwater monitoring results and

LTMMMP trigger levels. All results were below applicable LTMMMP trigger levels defined in Section 5.2.4 of the LTMMMP (SNL/NM March 2012) and were comparable to historic MWL groundwater monitoring results.

Table 7-1 summarizes detected VOCs for the April and October sampling events. Table 7-2 summarizes MDLs for all VOCs. Table 7-3 summarizes the cadmium, chromium, nickel, and uranium results for the April and October 2015 groundwater sampling events. Table 7-4 summarizes radionuclide, gross alpha, gross beta, tritium, and radon results for the April, October, and December 2015 sampling events. Table 7-5 summarizes field water quality measurements collected prior to sampling for all events.

Radionuclide activity in groundwater samples is determined through specific radiological analyses as presented in Table 7-4. In addition, gross alpha and beta activities are measured to screen for indications of other radionuclides (i.e., radiological anomalies). Gross alpha activity values are corrected to subtract naturally occurring uranium in accordance to 40 Code of Federal Regulations Parts 9, 141, and 142, Table I-4. Uranium is measured independently and results are presented in Table 7-3.

Trigger levels provide early detection of potentially changing conditions that require additional testing and further investigation (SNL/NM March 2012). Groundwater radiological trigger levels for tritium (4 millirem per year), radon (1,000 pCi/L), gross alpha activity (15 pCi/L), and gross beta activity (4 millirem per year) are shown in Table 7-4. The units for the tritium and gross beta triggers relate to a dose rate and not a specific “pCi/L activity.” For tritium, the approximate equivalent activity is 20,000 pCi/L, assuming an onsite resident using the groundwater as their primary drinking water source.

Gross alpha and beta results are used as a broad radiological screening tool to look for other potential radionuclides besides tritium, radon, and the radionuclides already addressed by gamma spectroscopy analysis (i.e., the radionuclides of concern). These screening analyses do not provide radionuclide-specific identification necessary to calculate a dose. If the gross alpha trigger is exceeded, additional radiological analysis may be required to identify the specific radionuclide(s) that are contributing to the “gross alpha result.” Gross beta results are compared to the extensive SNL/NM groundwater monitoring data set to determine if there are indications of radiological anomalies (i.e., if the gross beta activity is significantly different than natural background beta activity). If there are indications of radiological anomalies, additional analysis may be required to identify the specific radionuclide that is causing the anomalous beta activity. Once the specific radionuclide is identified, the corresponding dose to a human receptor can be determined and compared to the trigger of 4 millirem per year. Additional analysis based on elevated gross alpha or gross beta screening results would only be required if the results are not explained by the other radionuclide-specific results. If performed, the new radioisotope results would then be further evaluated and the corresponding dose determined and compared to the trigger of 4 millirem per year. For these reasons, a direct comparison of gross beta results to the LTMMMP trigger level is not possible. However, the screening and evaluation process ensures that if radiological contamination is present, it will be detected, evaluated, and appropriate follow up actions will be taken.

Table 7-1
Summary of Detected Volatile Organic Compounds (EPA Method 8260B^a)
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result (µg/L) | MDL (µg/L) | PQL (µg/L) | Trigger Levels (µg/L) | Laboratory Qualifier ^b | Validation Qualifier ^b |
|--|--------------------|---------------|------------|------------|-----------------------|-----------------------------------|-----------------------------------|
| April 2015 Sampling Event – No volatile organic compounds were detected in April 2015 groundwater samples | | | | | | | |
| October 2015 Sampling Event | | | | | | | |
| MWL-BW2 12-Oct-2015 | Methylene chloride | 1.20 | 1.00 | 10.0 | 3.00 | B,J | 10U |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

^bLaboratory/Validation Qualifier: If cell is blank (--), then all quality control samples met acceptance criteria with respect to submitted samples.

B = The analyte was detected in the blank above the MDL.

J = Estimated value, the analyte concentration is greater than the MDL but less than the PQL.

U = The analyte was reported as a detection by the laboratory but was qualified during data validation as not detected. The associated numerical value is the revised sample quantitation limit in units of µg/L, in accordance with the data validation process.

EPA = U.S. Environmental Protection Agency.

MDL = Method detection limit. The minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero, analyte is matrix-specific.

µg/L = Micrograms 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 the applicable method under routine laboratory operating conditions.

Table 7-2
Summary of Method Detection Limits for Volatile Organic Compounds (EPA Method 8260B^a)
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Analyte | MDL (µg/L) |
|---------------------------|---------------|
| 1,1,1-Trichloroethane | 0.300 |
| 1,1,2,2-Tetrachloroethane | 0.300 |
| 1,1,2-Trichloroethane | 0.300 |
| 1,1-Dichloroethane | 0.300 |
| 1,1-Dichloroethene | 0.300 |
| 1,2-Dichloroethane | 0.300 |
| 1,2-Dichloropropane | 0.300 |
| 2-Butanone | 1.50 – 2.00 |
| 2-Hexanone | 1.50 – 2.20 |
| 4-methyl-, 2-Pentanone | 1.50 |
| Acetone | 1.50 – 2.50 |
| Benzene | 0.300 |
| Bromodichloromethane | 0.300 |
| Bromoform | 0.300 |
| Bromomethane | 0.300 |
| Carbon disulfide | 1.50 |
| Carbon tetrachloride | 0.300 |
| Chlorobenzene | 0.300 |
| Chloroethane | 0.300 |
| Chloroform | 0.300 |
| Chloromethane | 0.300 |
| Dibromochloromethane | 0.300 |
| Dichlorodifluoromethane | 0.300 |
| Ethyl benzene | 0.300 |
| Methylene chloride | 1.00 – 1.70 |
| Styrene | 0.300 |
| Tetrachloroethene | 0.300 |
| Toluene | 0.300 |
| Trichloroethene | 0.300 |
| Vinyl acetate | 1.50 |
| Vinyl chloride | 0.300 |
| Xylene | 0.300 |
| cis-1,2-Dichloroethene | 0.300 |
| cis-1,3-Dichloropropene | 0.300 |
| trans-1,2-Dichloroethene | 0.300 |
| trans-1,3-Dichloropropene | 0.300 |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

EPA = U.S. Environmental Protection Agency.

MDL = Method detection limit. The minimum concentration that can be measured and reported with 99% confidence that the analyte is greater than zero.

µg/L = Micrograms per liter.

Table 7-3
Summary of Cadmium, Chromium, Nickel, and Uranium Results (EPA Method 6020^a)
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result (mg/L) | MDL (mg/L) | PQL (mg/L) | Trigger Level (mg/L) | Laboratory Qualifier ^b | Validation Qualifier ^b |
|---|----------|---------------|------------|------------|----------------------|-----------------------------------|-----------------------------------|
| April 2015 Sampling Event | | | | | | | |
| MWL-BW2 6-Apr-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000726 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00755 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW7 7-Apr-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000726 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00821 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW8 13-Apr-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000692 | 0.0005 | 0.002 | 0.050 | J | J- |
| | Uranium | 0.00889 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW9 8-Apr-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000564 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00977 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW9 8-Apr-15 (Duplicate) | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000582 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00974 | 0.000067 | 0.0002 | 0.015 | -- | -- |

Refer to notes at end of table.

Table 7-3 (Concluded)
Summary of Cadmium, Chromium, Nickel, and Uranium Results (EPA Method 6020^a)
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result (mg/L) | MDL (mg/L) | PQL (mg/L) | Trigger Level (mg/L) | Laboratory Qualifier ^b | Validation Qualifier ^b |
|--|----------|---------------|------------|------------|----------------------|-----------------------------------|-----------------------------------|
| October 2015 Sampling Event | | | | | | | |
| MWL-BW2 12-Oct-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000772 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00752 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW7 13-Oct-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000615 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00822 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW8 15-Oct-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000701 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00806 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW8 15-Oct-15 (Duplicate) | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000627 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00809 | 0.000067 | 0.0002 | 0.015 | -- | -- |
| MWL-MW9 14-Oct-15 | Cadmium | ND | 0.00011 | 0.001 | 0.0025 | U | -- |
| | Chromium | ND | 0.002 | 0.010 | 0.043 | U | -- |
| | Nickel | 0.000633 | 0.0005 | 0.002 | 0.050 | J | -- |
| | Uranium | 0.00978 | 0.000067 | 0.0002 | 0.015 | -- | -- |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

^bLaboratory/Validation Qualifier: If cell is blank (--), then all quality control samples met acceptance criteria with respect to submitted samples.

J = Estimated value, the analyte concentration is greater than the MDL but less than the PQL.

J- = Estimated value with a suspected negative bias.

U = Analyte was not detected.

EPA = U.S. Environmental Protection Agency.

MDL = Method detection limit. The minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero, analyte is matrix-specific.

mg/L = Milligrams per liter.

ND = Not detected (at MDL).

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 applicable method under routine laboratory operating conditions.

Table 7-4
Summary of Gamma Spectroscopy, Gross Alpha, Gross Beta, Tritium, and Radon Results
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result ^a (pCi/L) | Trigger Level | Laboratory Qualifier ^b | Validation Qualifier ^b | Analytical Method ^c |
|----------------------------------|-------------------------|--------------------------------|---------------|--------------------------------------|--------------------------------------|-----------------------------------|
| April 2015 Sampling Event | | | | | | |
| MWL-BW2 6-Apr-15 | Americium-241 | 5.29 ± 7.29 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | 0.989 ± 1.61 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | 0.00502 ± 1.58 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 8.34 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 6.70 ± 1.54 | 4 mrem/yr | -- | -- | EPA 900.0 |
| | Tritium ^e | -49.2 ± 65.7 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 417 ± 111 | 1000 pCi/L | -- | -- | SM7500 RnB |
| MWL-MW7 7-Apr-15 | Americium-241 | 4.64 ± 15.4 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | -2.63 ± 3.40 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | 1.16 ± 1.99 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 4.36 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 8.86 ± 1.97 | 4 mrem/yr | -- | -- | EPA 900.0 |
| | Tritium ^e | -21.8 ± 71.1 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 80.2 ± 52.5 | 1000 pCi/L | -- | J | SM7500 RnB |
| MWL-MW8 13-Apr-15 | Americium-241 | 8.79 ± 12.6 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | -2.01 ± 3.52 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | -0.976 ± 2.24 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 1.75 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 7.15 ± 1.49 | 4 mrem/yr | -- | -- | EPA 900.0 |
| | Tritium ^e | 40.8 ± 98.1 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 107 ± 70.1 | 1000 pCi/L | H, U | BD | SM7500 RnB |
| MWL-MW9 8-Apr-15 | Americium-241 | -1.62 ± 19.8 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | -0.865 ± 2.09 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | -0.66 ± 1.91 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 6.95 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 11.6 ± 2.33 | 4 mrem/yr | -- | -- | EPA 900.0 |
| | Tritium ^e | 1.62 ± 74.6 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 240 ± 73.1 | 1000 pCi/L | -- | -- | SM7500 RnB |

Refer to notes at end of table.

Table 7-4 (Continued)
Summary of Gamma Spectroscopy, Gross Alpha, Gross Beta, Tritium, and Radon Results
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result ^a (pCi/L) | Trigger Level | Laboratory Qualifier ^b | Validation Qualifier ^b | Analytical Method ^c |
|--|-------------------------|--------------------------------|---------------|--------------------------------------|--------------------------------------|-----------------------------------|
| April 2015 Sampling Event (Continued) | | | | | | |
| MWL-MW9 8-Apr-15 (Duplicate) | Americium-241 | 1.58 ± 13.1 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | 0.0147 ± 1.98 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | -1.6 ± 2.15 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 11.87 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 7.44 ± 1.65 | 4 mrem/yr | -- | -- | EPA 900.0 |
| | Tritium ^e | -37.3 ± 68.2 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 307 ± 86.1 | 1000 pCi/L | -- | -- | SM7500 RnB |

Refer to notes at end of table.

Table 7-4 (Continued)
Summary of Gamma Spectroscopy, Gross Alpha, Gross Beta, Tritium, and Radon Results
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result ^a (pCi/L) | Trigger Level | Laboratory Qualifier ^b | Validation Qualifier ^b | Analytical Method ^c |
|--|-------------------------|--------------------------------|---------------|--------------------------------------|--------------------------------------|-----------------------------------|
| October 2015 Sampling Event | | | | | | |
| MWL-BW2 12-Oct-15 | Americium-241 | -13.1 ± 15.5 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | 3.02 ± 3.02 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | -1.06 ± 2.45 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 12.06 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 5.73 ± 2.64 | 4 mrem/yr | -- | J | EPA 900.0 |
| | Tritium ^e | -7.74 ± 71.9 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 419 ± 138 | 1000 pCi/L | H | J | SM7500 Rn B |
| MWL-MW7 13-Oct-15 | Americium-241 | -44.5 ± 26.5 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | -1.11 ± 2.09 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | 0.346 ± 2.00 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 7.89 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 7.07 ± 3.53 | 4 mrem/yr | -- | J | EPA 900.0 |
| | Tritium ^e | -7.83 ± 73.0 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 106 ± 80.7 | 1000 pCi/L | H, U | R | SM7500 Rn B |
| MWL-MW7 (Resample) 14-Dec-15 | Radon-222 | 100 ± 66.7 | 1000 pCi/L | H, U | BD | SM7500 Rn B |
| MWL-MW8 15-Oct-15 | Americium-241 | -8.71 ± 12.8 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | -0.61 ± 1.80 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | -0.541 ± 1.83 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 8.10 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 5.87 ± 3.33 | 4 mrem/yr | -- | J | EPA 900.0 |
| | Tritium ^e | -49.5 ± 69.1 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 153 ± 66.6 | 1000 pCi/L | H | J | SM7500 Rn B |
| MWL-MW8 15-Oct-15 (Duplicate) | Americium-241 | 7.93 ± 9.74 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | 0.968 ± 1.82 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | 2.04 ± 2.49 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 4.98 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 5.08 ± 2.29 | 4 mrem/yr | -- | J | EPA 900.0 |
| | Tritium ^e | -31.4 ± 70.0 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 163 ± 68.3 | 1000 pCi/L | H | J | SM7500 Rn B |

Refer to notes at end of table.

Table 7-4 (Concluded)
Summary of Gamma Spectroscopy, Gross Alpha, Gross Beta, Tritium, and Radon Results
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID | Analyte | Result ^a (pCi/L) | Trigger Level | Laboratory Qualifier ^b | Validation Qualifier ^b | Analytical Method ^c |
|--|-------------------------|--------------------------------|---------------|--------------------------------------|--------------------------------------|-----------------------------------|
| October 2015 Sampling Event (Continued) | | | | | | |
| MWL-MW9 14-Oct-15 | Americium-241 | -5.53 ± 18.3 | NE | U | BD | EPA 901.1 |
| | Cesium-137 | 0.0607 ± 2.32 | NE | U | BD | EPA 901.1 |
| | Cobalt-60 | -2.45 ± 2.98 | NE | U | BD | EPA 901.1 |
| | Gross Alpha | 11.25 | 15 pCi/L | NA | None | EPA 900.0 |
| | Gross Beta ^d | 8.35 ± 2.88 | 4 mrem/yr | -- | -- | EPA 900.0 |
| | Tritium ^e | -49.6 ± 69.0 | 4 mrem/yr | U | BD | EPA 906.0 M |
| | Radon-222 | 427 ± 121 | 1000 pCi/L | H | J | SM7500 Rn B |

Notes:

^aGross alpha activity measurements were corrected by subtracting the total uranium activity from the total gross alpha result (40 Code of Federal Regulations Parts 9, 141, and 142, Table I-4). Negative numbers indicate the sample count or result was less than the instrument background; result is below the minimum detectable activity.

^bLaboratory/Validation Qualifier: If cell is blank (--), then all quality control samples met acceptance criteria with respect to submitted samples.

BD = Below detection limit as used in radiochemistry to identify results that are not statistically different from zero.

H = Analytical holding time was exceeded.

J = Estimated value.

None = No data validation for corrected gross alpha activity.

R = The value is unusable, resampling and analysis are necessary for verification.

U = Analyte was below detection limit.

^cAnalytical Methods EPA 900.0, EPA 900.6, and EPA 906.0:

- U.S. Environmental Protection Agency, 1980, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, U.S. Environmental Protection Agency, Cincinnati, Ohio. Analytical Method SM7500 RnB

- American Public Health Association, American Water Works Association, and Water Environment Federation, 1988, "Standard Methods for the Examination of Water and Wastewater," 7500-Rn B Method, 20th Edition, published jointly by American Public Health Association, American Water Works Association, and Water Environment Federation, Washington, D.C., 1988.

^dRefer to Section 7.2.1 for an explanation of the gross beta trigger level.

^eThe approximate equivalent activity for the 4 mrem/yr tritium trigger level is 20,000 pCi/ L.

EPA = U.S. Environmental Protection Agency.

mrem/yr = Millirem per year.

NA = Not applicable.

NE = Not established.

pCi/L = Picocuries per liter.

Table 7-5
Summary of Field Water Quality Measurements^a
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID/ Sample Date | Temperature (°C) | SC (µmhos/cm) | ORP (mV) | pH | Turbidity (NTU) | DO (% Sat) | DO (mg/L) |
|-------------------------------------|---------------------|------------------|-------------|------|--------------------|---------------|--------------|
| April 2015 Sampling Event | | | | | | | |
| MWL-BW2 | 21.18 | 707.5 | 118.5 | 7.53 | 0.28 | 11.1 | 0.98 |
| MWL-MW7 | 21.58 | 593.8 | 179.4 | 7.76 | 0.16 | 73.1 | 6.40 |
| MWL-MW8 | 16.53 | 534.5 | 144.5 | 7.72 | 0.25 | 34.7 | 3.37 |
| MWL-MW9 | 20.37 | 580.1 | 143.7 | 7.66 | 0.32 | 19.9 | 1.77 |
| October 2015 Sampling Event | | | | | | | |
| MWL-BW2 | 20.71 | 705.2 | 239.6 | 7.22 | 0.81 | 20.1 | 1.80 |
| MWL-MW7 | 21.54 | 593.6 | 349.9 | 7.50 | 0.25 | 72.0 | 6.30 |
| MWL-MW8 | 21.45 | 593.3 | 369.5 | 7.44 | 0.47 | 37.5 | 3.30 |
| MWL-MW9 | 21.50 | 594.2 | 354.0 | 7.41 | 0.45 | 16.0 | 1.38 |
| December 2015 Sampling Event | | | | | | | |
| MWL-MW7 | 16.39 | 527.9 | 219.4 | 7.42 | 0.58 | 65.9 | 6.43 |

Notes:

^aField measurements collected prior to sampling.

°C = Degrees Celsius.

% Sat = Percent saturation.

DO = Dissolved oxygen.

mg/L = Milligrams per liter.

µmhos/cm = Micromhos per centimeter.

mV = Millivolts.

NTU = Nephelometric turbidity units.

ORP = Oxidation-reduction potential.

pH = Potential of hydrogen (negative logarithm of the hydrogen ion concentration).

SC = Specific Conductance.

First Semiannual Sampling Event – April 6-13, 2015

No VOCs were detected in environmental samples above MDLs.

Cadmium and chromium were not detected above the associated MDLs. Nickel and uranium were detected above the associated MDLs and below LTMMMP trigger levels in all groundwater samples. Nickel concentrations ranged from 0.000564 milligrams per liter (mg/L) at MWL-MW9 to 0.000726 mg/L at MWL-MW7 and MWL-BW2. Uranium concentrations ranged from 0.00755 mg/L at MWL-BW2 to 0.00977 mg/L at MWL-MW9. All results are consistent with historical MWL groundwater monitoring results and are below LTMMMP trigger levels.

MWL groundwater samples were screened for gamma-emitting radionuclides, gross alpha activity, gross beta activity, tritium, and radon-222. There were no detections of gamma-emitting radionuclides (as determined by gamma spectroscopy) or tritium (as determined by liquid scintillation counting). Negative results in Table 7-4 indicate the sample result was lower than the instrument background (i.e., below the instrument detection limit). Radon-222 was detected in all samples, with activities ranging from 80.2 pCi/L at MWL-MW7 to 417 pCi/L at MWL-BW2. All radiological results were reviewed by an SNL/NM radiological SME to screen for potential indications of radiological contamination; there were no indications of radiological anomalies in the groundwater sample results. Results are consistent with historical results and below LTMMMP trigger levels.

Second Semiannual Sampling Event – October 12-15, and December 14, 2015

No VOCs were detected in environmental samples above MDLs, except for methylene chloride in the sample from well MWL-BW2. Methylene chloride was qualified as not detected during data validation since this compound was also detected in the associated laboratory method blank sample (i.e., associated with laboratory contamination).

Cadmium and chromium were not detected above the associated MDLs. Nickel and uranium were detected above the associated MDLs and below LTMMMP trigger levels in all groundwater samples. Nickel concentrations ranged from 0.000615 mg/L at MWL-MW7 to 0.000772 mg/L at MWL-BW2. Uranium concentrations ranged from 0.00752 mg/L at MWL-BW2 to 0.00978 mg/L at MWL-MW9. All results are consistent with historical MWL groundwater monitoring results and are below LTMMMP trigger levels.

MWL groundwater samples were screened for gamma-emitting radionuclides, gross alpha activity, gross beta activity, tritium, and radon-222. Resampling of MWL-MW7 for radon-222 was performed on December 14, 2015 due to a holding time issue with the October environmental sample. There were no detections of gamma-emitting radionuclides (as determined by gamma spectroscopy) or tritium (as determined by liquid scintillation counting). Radon-222 was detected in all samples, with activities ranging from 100 pCi/L at MWL-MW7 (December 14, 2015) to 427 pCi/L at MWL-MW9. All radiological results were reviewed by an SNL/NM radiological SME to screen for potential indications of radiological contamination; there were no indications of radiological anomalies in the groundwater sample results. Results are consistent with historical results and below LTMMMP trigger levels.

7.2.2 Field Quality Control Sample Results

Field QC sample results met the sampling DQOs and validated the field sampling procedures and protocol. The analytical results for each field QC sample type are presented in this section.

Table 7-6 summarizes results of environmental-duplicate sample pair results and the calculated RPD values for the April and October 2015 data sets. Only the metals nickel and uranium were detected above the associated MDLs in the two sample pairs. Calculated RPDs for the detected metal constituents show good agreement (i.e., RPD values less than or equal to 35 for metals) for both sampling events, ranging from <1 to 11.

A discussion of equipment, field, and trip blank results for the April and October sampling events is provided below for the April and October sampling events.

First Semiannual Sampling Event – April 6-13, 2015

The equipment blank sample in April was analyzed for all constituents. Bromodichloromethane, bromoform, chloroform, and dibromochloromethane were detected above laboratory MDLs. No corrective action was necessary since these compounds were not detected in the associated MWL-MW9 environmental sample.

Table 7-6
Summary of Duplicate Sample Results
Mixed Waste Landfill Groundwater Monitoring
April and October 2015

| Well ID/Parameter | Environmental Sample (R ₁) | Duplicate Sample (R ₂) | RPD ^a |
|-------------------------------|--|------------------------------------|------------------|
| April Sampling Event | | | |
| MWL-MW9 | | | |
| Nickel (mg/L) | 0.000564 | 0.000582 | 3 |
| Uranium (mg/L) | 0.00977 | 0.00974 | < 1 |
| October Sampling Event | | | |
| MWL-MW8 | | | |
| Nickel (mg/L) | 0.000701 | 0.000627 | 11 |
| Uranium (mg/L) | 0.00806 | 0.00809 | < 1 |

Notes:

^aRPD = Relative percent difference is calculated with the following equation and rounded to the nearest whole number.

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

where: R₁ = Environmental sample result.
R₂ = Duplicate sample result.

mg/L = Milligram(s) per liter.

The field blank collected at ERFO during the decontamination process and the four field blanks collected at the monitoring well locations during April all showed detections of bromodichloromethane, chloroform, and dibromochloromethane above laboratory MDLs. Bromoform was detected in the field blank samples associated with MWL-BW2, MWL-MW7, and MWL-MW8. Acetone was detected in the field blank sample associated with the source DI water at ERFO. No corrective action was required since these compounds were not detected in associated environmental samples.

No VOCs were detected in the five trip blank samples associated with the April sampling event.

Second Semiannual Sampling Event – October 12-15, 2015

The equipment blank sample collected in October was analyzed for all constituents. Only acetone was detected above laboratory MDLs. No corrective action was necessary since this compound was not detected in the associated MWL-MW8 environmental and duplicate sample pair.

The field blank collected at ERFO during the decontamination process and the four field blanks collected at the monitoring wells all showed detections of acetone. The compound 2-butanone was detected in field blanks associated with MWL-BW2 and the source DI water at ERFO. No corrective action was required since these compounds were not detected in associated environmental samples.

No VOCs were detected in the five trip blanks associated with the October sampling event.

7.2.3 Laboratory Quality Control and Data Quality

Internal laboratory QC samples were analyzed concurrently with all environmental samples in accordance with laboratory procedures and EPA methods. These samples included laboratory control samples, method blanks, matrix spike and matrix spike duplicate samples, surrogate spike samples, and replicate samples. The results were used to evaluate potential contamination associated with the laboratory analytical process and to determine the accuracy and precision of the analytical methods. Reported QC sample results were in compliance with analytical method and laboratory procedure requirements. Laboratory QC sample results that effected environmental sample results are discussed below.

Methylene chloride was detected in the laboratory method blank associated with the October MWL-BW2 environmental sample. Therefore, the methylene chloride detection in the MWL-BW2 environmental sample was qualified as not detected during data validation.

All chemical data were reviewed and qualified in accordance with SNL/NM AOP 00-03, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM June 2014a). Based upon the data validation and review criteria, all analytical data were determined acceptable and met the DQOs. Data Validation Reports and Contract Verification Review forms are provided in Annex E.

7.2.4 Variances and Non-Conformances

No variances or non-conformances were identified during the April and October 2015 semiannual groundwater sampling events. Project-specific issues from the April and October sampling events are summarized as follows.

Bromodichloromethane, bromoform, chloroform, dibromochloromethane were detected at very low concentrations in both the April equipment blank and field blank samples. These compounds are a by-product of the deionized water purification process (i.e., chlorination) and are routinely detected in equipment blank and field blank samples at very low concentrations. Acetone, a common laboratory contaminant, was also detected in one field blank sample but not in any environmental samples.

As part of the October groundwater monitoring event and in accordance with LTMMP requirements, resampling of well MWL-MW7 for radon-222 was performed since the original sample result was qualified during data validation as unusable because the holding time requirement was exceeded. Acetone and 2-butanone were detected at very low concentrations in equipment blank and field blank samples, but were not detected in any environmental samples.

7.3 Hydrogeologic Assessment

A detailed conceptual site model is provided in the MWL Phase 2 RCRA Facility Investigation Report (Peace et al. September 2002) and the Mixed Waste Landfill Groundwater Report, 1990 through 2001 (Goering et al. 2002). An update to the conceptual site model integrating the

findings from the four monitoring wells installed in 2008 is presented in the Mixed Waste Landfill Annual Groundwater Monitoring Report, Calendar Year 2009 (SNL/NM June 2010).

The upper surface of the regional aquifer at the MWL is contained within the interfingering, unconsolidated, fine-grained alluvial-fan deposits of the Santa Fe Group. The more transmissive, coarser-grained Ancestral Rio Grande sediments underlie the fine-grained alluvial deposits beneath the MWL. The depth to water is approximately 500 feet bgs and groundwater flows generally westward, away from the Manzanita Mountains and towards the Rio Grande. Several water-supply wells operated by KAFB and the Albuquerque Bernalillo County Water Utility Authority have profoundly modified the natural groundwater flow regime near the MWL by creating a trough in the water table in the western and northern portions of KAFB. As a result, water levels at the MWL have continued to decline since monitoring began in 1990.

Since 2009, the rate of groundwater elevation decline in all wells except MWL-MW4 and MWL-BW2 has been relatively slow and constant, and less than 2 feet overall. The rate of groundwater elevation decline in the upper screen interval of MWL-MW4 has stabilized since April 2010. The overall decline in MWL-BW2 since 2009 has been approximately 3 feet, reflecting a slightly higher rate of decline than observed in the other wells. Recharge from infiltration of direct precipitation at the MWL is negligible due to high evapotranspiration, low precipitation, the thick sequence of unsaturated Santa Fe Group deposits above the water table, and the presence of the MWL ET Cover. Groundwater recharge of the regional aquifer occurs by the infiltration of precipitation in the Manzanita Mountains located approximately 5 miles to the east.

Figure 7-2 shows the October 2015 potentiometric surface of the regional aquifer beneath the MWL. Groundwater flows towards the west and northwest. Measured orthogonally from the potentiometric surface contours, the horizontal gradient for October 2015 ranges from approximately 0.03 to 0.08 feet per foot. Groundwater velocities in the alluvial-fan sediments were calculated using the current potentiometric surface gradient, the average hydraulic conductivity obtained from the slug testing of four monitoring wells, and an effective porosity of 25 percent. The calculated 2015 groundwater velocity was the same as 2014, and ranges from 0.02 to 0.06 feet per day. The average 2015 groundwater velocity is 0.04 feet per day. These very low values are consistent with previous estimates for horizontal groundwater flow at the water table in the MWL vicinity.

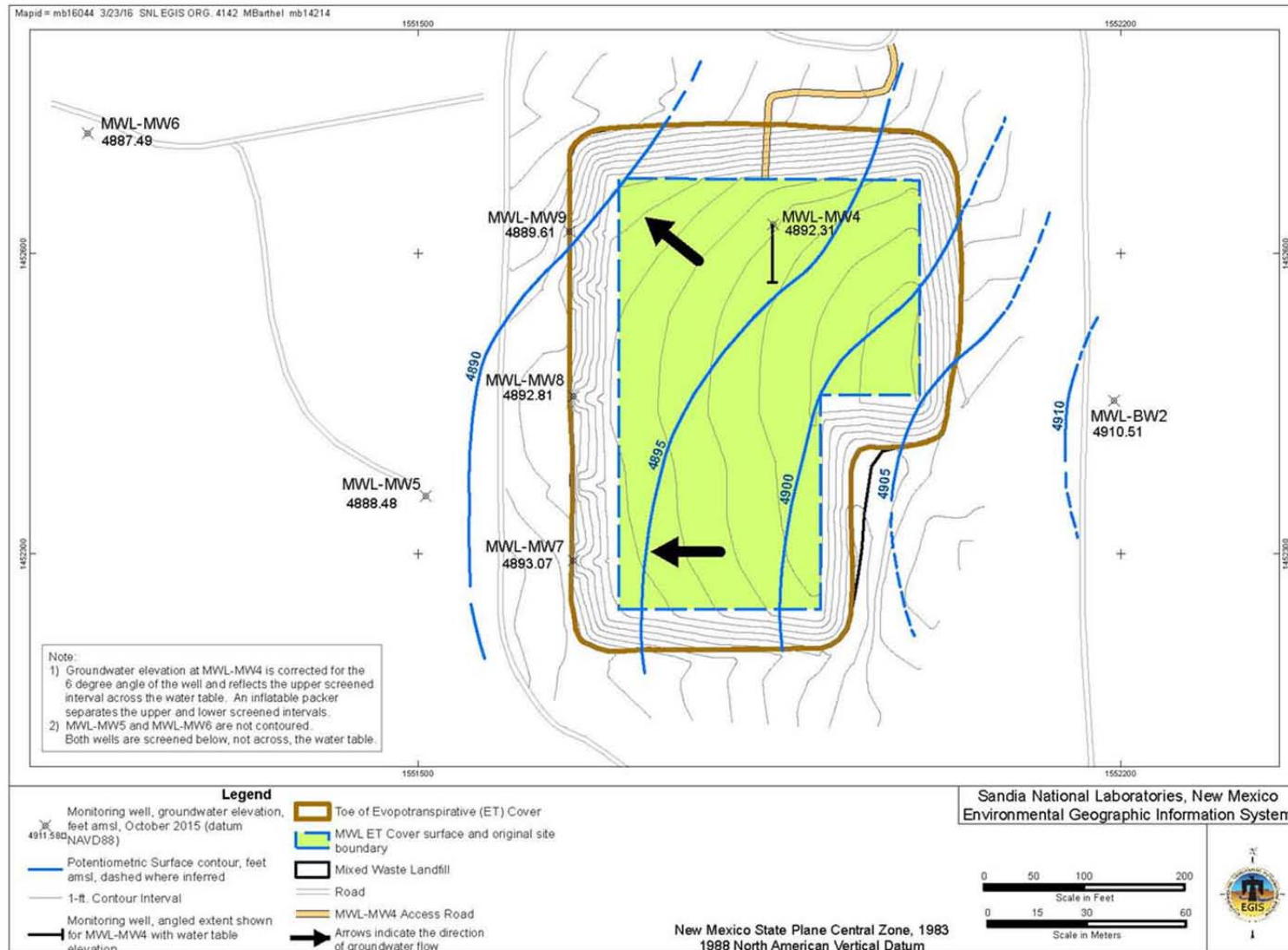


Figure 7-2
Localized Potentiometric Surface of the Basin Fill Aquifer at the Mixed Waste Landfill, October 2015

This page intentionally left blank.

8.0 BIOTA MONITORING RESULTS

This chapter presents biota monitoring activities (i.e., sampling and analysis), analytical results, and data evaluation in accordance with the LTMMMP Section 3.6 and Appendix F (SNL/NM March 2012). The monitoring objective is to provide data to evaluate biotic mobilization of contaminants (i.e., metals and radionuclides) from the subsurface to surface. Sampling of surface soil from animal burrows and ant hills is performed, as well as sampling of potentially deep-rooted vegetation, if present. Biota monitoring functions as an early warning detection system for biotic mobilization of contaminants to the surface so that timely action can be taken, if necessary. Results are compared to trigger levels defined in LTMMMP Section 5.2.2.2.

Biota monitoring field activities are described in Section 8.1, analytical laboratory results and a discussion of data quality are presented in Section 8.2, and data evaluation and a comparison of results to monitoring trigger levels are presented in Section 8.3. A summary of biota monitoring activities and results is provided in Section 11.1.

8.1 Biota Monitoring Field Activities

One annual sampling event was conducted during the April 1, 2015 through March 31, 2016 reporting period fulfilling the LTMMMP annual monitoring requirement. The biota sampling locations were identified during the growing season ET Cover Biology Inspection performed on August 3, 2015. The sampling locations are shown in Figure 8-1 and consist of two ant hills (MWL AHSS-01-2015 and MWL AHSS-02-2015). There were no animal burrows or potentially deep-rooted plants identified on the ET Cover during Biology Inspection. The two ant hill locations selected for surface soil sampling by the staff biologist were the largest and most active ant hills. The locations were also selected to provide good spatial coverage. Surface soil samples were collected at these locations on August 11, 2015 and analyzed for metals and gamma emitting radionuclides by gamma spectroscopy.

8.1.1 Field Quality Control

In accordance with the Tritium and Biota SAP (MWL LTMMMP Appendix G, Table G-4.2-1), one field QC sample (duplicate sample) was collected at MWL AHSS-02-2015.

8.1.2 Waste Management

Waste generated during sampling activities included PPE (i.e., gloves), and decontamination wipes. Analytical data collected from the sampling event was used to characterize the waste as non-hazardous; it was managed as solid waste.



Figure 8-1
Mixed Waste Landfill Biota Sampling Locations

8.2 Laboratory Results

Biota samples were submitted to GEL for analyses. Samples were analyzed in accordance with applicable EPA analytical methods. Gamma spectroscopy analytical results that are below the MDA are qualified with a “U” and are designated as below detection. Both laboratory and data validation qualifiers are included in the data tables presented in this section. Analytical laboratory reports, including certificates of analyses, analytical methods, MDAs and MDLs, sample results, dates of analyses, results of QC analyses, and data validation reports are filed in the SNL/NM Record Center.

8.2.1 Environmental Sample Results

Table 8-1 summarizes metal results and Table 8-2 summarizes gamma spectroscopy results. NMED-approved background concentrations and activities (Dinwiddie September 1997) and LTMMMP trigger levels are included in Tables 8-1 and 8-2 for comparison.

All metals results were at or below the respective NMED-approved background concentrations and below trigger levels. The vanadium concentration (20.9 mg/kg) in the environmental duplicate sample from location MWL-AHSS-02-2015 slightly exceeded the background concentration of 20.4 mg/kg. However, the vanadium concentration in the corresponding environmental sample (18.7 mg/kg) was below the background concentration. The selenium concentration for the same environmental sample (1.43 mg/kg) slightly exceeded the background concentration of <1 mg/kg. However, the selenium concentration in the corresponding the duplicate sample was 0.902 mg/kg. All cadmium, selenium, and silver results were non-detects or estimated concentrations near the MDL.

All gamma spectroscopy radionuclide results are very low activities below the respective NMED-approved background activities. Six of the 18 results were non-detects, and two results (U-238 for the MWL-AHSS-01-2015 sample and the U-235 result for the MWL-AHSS-02-2015 sample) were determined by the laboratory to be invalid (see Section 8.2.3, i.e., false positives) due to analytical uncertainty. The gamma spectroscopy results were reviewed by an SNL/NM radiological SME to screen for potential indications of radiological contamination; there were no indications of radiological anomalies in the biota soil sample results.

8.2.2 Field Quality Control Sample Results

Table 8-3 summarizes results of environmental-duplicate sample pairs and the RPD values calculated for the August data set. An RPD was calculated when metal analytes were reported in both the environmental and duplicate sample at concentrations greater than the RL, and when radionuclides were reported in both the environmental and duplicate sample at activities greater than the MDA. Calculated RPDs for metals and radiological constituents show good agreement, ranging from ≤ 1 to 18. As defined in Section 2.3, Appendix G of the LTMMMP, an RPD of less than or equal to 35 is considered acceptable for biota duplicate sampling results.

Table 8-1
Summary of Metals Results (EPA Method 6020/7470^a)
Mixed Waste Landfill Biota Monitoring
August 2015

| Sample Location | Parameter | NMED Background ^b (mg/kg) | Result (mg/kg) | Reporting Limit (mg/kg) | Trigger Level (mg/kg) | Laboratory Qualifier ^c | Validation Qualifier ^d |
|-------------------------------|-----------|---|-------------------|----------------------------|--------------------------|-----------------------------------|-----------------------------------|
| MWL AHSS-01-2015 11-Aug-15 | Arsenic | 5.6 | 4.61 | 2.83 | 17.7 | -- | -- |
| | Barium | 130 | 80.7 | 0.472 | 100,000 | N | J+ |
| | Beryllium | 0.65 | 0.459 | 0.472 | 2,260 | J | -- |
| | Cadmium | <1 | ND | 0.472 | 897 | U | -- |
| | Chromium | 17.3 | 7.17 | 0.472 | 63.1 | -- | -- |
| | Cobalt | 5.2 | 2.92 | 0.472 | 20,500 | -- | -- |
| | Copper | 15.4 | 7.63 | 0.943 | 45,400 | -- | -- |
| | Lead | 21.4 | 6.70 | 0.943 | 800 | * | -- |
| | Mercury | <0.25 | 0.00383 | 0.0108 | 73.6 | J | -- |
| | Nickel | 11.5 | 5.70 | 0.472 | 22,500 | -- | -- |
| | Selenium | <1 | 0.742 | 2.83 | 5,680 | J | -- |
| | Silver | <1 | 0.110 | 0.472 | 5,680 | J | -- |
| | Vanadium | 20.4 | 20.4 | 0.472 | 5,680 | -- | J |
| | Zinc | 62 | 24.5 | 0.943 | 100,000 | -- | -- |
| MWL AHSS-02-2015 11-Aug-15 | Arsenic | 5.6 | 4.94 | 2.99 | 17.7 | -- | -- |
| | Barium | 130 | 84.6 | 0.498 | 100,000 | N | J+ |
| | Beryllium | 0.65 | 0.483 | 0.498 | 2,260 | J | -- |
| | Cadmium | <1 | ND | 0.498 | 897 | U | -- |
| | Chromium | 17.3 | 7.72 | 0.498 | 63.1 | -- | -- |
| | Cobalt | 5.2 | 3.16 | 0.498 | 20,500 | -- | -- |
| | Copper | 15.4 | 6.71 | 0.996 | 45,400 | -- | -- |
| | Lead | 21.4 | 7.85 | 0.996 | 800 | * | -- |
| | Mercury | <0.25 | 0.0058 | 0.0112 | 73.6 | J | -- |
| | Nickel | 11.5 | 6.40 | 0.498 | 22,500 | -- | -- |
| | Selenium | <1 | 1.43 | 2.99 | 5,680 | J | -- |
| | Silver | <1 | 0.131 | 0.498 | 5,680 | J | -- |
| | Vanadium | 20.4 | 18.7 | 0.498 | 5,680 | -- | J |
| | Zinc | 62 | 23.0 | 0.0996 | 100,000 | -- | -- |

Refer to notes at end of table.

Table 8-1 (Concluded)
Summary of Metals Results (EPA Method 6020/7470^a)
Mixed Waste Landfill Biota Monitoring
August 2015

| Sample Location | Parameter | NMED Background ^b (mg/kg) | Result (mg/kg) | Reporting Limit (mg/kg) | Trigger Level (mg/kg) | Laboratory Qualifier ^c | Validation Qualifier ^d |
|--|-----------|---|-------------------|----------------------------|--------------------------|-----------------------------------|-----------------------------------|
| MWL AHSS-02-2015 11-Aug-15 (Duplicate) | Arsenic | 5.6 | 4.74 | 2.90 | 17.7 | -- | -- |
| | Barium | 130 | 87.8 | 0.483 | 100,000 | N | J+ |
| | Beryllium | 0.65 | 0.509 | 0.483 | 2,260 | -- | -- |
| | Cadmium | <1 | ND | 0.483 | 897 | U | -- |
| | Chromium | 17.3 | 8.27 | 0.483 | 63.1 | -- | -- |
| | Cobalt | 5.2 | 3.41 | 0.483 | 20,500 | -- | -- |
| | Copper | 15.4 | 6.71 | 0.965 | 45,400 | -- | -- |
| | Lead | 21.4 | 7.92 | 0.965 | 800 | * | -- |
| | Mercury | <0.25 | 0.00406 | 0.0119 | 73.6 | J | -- |
| | Nickel | 11.5 | 6.81 | 0.483 | 22,500 | -- | -- |
| | Selenium | <1 | 0.902 | 2.90 | 5,680 | J | -- |
| | Silver | <1 | 0.136 | 0.483 | 5,680 | J | -- |
| | Vanadium | 20.4 | 20.9 | 0.483 | 5,680 | -- | J |
| | Zinc | 62 | 24.5 | 0.0965 | 100,000 | -- | -- |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

^bDinwiddie September 1997, Letter from R.S. Dinwiddie (NMED) to M.J. Zamorski (DOE), "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

^cLaboratory Qualifier:

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

* = Relative Percent Difference (RPD) for replicate sample was greater than 20%, but less than 35%.

J = Estimated value, the analyte concentration is greater than the Method Detection Limit but less than the Reporting Limit.

N = Result for the associated matrix spike had high recovery.

U = Analyte was not detected.

^dValidation Qualifier:

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

J = Estimated value.

J+ = Value is estimated with a suspected positive bias.

DOE = U.S. Department of Energy

EPA = U.S. Environmental Protection Agency.

mg/kg = Milligram(s) per kilogram.

ND = Not detected above the MDL, shown in parentheses.

NMED = New Mexico Environment Department.

Table 8-2
Summary of Gamma Spectroscopy Results (EPA Method 901.1^a)
Mixed Waste Landfill Biota Monitoring
August 2015

| Sample Location | Parameter | Result (pCi/g) | MDA (pCi/g) | NMED Background ^b (pCi/g) | Laboratory Qualifier ^c | Validation Qualifier ^d |
|---|--------------------------|---------------------|-------------|--------------------------------------|-----------------------------------|-----------------------------------|
| MWL AHSS-01-2015 11-Aug-15 | Cesium-137 | 0.105 ± 0.0276 | 0.0277 | 1.5 | -- | -- |
| | Cobalt-60 | -0.00399 ± 0.0148 | 0.0261 | NA | U | BD |
| | Radium-226 | 0.633 ± 0.0884 | 0.0548 | 2.7 | -- | -- |
| | Thorium-232 ^e | 0.876 ± 0.0885 | 0.0439 | 1.5 | -- | -- |
| | Uranium-235 | 0.117 ± 0.140 | 0.153 | 0.18 | U | BD |
| | Uranium-238 | 1.24 ± 1.30 | 1.23 | 2.3 | X | R |
| MWL AHSS-02-2015 11-Aug-15 | Cesium-137 | 0.108 ± 0.0175 | 0.0166 | 1.5 | -- | -- |
| | Cobalt-60 | 0.000383 ± 0.0101 | 0.0181 | NA | U | BD |
| | Radium-226 | 0.725 ± 0.0782 | 0.0292 | 2.7 | -- | -- |
| | Thorium-232 ^e | 0.979 ± 0.101 | 0.0269 | 1.5 | -- | -- |
| | Uranium-235 | 0.0317 ± 0.0846 | 0.0955 | 0.18 | U | BD |
| | Uranium-238 | 0.977 ± 0.659 | 0.491 | 2.3 | -- | J |
| MWL AHSS-02-2015 (Duplicate) 11-Aug-15 | Cesium-137 | 0.101 ± 0.0176 | 0.0161 | 1.5 | -- | -- |
| | Cobalt-60 | -0.0000702 ± 0.0119 | 0.0176 | NA | U | BD |
| | Radium-226 | 0.694 ± 0.0742 | 0.0314 | 2.7 | -- | -- |
| | Thorium-232 ^e | 0.953 ± 0.0832 | 0.0256 | 1.5 | -- | -- |
| | Uranium-235 | 0.112 ± 0.0975 | 0.089 | 0.18 | X | R |
| | Uranium-238 | 0.259 ± 1.01 | 0.744 | 2.3 | U | BD |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

^bDinwiddie September 1997, Letter from R.S. Dinwiddie (NMED) to M.J. Zamorski (DOE), "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997. Cobalt-60 is not naturally occurring; therefore, it does not have a listed background activity. There are no established background activities for vegetation.

^cLaboratory Qualifier:

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

U = Analyte is below detection limit.

X = Analytical value is not valid due to peak not meeting identification criteria.

^dValidation Qualifier:

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

BD = Value is below the MDA or less than the 2-sigma uncertainty.

J = Estimated value.

R = Value is not valid, peak could not be identified.

^eThorium-232 activity is quantified and reported using the daughter isotope Lead-212 results.

DOE = U.S. Department of Energy.

EPA = U.S. Environmental Protection Agency.

MDA = Minimum detectable activity.

NA = Not applicable.

NMED = New Mexico Environment Department.

pCi/g = Picocuries per gram.

Table 8-3
Summary of Duplicate Sample Results
Mixed Waste Landfill Biota Monitoring
August 2015

| Sample Location | Environmental Sample (R ₁) | Duplicate Sample (R ₂) | RPD ^a |
|---|--|------------------------------------|------------------|
| MWL AHSS-02-2015 – Metals (mg/kg) | | | |
| Arsenic | 4.94 | 4.74 | 4 |
| Barium | 80.7 | 87.8 | 8 |
| Chromium | 7.17 | 8.27 | 14 |
| Cobalt | 2.92 | 3.41 | 15 |
| Copper | 7.63 | 6.71 | 13 |
| Lead | 6.70 | 7.92 | 17 |
| Nickel | 5.70 | 6.81 | 18 |
| Vanadium | 20.4 | 20.9 | 2 |
| Zinc | 24.5 | 24.5 | <1 |
| MWL AHSS-02-2015 – Radionuclides (pCi/g) | | | |
| Cesium-137 | 0.108 | 0.101 | 7 |
| Radium-226 | 0.725 | 0.694 | 4 |
| Thorium-232 | 0.979 | 0.953 | 3 |

Notes:

^aRPD = Relative percent difference is calculated with the following equation and rounded to the nearest whole number.

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

where: R₁ = Environmental sample result.
R₂ = Duplicate sample result.

mg/kg = Milligram(s) per kilograms(s).
pCi/g = Picocuries per gram.

8.2.3 Laboratory Quality Control Data Quality

Internal laboratory QC samples were analyzed concurrently with all environmental samples in accordance with laboratory procedures and EPA methods. These included laboratory control samples, method blanks, matrix spike, and matrix spike duplicate samples for the metals analyses. For the radiological analyses, method blank and laboratory control samples were analyzed with the environmental samples. The results were used to evaluate potential contamination associated with the laboratory analytical process and to determine the accuracy and precision of the analytical methods. All radiochemical data were reviewed and qualified in accordance with SNL/NM Administrative Operating Procedure (AOP) AOP 00-03, "Data Validation Procedure for Chemical and Radiochemical Data" (SNL/NM June 2014a). Data Validation Reports and Contract Verification Review forms are provided in Annex B.

No significant issues were identified with the metals results. For the radiological analyses, two results (U-238 for the MWL-AHSS-01-2015 sample and the U-235 result for the MWL-AHSS-02-2015 duplicate sample) were determined by the laboratory to be invalid. The U-238 result was rejected due to high counting uncertainty, and the U-235 result was rejected due to peak identification uncertainty. Both of these issues are related to the very low activity of these radionuclides in the sample, which makes it very difficult to both accurately identify the presence of the radionuclide and determine the activity. This is reflected in the 2-sigma error (plus or

minus value next to the result in Table 8-3) being very close to, or larger, than the result. For the U-235 result from the MWL-AHSS-02-2015 duplicate sample, the corresponding U-235 result in the associated environmental sample was a non-detect (i.e., result was less than the MDA). For these reasons, there is no requirement for resampling.

Based upon the data validation and review criteria, all analytical data were determined acceptable and met the DQOs. Reported QC samples results were in compliance with analytical method and laboratory procedure requirements.

8.3 Data Evaluation and Monitoring Trigger Level

Trigger levels for metals in surface soil samples collected at ant hills are specified in the MWL LTMMMP, Table 5.2.2-1 and included in Table 8-1. No surface soil metals results exceeded the trigger levels.

There are no trigger levels established for radionuclides. In accordance with the LTMMMP Section 5.2.2.2, the gamma spectroscopy results are compared with NMED-approved background activity levels (Dinwiddie September 1997), but the background activities are not considered trigger levels. All radionuclide results for surface soil samples collected at ant hills were below the NMED-approved background activity levels. No animal burrows or deep-rooted vegetation were identified for sampling.

9.0 INSPECTION, MAINTENANCE, AND REPAIR RESULTS

This chapter presents a summary of inspection, maintenance, and repair activities in accordance with requirements in MWL LTMM Section 4.0 and Appendix I, MWL Long-Term Monitoring Inspection Checklists/Forms (SNL/NM March 2012). Inspection requirements are summarized in Table 2-2 of this Annual LTMM Report. Table 9-1 lists the date(s) each type of inspection was performed during the April 1, 2015 through March 31, 2016 reporting period. Inspection results are presented in the following sections and documented on the inspection forms/checklists called out in Table 9-1 and provided in Annex F. A summary of inspection activities and results is provided in Section 11.2.

9.1 Final Cover System

The final cover system includes the ET Cover vegetation and ET Cover surface (note the term ET Cover includes the side slopes). ET Cover vegetation is inspected annually by an SNL/NM staff biologist, documented on the Biology Inspection Form/Checklist for the MWL Cover, and summarized in Section 9.1.1. The ET Cover surface is inspected quarterly by a field technician, documented on the MWL Cover Inspection Checklist/Form, and summarized in Section 9.1.2. During the quarterly inspections the field technician also inspects the storm-water diversion structures, security fence, and survey monuments (summarized in Sections 9.2 and 9.6).

9.1.1 Biology Inspection

One ET Cover Biology Inspection was performed by the staff biologist on August 3, 2015 fulfilling the requirement for an annual Biology Inspection during the reporting period growing season (Table 9-1). The ET Cover met all LTMM criteria. The approximate foliar coverage on the ET Cover was 54 percent, with 100 percent of this coverage composed of native vegetation. The foliar coverage is dominated by native grasses, with James' galleta (native grass species) comprising approximately 40 percent of the total foliar coverage. There were no contiguous areas without vegetation exceeding 200 square feet in size. No plants capable of developing deep root systems were observed. Fourteen ant hills were observed and noted on a site map included with the inspection form. The ant hills were located predominantly on the side slopes or on the cover surface near the side slopes. No animal burrows were observed on the ET Cover. No action or repairs were required based on the August 3, 2015 Biology Inspection. Additional information is provided on the August 3, 2015 Biology Inspection Form/Checklist (Annex F) and in the Biology Report (Annex G), which summarizes local climate trends and presents recommendations for the ET Cover.

9.1.2 ET Cover System/Surface Inspection

Four ET Cover surface inspections were performed by a field technician during the reporting period fulfilling the LTMM quarterly inspection requirement (Table 9-1). Inspection items that required maintenance or repairs are summarized as follows for each quarterly inspection.

Table 9-1
Inspection Frequency and Dates Performed
Mixed Waste Landfill
April 2015 – March 2016 Reporting Period

| Inspection Type | Frequency | Form/Checklist ^a | Date Performed |
|---|---------------------------|---|---------------------|
| ET Cover Biology Inspection | Annual ^b | Biology Inspection Checklist/Form | August 3, 2015 |
| ET Cover Surface Inspection | Quarterly | Cover Inspection Checklist/Form | May 21, 2015 |
| | | | August 7, 2015 |
| | | | November 4, 2015 |
| | | | February 17, 2016 |
| Storm-Water Diversion Structure Inspection ^c | Quarterly | Cover Inspection Checklist/Form | May 21, 2015 |
| | | | August 7, 2015 |
| | | | November 4, 2015 |
| | | | February 17, 2016 |
| Soil-Vapor Monitoring Network Inspection | Semiannually ^d | Soil-Vapor Monitoring Network Checklist/Form | April 13, 2015 |
| Groundwater Monitoring Network Inspection | Semiannually ^d | Groundwater Monitoring Network Checklist/Form | October 8, 2015 |
| | | | April 6, 2015 |
| Soil-Moisture Monitoring Network Inspection | Semiannually ^d | Soil-Moisture Monitoring Network Checklist/Form | October 12, 2015 |
| | | | April 21 & 23, 2015 |
| Security Fence Inspection ^c | Quarterly | Cover Inspection Checklist/Form | October 8, 2015 |
| | | | May 21, 2015 |
| | | | August 7, 2015 |
| | | | November 4, 2015 |
| | | | February 17, 2016 |

Notes:

^aAll reporting period inspection forms are provided in Annex F.

^bTransition from quarterly to annual inspection frequency based upon meeting successful revegetation criteria as determined by the staff biologist during the August 14, 2014 growing season Biology Inspection.

^cThese inspections are conducted at the same time as the ET Cover Surface Inspection and documented on the same inspection form.

^dMonitoring network inspections are performed at the same frequency and at the same time as the associated monitoring.

ET = Evapotranspirative.

May 21, 2015 Inspection

Early growth seedlings of Russian thistle (i.e., tumbleweeds) were noted on and around the ET Cover. From July 6 – 8, 2015, tumbleweeds were removed from the ET Cover and perimeter area. As a preventive measure to reduce the abundance of local weed seeds, post-emergent herbicide was applied to the North and South Staging Areas after the removal of tumbleweeds in these perimeter areas. During the inspection, dead, dry tumbleweeds were also removed from the perimeter fence line.

August 7, 2015

No inspection items required maintenance or repairs.

November 4, 2015

During this inspection two SNL/NM staff biologists assisted the field technician in the inspection of the ET Cover and surrounding perimeter area for signs of animal intrusion (i.e., burrows). No burrows were observed on the ET Cover, but small animal burrows (less than 4-inches in

diameter) were observed in the perimeter area, including in the soil pile north of the ET Cover within the security fence area, and in the vicinity of some of the perimeter monitoring wells. No maintenance or repairs were required, but monitoring of the ET Cover and perimeter area for animal burrows will continue to be performed on a quarterly frequency.

February 17, 2016

During this inspection the SNL/NM staff biologist assisted the field technician in the inspection of the ET Cover and surrounding perimeter area for biological parameters. Observations of the ET Cover vegetation were consistent with the August 2015 Biology Inspection (i.e., vegetation is in good condition with good spatial coverage). No burrows were observed on the ET Cover. Ant hills were observed on the cover but were all inactive due to winter dormancy. Animal burrows were observed in the perimeter area and noted for continued observation in future inspections. Small animal burrows adjacent to the MWL-VZ-3 and MWL VZ-1 soil-moisture monitoring access tube concrete pads were investigated and backfilled to protect the monitoring wells. A gravel-soil mixture was used to backfill the MWL-VZ-3 burrows to discourage future burrowing in this area after taking measures to allow the animals to vacate. The burrow near MWL-VZ-1 was inadvertently backfilled by foot traffic along the western ET Cover perimeter, where seven monitoring wells are located. A small animal burrow was previously noted, inspected, and backfilled at the MWL-VZ-3 location based on the October 8, 2015 soil-moisture monitoring network inspection (see Section 9.4). More detailed information is provided with the February 2016 inspection form (Annex F).

Based on this experience, planning is underway to establish a protective surface barrier around each of the perimeter monitoring well concrete pads to prevent burrowing in the future. This best management practice will protect the integrity of the monitoring wells and minimize long-term maintenance.

9.2 Storm-Water Diversion Structure Inspection

Storm-water diversion structure inspections were combined with the quarterly ET Cover System/Surface Inspections during the reporting period, fulfilling the LTMMMP quarterly inspection requirement (Table 9-1). These inspections addressed the storm-water diversion swale on the north, east, and south sides of the ET Cover (just beyond the toe of the cover side slopes), and were documented on the same Cover Inspection Checklist/Form. No inspection items required follow-up actions. However, live or windblown weeds that were present were removed from the swale during the July 6 – 8, 2015 ET Cover weed removal event as a best management practice.

9.3 Soil-Vapor Monitoring Network Inspection

Two inspections of the soil-vapor monitoring network were performed as part of the semiannual soil-vapor monitoring events conducted during the reporting period, fulfilling the LTMMMP inspection requirement (Table 9-1). No inspection items required follow-up actions.

9.4 Soil-Moisture Monitoring Network Inspection

Two inspections of the soil-moisture monitoring network were performed as part of the semiannual monitoring events conducted during the reporting period, fulfilling the LTMMMP inspection requirement (Table 9-1). A small animal burrow entrance leading under the concrete pad of MWL-VZ-3 was identified during the October 8, 2015 inspection. On November 4, 2015 an inspection of the area, including a downhole video inspection of the burrow, was performed by an SNL/NM staff biologist. The burrow was backfilled as a best management practice after the staff biologist determined no animal was present in the burrow. No other inspection items required action.

9.5 Groundwater Monitoring Well Network Inspection

Two inspections of the groundwater monitoring well network were performed as part of the semiannual monitoring events conducted during the reporting period, fulfilling the LTMMMP inspection requirement (Table 9-1). No inspection items required follow-up actions.

9.6 Security Fence Inspection

Perimeter security fence inspections were combined with the four quarterly ET Cover System/Surface Inspections during the reporting period, fulfilling the LTMMMP inspection requirement (Table 9-1). The inspections addressed the security fence, access controls (gates, locks, signs), and survey monuments, and were documented on the same Cover Inspection Checklist/Form. Results of the quarterly inspections are provided below.

May 21, 2015 – Quarterly Inspection

Accumulation of dead, dry wind-blown tumbleweeds was identified and removed from the fence at time of the inspection. No other inspection items required action.

August 7, 2015 – Quarterly Inspection

The lock on the south gate required maintenance, and was replaced at time of the inspection. No other inspection items required action.

November 4, 2015 – Quarterly Inspection

Several warning signs were coming loose from the perimeter security fence. They were repaired at time of the inspection. No other inspection items required action.

February 17, 2016 – Quarterly Inspection

No inspection items required action.

9.7 ET Cover Maintenance and Supplemental Watering

Efforts completed since ET Cover construction in 2009 to establish self-sustaining, native grasses on the ET Cover have been successful. As a result, minimal maintenance was required during this reporting period, and no supplemental watering was conducted. Routine ET Cover maintenance for the removal of invasive weed growth was conducted as part of the quarterly ET Cover System/Surface Inspections discussed in Section 9.1.2.

No supplemental watering was required during the 2015 growing season due to the mature condition of the native grasses and adequate natural precipitation. The temporary irrigation system installed on top of the ET Cover surface in 2011 was dismantled and removed from July 30 through August 3, 2015. The polyvinyl chloride pipe was deteriorating and it no longer appears that supplemental watering is needed based on current ET Cover conditions. If supplemental watering is needed in the future, other options will be used to apply the water.

This page intentionally left blank.

10.0 REGULATORY ACTIVITIES

On January 8, 2014, the NMED approved the MWL LTMM (Blaine January 2014). All MWL regulatory submittals since full implementation of the LTMM are summarized in Section 10.1, along with submittals that occurred during this April 1, 2015 through March 31, 2016 reporting period. The Class 3 Permit Modification for CAC with Controls status for the MWL was approved during this reporting period and is summarized in Section 10.2.

Post-LTMM implementation submittals, including submittals associated with the April 2015 through March 2016 reporting period, are summarized in this Section. There were no modification requests during the reporting period related to changing the LTMM.

10.1 MWL Regulatory Submittals

This section addresses post-LTMM implementation MWL regulatory submittals, including submittals that occurred during this reporting period. All MWL post-LTMM implementation regulatory submittals are summarized in Table 10-1. Previous regulatory submittals associated with full implementation of the LTMM are summarized in the MWL Annual LTMM Report, April 2014 – March 2015 (SNL/NM June 2015).

Table 10-1
Mixed Waste Landfill Long-Term Monitoring and Maintenance Plan Document Submittal History

| Date of Submittal ^a | LTMM Requirement | Description of Submittal |
|--------------------------------|---------------------------|--|
| March 6, 2014 | Appendices C through G | Procedures, plans, and documents cited in the LTMM used by SNL/NM personnel for air, surface soil, soil vapor, soil moisture, biota, and groundwater monitoring. |
| June 18, 2014 | Section 4.8.1 | MWL Annual LTMM Report, January – March 2014. |
| July 9, 2014 | Appendices C, D, F, and G | Updates to two documents used by SNL/NM personnel to validate analytical data from contract laboratories and conduct activities related to sampling MWL soil-vapor wells. Updates to the health and safety plan for groundwater monitoring at the MWL. |
| February 18, 2015 | Appendix F | Updates to reference documents used by SNL/NM personnel to conduct groundwater monitoring activities at the MWL. |
| June 8, 2015 | Section 4.8.1 | MWL Annual LTMM Report, April 2014 – March 2015. |

Notes:

^aDate represents the date stamp on the DOE transmittal letter for the submittal.

DOE = U.S. Department of Energy.

LTMM = Long-Term Monitoring and Maintenance.

LTMM = Long-Term Monitoring and Maintenance Plan.

MWL = Mixed Waste Landfill.

SNL/NM = Sandia National Laboratories/New Mexico

Regulatory submittals during this reporting period included the MWL Annual LTMM Report, April 2014 – March 2015 (SNL/NM June 2015). This second Annual LTMM Report was approved by NMED in October 2015 (Kielling October 2015 and March 2016).

10.2 Class 3 Permit Modification Request for Corrective Action Complete With Controls for the Mixed Waste Landfill

DOE and Sandia requested a Certification of Completion for the MWL in accordance with Section VII.D.6 of the Compliance Order on Consent on September 25, 2014 (Beausoleil September 2014). On October 8, 2014, NMED determined that all LTMM monitoring systems were deployed for long-term controls and issued the Certificate of Completion (Cobrain October 2014). DOE and Sandia submitted a request dated October 17, 2014 to NMED for a Class 3 Permit Modification for CAC with Controls at the MWL (Beausoleil October 2014). The request and associated legal notice initiated the DOE and Sandia 60-day public comment period that ended on January 5, 2015 and included a DOE and Sandia-hosted public meeting on November 18, 2014. NMED initiated a 60-day public comment period that started on January 12, 2015 (Cobrain January 2015). On March 17, 2015 NMED extended this public comment period an additional 30 days, to April 13, 2015.

During this reporting period on April 29 and May 4, 2015, the NMED conducted informal negotiations open to all parties that requested a hearing during the public comment period. These meetings did not resolve identified issues to the satisfaction of all parties that requested a hearing, so the NMED proceeded with a public hearing from July 8 through 11, 2015. The Hearing Officer issued a report on October 13, 2015 recommending that the NMED Secretary modify the Permit to reflect that the MWL is CAC with Controls. On February 12, 2016, the NMED Secretary issued a Final Order (Flynn February 2016) adopting the Hearing Officer Report with minor modifications, and granting the Class 3 Permit Modification to reflect that the MWL is CAC with Controls. The Final Order became effective on March 13, 2016 after no party filed a legal challenge to the Final Order.

11.0 SUMMARY AND CONCLUSIONS

This chapter presents a summary and conclusions of all MWL LTMMP monitoring, inspection, and maintenance/repair activities in this reporting period.

11.1 Monitoring Activities

All monitoring activities for the April 1, 2015 through March 31, 2016 reporting period were completed in accordance with LTMMP requirements. The results for each monitoring activity are summarized as follows.

Radon Monitoring

The radon air monitoring frequency is quarterly. The average radon concentrations for the four quarters ranged from 0.5 to 0.7 pCi/L at monitoring locations RN1 through RN15, and average background radon concentrations at locations RN16 and RN17 ranged from 0.6 to 0.7 pCi/L. The results for locations RN1 through RN10 were all below the trigger level of 4.0 pCi/L.

In accordance with the LTMMP, the radon monitoring frequency will transition to semiannual for the next reporting period. Two years of quarterly radon monitoring have been completed.

Tritium Surface Soil Monitoring

The tritium surface soil monitoring frequency is annual. Soil samples were collected on August 4, 2015. Tritium activities ranged from 269 to 719 pCi/L, which are low activities and consistent with historical data. All values were below the trigger level of 20,000 pCi/L.

Soil-Vapor Monitoring

The vadose zone soil-vapor monitoring frequency is semiannual. A total of 20 compounds were detected above laboratory MDLs between the two sampling events. Results for PCE, TCE, and Total VOCs from the deepest port of wells MWL-SV03, MWL-SV04, and MWL-SV05 were below the 20 ppmv trigger level for PCE and TCE, and the 25 ppmv trigger level for Total VOCs. The maximum concentrations detected for PCE and TCE at the 400 feet bgs sampling ports were 0.450 ppmv and 0.350 ppmv, respectively. The maximum concentration for Total VOCs was 0.9592 ppmv. Soil-vapor monitoring results indicate a relatively uniform distribution of low concentration VOCs throughout the 500-foot thick vadose zone that are not a threat to groundwater. This distribution is consistent with an old source that has dissipated throughout the vadose zone, and indicates the VOC soil-vapor plume is stable with no new releases from the disposal area.

Soil-Moisture Monitoring

The vadose zone soil-moisture monitoring frequency is semiannual. The trigger level for soil moisture applies to the shallow depth interval of 8.7 to 86.6 feet bgs at the three monitoring locations. The soil-moisture content by volume for this depth interval ranged from 1.4 to 5.2 percent, below the 23 percent soil-moisture content by volume trigger level. Soil moisture monitoring results are consistent with baseline results established prior to ET Cover construction.

Groundwater Monitoring

The groundwater monitoring frequency is semiannual. No constituents were detected in groundwater at concentrations exceeding trigger levels and the results are consistent with historical MWL groundwater monitoring results.

Biota Monitoring

Biota monitoring frequency is annual. All results were below the trigger levels and radionuclide results were below background activities.

11.2 Inspections/Maintenance/Repairs Activities

The annual ET Cover Biology Inspection was performed in August 2015 during the growing season. The ET Cover continues to meet LTMMP successful revegetation criteria. Efforts completed since ET Cover construction in 2009 to establish self-sustaining, native grasses on the ET Cover have been successful. As a result, minimal maintenance was required during this reporting period, and no supplemental watering was needed. The ET Cover vegetation is in good condition and no issues requiring maintenance or repairs were identified.

The ET Cover System/Surface Inspection was performed quarterly. Minor maintenance was performed during the inspections or within 60 days of the inspection, including the removal of Russian thistle weeds in early July 2015 from the ET Cover and perimeter area. Small animal burrows identified during the February 2016 inspection in the immediate vicinity of perimeter monitoring wells MWL-VZ-1 and MWL-VZ-3 were backfilled in March 2016. Planning is underway to establish a protective surface barrier around the perimeter monitoring well concrete pads to prevent burrowing in the future. This best management practice will protect the integrity of the monitoring wells and minimize long-term maintenance.

The engineered storm-water drainage swale inspection was performed quarterly. There were no issues identified. During the July 6 – 8, 2015 ET Cover weed removal event, dead and/or live weeds present in the swale were removed as a best management practice.

The soil-vapor monitoring network inspection was performed semiannually. There were no issues identified.

The soil-moisture monitoring network inspection was performed semiannually. Small animal burrows in the immediate vicinity MWL-VZ-3 were backfilled in November 2015 after inspection by the staff biologist as part of the October 2015 inspection. There were no other issues identified.

The groundwater monitoring network inspection was performed semiannually. There were no issues identified.

The perimeter security fence inspection that also includes access controls (i.e., gates, locks, signs) and survey monuments was performed quarterly. Minor maintenance was performed during three of the four inspections, including the removal of wind-blown plant debris from the fence, repair of warning signs, and the replacement of the lock on the south gate. There were no other issues identified.

11.3 Regulatory Activities

Regulatory activities during the April 2015 – March 2016 reporting period included submittal of the second MWL Annual LTMM Report, April 2014 – March 2015, in June 2015. NMED approved the report in October 2015.

The Class 3 Permit Modification for CAC with Controls for the MWL that DOE and Sandia requested in October 2014 was granted by NMED in February 2016. During this reporting period the associated regulatory process included completion of the NMED public comment period in April 2015, informal negotiations held by NMED on April 29 and May 4, 2014, a four-day public hearing held from July 8 – 11, 2015, the Hearing Officer Report issued on October 13, 2015, and the Final Order issued by the NMED Secretary on February 12, 2016. The February 2016 Final Order became effective on March 13, 2016.

11.4 Conclusions

DOE and Sandia have performed and documented all required MWL LTMM monitoring, inspection, and maintenance/repair requirements for the April 1, 2015 through March 31, 2016 reporting period. This third Annual LTMM Report presents the monitoring, inspection, and maintenance/repair activities and results for the reporting period as required by the MWL LTMM, Section 4.8.1. The monitoring and inspection results indicate the final remedy, which includes the ET Cover and related physical controls, is performing as designed. DOE and Sandia continue to maintain institutional controls related to the MWL. No monitoring trigger levels were exceeded. Based on monitoring and inspection results, site conditions continue to be protective of human health and the environment.

This page intentionally left blank.

12.0 REFERENCES

American Public Health Association American Water Works Association, and Water Environment Federation, 1988. "Standard Methods for the Examination of Water and Wastewater," 7500-Rn B Method, 20th Edition, published jointly by American Public Health Association, American Water Works Association, and Water Environment Federation. Washington, D.C., 1998.

Beausoleil, G. L. (U.S. Department of Energy), September 2014. Letter to J.E. Kieling (New Mexico Environment Department Hazardous Waste Bureau), "Department of Energy/National Nuclear Security Administration Sandia Corporation Request for Certificate of Completion for the Mixed Waste Landfill at Sandia National Laboratories, New Mexico," September 25, 2014.

Beausoleil, G. L. (U.S. Department of Energy), October 2014. Letter to J.E. Kieling (New Mexico Environment Department Hazardous Waste Bureau), "Request for Class 3 Modification to Module IV of Hazardous Waste Permit for Sandia National Laboratories/New Mexico, EPA ID NM5890110518, New Mexico," October 17, 2014.

Blaine, T. (New Mexico Environment Department), January 2014. Letter to G.L. Beausoleil (U.S. Department of Energy NNSA/Sandia Site Office) and S. Andrew Orrell (Sandia National Laboratories/New Mexico), "Approval, Mixed Waste Landfill Long-Term Monitoring and Maintenance Plan, March 2012, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-12-007," January 8, 2014.

Cobrain, D. (New Mexico Environment Department), October 2014. Letter to G. Beausoleil (U.S. Department of Energy NNSA/Sandia Site Office) and S.A. Orrell (Sandia National Laboratories, New Mexico), "Certificate of Completion for the Mixed Waste Landfill, September 25, 2014, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-14-MISC," October 8, 2014.

Cobrain, D. (New Mexico Environment Department), January 2015. Letter to G. Beausoleil (U.S. Department of Energy NNSA/Sandia Site Office) and P.B. Davies (Sandia National Laboratories, New Mexico), "Notice of Public Comment Period for Proposed Determination of Corrective Action Complete With Controls for Sandia National Laboratories Mixed Waste Landfill, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-14-014," January 12, 2015.

Curry, R. (New Mexico Environment Department), May 2005. "Final Order, State of New Mexico Before the Secretary of the Environment in the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill, Sandia National Laboratories, Bernalillo County, New Mexico," EPA ID# 5890110518." May 26, 2005.

Dinwiddie, R.S. (New Mexico Environment Department), September 1997. Letter to M.J. Zamorski (U.S. Department of Energy), "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," September 24, 1997.

EPA, see U.S. Environmental Protection Agency.

Flynn, R. (New Mexico Environment Department), February 2016. Final Order No. HWB 15-18 (P), State of New Mexico Before the Secretary of the Environment in the Matter of Proposed Permit Modification for Sandia National Laboratories, EPA ID #5890110518, To Determine Corrective Action Complete with Controls at the Mixed Waste Landfill, New Mexico Environment Department, Santa Fe, New Mexico, February 12, 2016.

Goering, T.J., G.M. Haggerty, D. Van Hart, and J.L. Peace, December 2002. "Mixed Waste Landfill Groundwater Report, 1990 through 2001, Sandia National Laboratories, Albuquerque, New Mexico," SAND2002-4098, Sandia National Laboratories, Albuquerque, New Mexico.

Kieling, J.E. (New Mexico Environment Department), October 2015. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and M.W. Hazen (Sandia National Laboratories, New Mexico), "Approval, Mixed Waste Landfill Annual Long-Term Monitoring & Maintenance Report, April 2014 – March 2015, June 2015, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-15-011," October 16, 2015.

Kieling, J.E. (New Mexico Environment Department), February 2016. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and P.B. Davies (Sandia National Laboratories, New Mexico), "Approval, Final Decision on Proposal to Grant Corrective Action Complete with Controls Status for Mixed Waste Landfill, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-14-014," February 18, 2016.

Kieling, J.E. (New Mexico Environment Department), March 2016. Letter to J.P. Harrell (U.S. Department of Energy NNSA/Sandia Field Office) and P.B. Davies (Sandia National Laboratories, New Mexico), "Approval, Mixed Waste Landfill Annual Long-Term Monitoring & Maintenance Report, April 2014 – March 2015, June 2015, Sandia National Laboratories, EPA ID# NM5890110518, HWB-SNL-15-011," March 22, 2016. [note: letter corrects the date the report was submitted to NMED, which was incorrect in the October 2015 approval letter]

New Mexico Environment Department (NMED), April 2004. "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act § 74-4-10," prepared by the New Mexico Environment Department in the matter of Respondents U.S. Department of Energy and Sandia Corporation, Sandia National Laboratories, Bernalillo County, New Mexico, April 29, 2004.

New Mexico Environment Department (NMED), October 2009 and subsequent revisions. "Resource Conservation and Recovery Act, Post-Closure Care Permit, EPA ID No. NM5890110518, to the U.S. Department of Energy/Sandia Corporation, for the Sandia National Laboratories Chemical Waste Landfill," New Mexico Environment Department Hazardous Waste Bureau, Santa Fe, New Mexico, October 15, 2009. Revised November 7, 2013.

New Mexico Environment Department (NMED), January 2015. "Resource Conservation and Recovery Act Facility Operating Permit EPA ID Number NM5890110518 Issued to the U.S. Department of Energy/Sandia Corporation for the Sandia National Laboratories Hazardous and Mixed Waste Treatment and Storage Units and Post-Closure Care of the Corrective Action Management Unit," January 27, 2015.

NMED, see New Mexico Environment Department.

Peace, J.L., T.J. Goering, M.D. McVey, September 2002. "Report of the Mixed Waste Landfill Phase 2 RCRA Facility Investigation, Sandia National Laboratories, Albuquerque, New Mexico," SAND2002-2997, Sandia National Laboratories, Albuquerque, New Mexico.

Peace, J.L., P.J. Knight, T.S. Ashton, and T.J. Goering, November 2004. "Vegetation Study in Support of the Design and Optimization of Vegetative Soil Covers, Sandia National Laboratories, Albuquerque, New Mexico," SAND2004-6144, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), August 2008. "Investigation Report on the Soil-Vapor Volatile Organic Compounds, Tritium, and Radon Sampling at the Mixed Waste Landfill," Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), June 2010. "Mixed Waste Landfill Groundwater Monitoring Report, Calendar Year 2009," Sandia National Laboratories, Albuquerque, New Mexico, June 7, 2010.

Sandia National Laboratories, New Mexico (SNL/NM), March 2012. "Long-Term Monitoring and Maintenance Plan for the Mixed Waste Landfill," Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), June 2014a. "Data Validation Procedure for Chemical and Radiochemical Data," AOP 00-03, Revision 4, Sample Management Office, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), June 2014b. "Field Operating Procedure, Soil Vapor Monitoring, Revision 03," SNL/NM FOP 08-22, Long-Term Stewardship Department, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), June 2015. "Mixed Waste Landfill Annual Long-Term Monitoring and Maintenance Report, April 2014 – March 2015," Sandia National Laboratories, Albuquerque, New Mexico.

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

Sullivan, R.M., and P.J. Knight, 1992. "Biological Assessment for the Sandia National Laboratories Coyote Canyon Test Complex, Kirtland Air Force Base, Albuquerque, New Mexico," Special Technical Report 1 (Contract AB4892), Physical Sciences Laboratory, Las Cruces, New Mexico.

U.S. Environmental Protection Agency (EPA), 1980. "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA-600/4-80-032, Center for Environmental Research Information, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio.

U.S. Environmental Protection Agency (EPA), November 1986. "Test Methods for Evaluating Solid Waste," Third Edition, Update 3, SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), January 1999. "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition, Compendium Method TO-15," Center for Environmental Research Information, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio.

ANNEX A

**Mixed Waste Landfill
Radon Monitoring**

January-December 2015

Data Evaluation Memos

Field Forms

Inspection Forms

Contract Verification Reviews

MIXED WASTE LANDFILL

RADON MONITORING

January-March 2015 Monitoring Period



Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Albuquerque, New Mexico 87185-

date: April 22, 2015

to: Mike Mitchell (6234), Robert Ziock (4142), Bonnie Little (4142) and Annemarie Rader (4143)

from: Mark Miller (41281), CHP

subject: Review of MWL Radon-in-Air Data – 1st Quarter of 2015, January through March 2015

The purpose of this memo is to document my review of the radon-in-air monitoring data results for the 1st Quarter of Calendar Year (CY) 2015, January through March 2015, relative to the data quality objective (DQO) and monitoring objectives specified in the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (Appendix C, *Air Sampling and Analysis Plan for the Mixed Waste Landfill*). The DQO for this monitoring is to produce representative, accurate, defensible, and comparable analytical results to support the monitoring objective. Monitoring results provide radon emission data from across the site and at two background locations (Figure 1). These results are compared to historic results to evaluate radon air emission trends and for direct comparison to the LTMMMP trigger level of 4 picocuries per liter. This DQO and these monitoring objectives are met through the implementation of standard operating procedures, analytical procedures/methods, quality assurance and control measures, and data evaluation protocol.

The radon-in-air monitoring measurements for the monitoring period January through March 2015 were obtained using Radtrak® radon detectors that were submitted to Landauer® Incorporated for analysis on Analysis Request/Chain of Custody (AR/COC) #615960. On January 7, 2015, the detectors were deployed on and around the MWL (locations RN1 through RN15 at the MWL, background locations RN16 and RN17, and a trip blank that was never exposed, RN18) in accordance with the requirements of Section 3.2.1 of the LTMMMP. These detectors remained in the field for approximately 3 months (one quarter), and were collected on April 2, 2015. The protective casing and mounting hardware were inspected during the collection effort and repairs were made if needed. The location of these detectors is shown in Figure 1.

I have reviewed the results for this monitoring period along with supporting field documentation and determined the results meet the LTMMMP DQO and monitoring objectives. The radon trigger level was not exceeded by any of the individual sample results; however, it only applies to the results from the perimeter locations (locations RN1 through RN10, Figure 1). The results from this quarterly monitoring event will be presented in the next MWL Annual LTMM Report that will be submitted to NMED in June 2016 (reporting period is April 1, 2015 through March 31, 2016).

Attachments:

Analysis Request/Chain of Custody #616121

Landauer Radon Monitoring Report (analytical laboratory results)

Figure 1 Location of the Radon Track Etch® Detectors at the MWL

SMO 2012-ARCO (4-2012)

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

AOP 95-16

Internal Lab

Page 1 of 2

Batch No. N/A

SMO Use

AR/COC **616121**

| | | | |
|--------------------------------------|-------------------------------------|---|--|
| Project Name: MWL Radon monitoring | Date Samples Shipped: <u>4/2/15</u> | SMO Authorization: <u>[Signature]</u> | <input type="checkbox"/> Waste Characterization |
| Project/Task Manager: R. Ziock | Carrier/Waybill No. <u>231732</u> | SMO Contact Phone: <u>Robert Ziock/505-845-0485</u> | <input type="checkbox"/> RMMA |
| Project/Task Number: 146422/10.11.08 | Lab Contact: Landauer 800.528.8327 | | <input type="checkbox"/> Released by COC No. <input type="checkbox"/> 4° Celsius |
| Service Order: CFO 378-15 | Lab Destination: Landauer, INC. | Send Report to SMO: Rita Kavanaugh/505.284.2553 | |
| | Contract No.: Acct # 0410548 | | |

Tech Area: TA3 MWL
Building: Room: Operational Site: TA3 MWL
Bill to: Sandia National Laboratories (Accounts Payable),
P.O. Box 5800, MS-0154
Albuquerque, NM 87185-0154

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|----------------|--------|--------------|-------------------|-------------|------------------------------|---------------|
| 097656 | --001 | RN 1/ 4982883 ✓ | N/A | 4/2/15 1033 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097657 | --001 | RN 2/ 4982884 ✓ | N/A | 4/2/15 959 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097658 | --001 | RN 3/ 4982885 ✓ | N/A | 4/2/15 1003 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097659 | --001 | RN 4/ 4982886 ✓ | N/A | 4/2/15 1007 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097660 | --001 | RN 5/ 4982887 ✓ | N/A | 4/2/15 1019 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097661 | --001 | RN 6/ 4982984 ✓ | N/A | 4/2/15 1021 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097662 | --001 | RN 7/ 4982985 ✓ | N/A | 4/2/15 1023 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097663 | --001 | RN 8/ 4982986 ✓ | N/A | 4/2/15 1027 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097664 | --001 | RN 9/ 4982988 ✓ | N/A | 4/2/15 1030 | F | N/A | N/A | None | Collection | Sample | Radon | |
| 097665 | --001 | RN 10/ 4983142 ✓ | N/A | 4/2/15 1031 | F | N/A | N/A | None | Collection | Sample | Radon | |

| | | | | | |
|--|-----------------|---|---|---------------------------------|---------|
| Last Chain: <input type="checkbox"/> Yes | Sample Tracking | SMO Use | Special Instructions/QC Requirements: Parameter & Method | Conditions on Receipt | |
| Validation Req'd: <input type="checkbox"/> Yes | Date Entered: | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| Background: <input type="checkbox"/> Yes | Entered by: | Negotiated TAT <input type="checkbox"/> | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | |
| Confirmatory: <input type="checkbox"/> Yes | QC initials: | Return Samples By: | Comments: | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | Lab Use |
| | Annemarie Rader | <u>[Signature]</u> | <u>AR</u> | SNL/4143/844-2640 | |
| | | | | | |
| | | | | | |

| | |
|--|---|
| 1. Relinquished by <u>[Signature]</u> Org. 4143 Date <u>4-2-15</u> Time <u>1822</u> | 3. Relinquished by _____ Org. _____ Date _____ Time _____ |
| 1. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/2/15</u> Time <u>0720</u> | 3. Received by _____ Org. _____ Date _____ Time _____ |
| 2. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/2/15</u> Time <u>0738</u> | 4. Relinquished by _____ Org. _____ Date _____ Time _____ |
| 2. Received by <u>[Signature]</u> Org. _____ Date <u>4-8-15</u> Time _____ | 4. Received by _____ Org. _____ Date _____ Time _____ |

*Prior confirmation with SMO required for 7 and 15 day TAT

[illegible]

SANDIA NATIONAL LABORATORIES
ATTN: ALTA KAYANAGHI
1055 EUBANK SE, ORG 4142
Bldg 1090/120, Mail 103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL, 100504RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1786
Telephone: (800)538-6327 Fax: (708) 735-7006

Correction Data: LOCATION CORRECTION

*** COLLECTED RESPONSE ***

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|-----------------------|-------------------|------------------------|--|
| 4982883 | LDN2 | 07 JAN 15 | 02 APR 15 | 007656 J001 | 79.8 17.07 | 0.9 10.08 | |
| 4982884 | LDN2 | 07 JAN 15 | 02 APR 15 | 007657 J002 | 91.7 ±8.16 | 1.1 ±0.10 | |
| 4982885 | LDN2 | 07 JAN 15 | 02 APR 15 | 007658 J003 | 76.8 17.19 | 0.9 10.08 | |
| 4982886 | LDN2 | 07 JAN 15 | 02 APR 15 | 007659 J004 | 59.6 ±6.65 | 1.2 ±0.10 | |
| 4982887 | LDN2 | 07 JAN 15 | 02 APR 15 | 007660 J005 | 54.6 16.49 | 1.1 10.10 | |
| 4982888 | LDN2 | 07 JAN 15 | 02 APR 15 | 007661 J006 | 63.0 ±6.56 | 0.8 ±0.08 | |
| 4982889 | LDN2 | 07 JAN 15 | 02 APR 15 | 007662 J007 | 77.0 ±7.45 | 0.9 ±0.09 | |
| 4982890 | LDN2 | 07 JAN 15 | 02 APR 15 | 007663 J008 | 73.8 ±7.51 | 0.9 ±0.09 | |
| 4982891 | LDN2 | 07 JAN 15 | 02 APR 15 | 007664 J009 | 56.6 ±6.54 | 1.1 ±0.10 | |
| 4982892 | LDN2 | 07 JAN 15 | 02 APR 15 | 007665 J010 | 60.7 ±7.63 | 0.9 ±0.09 | |

RESULTS RELATE ONLY TO MONITORING
AS RECEIVED BY LANDAUER. RADON IS
AND BY ALPHA TRACK FOR 400 RPM 004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| LOW | A23020 | 00 APR 15 | 08 APR 15 |

Mark Salaskey
Radon Measurement Specialist

SANDIA NATIONAL LABORATORIES
ATTN: RITA KAVANAUGH
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL,100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

Correction Data: LOCATION CORRECTION

*** CORRECTED REPORT ***

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|---|---------------------|------------------------|--|
| 4983058 | DRNF | 07-JAN-15 | 02-APR-15 | 097670 RN15 | 59.9 ±6.28 | 0.7 ±0.07 | |
| 4983059 | DRNF | 07-JAN-15 | 02-APR-15 | 097671 RN16 | 55.0 ±5.93 | 0.6 ±0.07 | |
| 4983060 | DRNF | 07-JAN-15 | 02-APR-15 | 097672 RN17 | 60.9 ±6.35 | 0.7 ±0.07 | |
| 4983142 | DRNF | 07-JAN-15 | 02-APR-15 | 097665 RN10 | 54.0 ±5.86 | 0.6 ±0.07 | |
| 4983144 | DRNF | 07-JAN-15 | 02-APR-15 | 097666 RN11 | 84.7 ±7.87 | 1.0 ±0.09 | |
| 4983145 | DRNF | 07-JAN-15 | 02-APR-15 | 097667 RN12 | 64.9 ±6.62 | 0.8 ±0.08 | |
| 4983152 | DRNF | 07-JAN-15 | 02-APR-15 | * - LESS THAN INDICATED VALUE 097673 RNTB | * 30.0 | * 0.4 ±0.05 | |
| 4983154 | DRNF | 07-JAN-15 | 02-APR-15 | 097668 RN13 | 85.7 ±7.92 | 1.0 ±0.09 | |

①

②

③

④

⑤

⑥

⑦

⑧

RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| LMR | A23220 | 20-APR-15 | 08-APR-15 |

Mark Salaskey

Radon Measurement Specialist

The United States Environmental Protection Agency recommends fixing your home if the results of one long-term test or the average of two short-term tests taken in the lowest lived-in level of the home show radon levels of 4.0 pCi/l or higher. A short term test remains in your home for two days to 90 days, whereas a long-term test remains in your home for more than 90 days under these guidelines.

Column 7 of this report indicates the radon test result, i.e., the average radon concentration in pCi/l for the test period. If you did not provide us the starting and ending dates (days the detector was exposed) we are unable to calculate the average radon concentration. To calculate the average radon concentration, divide the total exposure in pCi/l-days (column 6) by the number of days the detector was exposed.

For more information about the interpretation of your test result or about other radon related issues we suggest you contact your state radon office. Your state radon office should have available the following EPA publications:

- A Citizen's Guide to Radon
- Home Buyer's and Seller's Guide to Radon
- Consumer's Guide to Radon Reduction

DISCLAIMER

Landauer, Inc. makes no warranty of any kind, express or implied, as regards to the use, operation or analysis of any Landauer, Inc. monitor. Landauer, Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Landauer, Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (800) 528-8327 Facsimile: (708) 755-7048
Email: radon@landauer.com Website: www.landauer.com

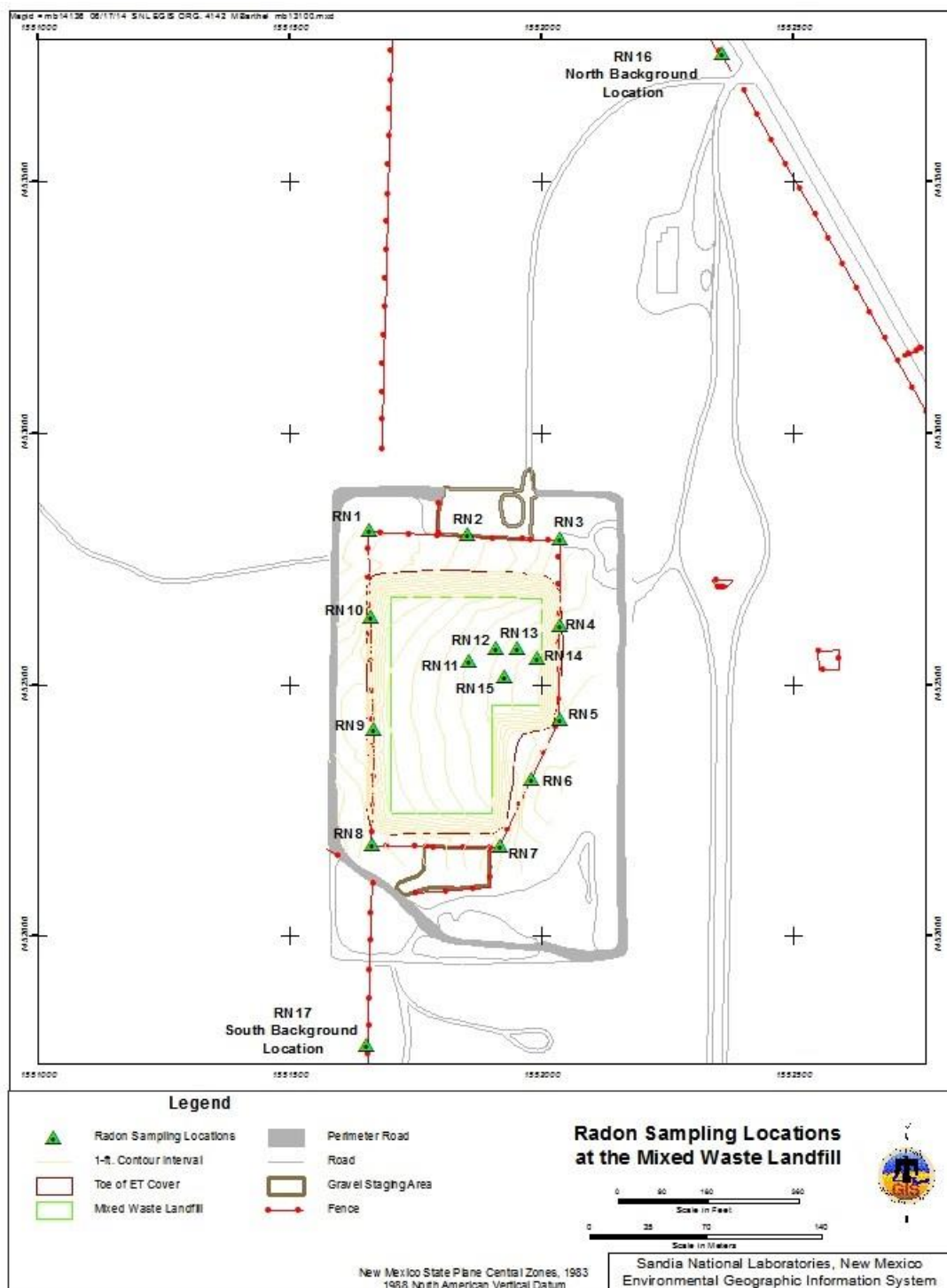


Figure 1. Location of the Radon Track Etch[®] Detectors at the MWL

LANDAUER®



RADTRAK® RADON TEST DATA SHEET

Company: Sandia Nat'l Labs
Acct. Number: 0410548
Contact: Robert Ziock
Phone: 505-845-0485
Email: rziock@sandia.gov

Send Radon Report To:

(If different from account settings)

Company: Sandia Nat'l Labs
Attn: Robert Ziock
Address: PO Box 5800
MS-1103
City: Albuquerque
ST/Prov: NM Post Code: 87185
Country: USA
Phone: 505-845-0485
Email: rziock@sandia.gov

Site Information:

(Please provide information on where detectors are being deployed. Reports will be labeled and sorted by value provided in 'Site Name' below.)

Site Name: SNL/MWL
Site Type: OUTDOOR
Additional Information: _____

If Applicable:

Technician Name: Annemarie Rader
Technician Number: _____
Technician Signature: [Signature]

Please include all detector numbers, exposure periods and location information to appear on report

| Detector Number | Building Name / Nbr | Unit Nbr | Floor | Comment / Note | Start Date mm/dd/yyyy | End Date mm/dd/yyyy |
|-----------------|---------------------|----------|-------|----------------|-----------------------|---------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

PLEASE SEE ATTACHED LIST.

Landauer Use Only: Processed By: _____ Date: _____


Page _____ of _____

**Mixed Waste Landfill
Radon Detector
Deployment / Collection Form**

COC # 616121

| Detector Serial Number | Sample Number | Sampling Location | Deployment Date | Collection Date | Time | Comments |
|------------------------|---------------|-------------------|-----------------|-----------------|------|----------|
| 4982883 | 097656 | RN1 | 01/07/2015 | 04/02/2015 | 1033 | |
| 4982884 | 097657 | RN2 | 01/07/2015 | 04/02/2015 | 0959 | |
| 4982885 | 097658 | RN3 | 01/07/2015 | 04/02/2015 | 1003 | |
| 4982886 | 097659 | RN4 | 01/07/2015 | 04/02/2015 | 1007 | |
| 4982887 | 097660 | RN5 | 01/07/2015 | 04/02/2015 | 1019 | |
| 4982984 | 097661 | RN6 | 01/07/2015 | 04/02/2015 | 1021 | |
| 4982985 | 097662 | RN7 | 01/07/2015 | 04/02/2015 | 1023 | |
| 4982986 | 097663 | RN8 | 01/07/2015 | 04/02/2015 | 1027 | |
| 4982988 | 097664 | RN9 | 01/07/2015 | 04/02/2015 | 1030 | |
| 4983142 | 097665 | RN10 | 01/07/2015 | 04/02/2015 | 1031 | |
| 4983144 | 097666 | RN11 | 01/07/2015 | 04/02/2015 | 1014 | |
| 4983145 | 097667 | RN12 | 01/07/2015 | 04/02/2015 | 1013 | |
| 4983154 | 097668 | RN13 | 01/07/2015 | 04/02/2015 | 1012 | |
| 4983057 | 097669 | RN14 | 01/07/2015 | 04/02/2015 | 1011 | |
| 4983058 | 097670 | RN15 | 01/07/2015 | 04/02/2015 | 1016 | |
| 4983059 | 097671 | RN16 | 01/07/2015 | 04/02/2015 | 1106 | |
| 4983060 | 097672 | RN17 | 01/07/2015 | 04/02/2015 | 1054 | |
| 4983152 | 097673 | RNTB | 01/07/2015 | 04/02/2015 | 1110 | |

**Mixed Waste Landfill
Radon Detector Collection Inspection Form**

Name of Inspector Annemarie RaderCollection Date 01/07/2015Deployment Date 10/02/2014 

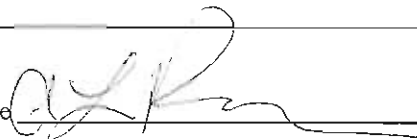
Radon Monitoring Frequency: ~ Quarterly ~ Semiannually ~ Annually

| <i>Radon Monitoring Location Inspection Parameters</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Action Required at Location Numbers</i> |
|--|--|--|--|
| A. Monitoring location identification labeling. | Yes | No | |
| B. Mounting (fence) post condition. | Yes | No | |
| C. Radon monitoring outer metal housing securely fastened (mounting bracket and stainless steel clamp). | Yes | No | |
| D. Radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, and plastic cup) | Yes | No | |
| E. Radon monitoring apparatus interior clean of debris (dirt, insects, spider webs, etc.). | Yes | No | |
| F. Radon monitoring apparatus assembled and detector securely fastened with Velcro® to inside of plastic cup. | Yes | No | |
| <i>Radon Monitoring Detectors Inspection Parameters</i> | | | |
| A. Condition of Radtrak® detector at time of collection. | Yes | No | |
| B. Condition of Radtrak® detector at time of deployment. | Yes | No | |

**Mixed Waste Landfill
Radon Detector Collection / Deployment Inspection Form**

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 02/26/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record

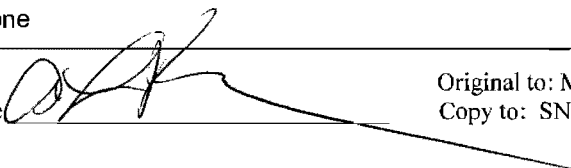
Copy to: SNL/NM Records Center

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 03/26/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Radon Detector Collection Inspection Form**

Name of Inspector Annemarie RaderCollection Date 04/02/2015Deployment Date 01/07/2015Radon Monitoring Frequency: ☒ Quarterly ☐ Semiannually ☐ Annually

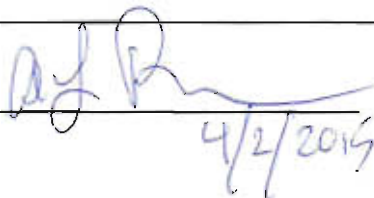
| <i>Radon Monitoring Location Inspection Parameters</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Action Required at Location Numbers</i> |
|--|--|------------------------------------|--|
| A. Monitoring location identification labeling. | yes | No | |
| B. Mounting (fence) post condition. | yes | No | |
| C. Radon monitoring outer metal housing securely fastened (mounting bracket and stainless steel clamp). | yes | No | |
| D. Radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, and plastic cup) | yes | No | |
| E. Radon monitoring apparatus interior clean of debris (dirt, insects, spider webs, etc.). | yes | No | |
| F. Radon monitoring apparatus assembled and detector securely fastened with Velcro® to inside of plastic cup. | yes | No | |
| <i>Radon Monitoring Detectors Inspection Parameters</i> | | | |
| A. Condition of Radtrak® detector at time of collection. | yes | No | |
| B. Condition of Radtrak® detector at time of deployment. | yes | No | |

aym 4/2/2015

**Mixed Waste Landfill
Radon Detector Collection / Deployment Inspection Form**

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



A. J. R.
4/2/2015

Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Contract Verification Review (CVR)

Project Leader MILLER Project Name MWL RADON MONITORING Project/Task No. 146422_10.11.08
 ARCOG No. 616121 Analytical Lab LANDAUER SDG No. A23220

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | N/A | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | N/A | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | N/A | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | N/A | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and L _c | N/A | | |
| 2.6 | QC batch numbers provided | N/A | | |
| 2.7 | Dilution factors provided and all dilution levels reported | N/A | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | N/A | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | N/A | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | N/A | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

| Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|--|-----|----|---|
| 3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 Quantitation limit met for all samples | N/A | | |
| 3.3 Accuracy | N/A | | |
| a) Laboratory control sample accuracy reported and met for all samples | | | |
| b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 Precision | N/A | | |
| a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | | | |
| b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 Blank data | N/A | | |
| a) Method or reagent blank data reported and met for all samples | | | |
| b) Sampling blank (e.g., field, trip, and equipment) data reported and met | N/A | | |
| 3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | N/A | | |
| 3.7 Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 Narrative included, correct, and complete | N/A | | |
| 3.9 Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151 | N/A | | |

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

| Item | Yes | No | Comments |
|--|-----|----|----------|
| 4.1 GC/MS (8260 and 8270) | | | |
| a) 12-hour tune check provided | N/A | | |
| b) Initial calibration provided | N/A | | |
| c) Continuing calibration provided | N/A | | |
| d) Internal standard performance data provided | N/A | | |
| e) Instrument run logs provided | N/A | | |
| 4.2 GC/HPLC (8330, 8082, 9070A, and 8010) | N/A | | |
| a) Initial calibration provided | N/A | | |
| b) Continuing calibration provided | N/A | | |
| c) Instrument run logs provided | N/A | | |
| 4.3 HRGC/HRMS (1668) | N/A | | |
| a) 12-hour tune check provided | | | |
| b) Initial calibration provided | N/A | | |
| c) Continuing calibration provided | N/A | | |
| d) Internal standard performance data provided | N/A | | |
| e) Labeled compound recovery data provided | N/A | | |

Contract Verification Review (Continued)

| | | | |
|--|-----|--|--|
| f) RRTs for samples and standards provided | N/A | | |
| g) Ion abundance ratios for samples and standards provided | N/A | | |
| h) Instrument run logs provided | N/A | | |
| 4.4 LC/MS/MS (6850) | | | |
| a) Initial calibration provided | N/A | | |
| b) Continuing calibration provided | N/A | | |
| c) CRI provided | N/A | | |
| d) Internal standard performance data provided | N/A | | |
| e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| f) ICS provided (perchlorate only) | N/A | | |
| 4.5 Inorganics (metals) | | | |
| a) Initial calibration provided | N/A | | |
| b) Continuing calibration provided | N/A | | |
| c) ICP interference check sample data provided | N/A | | |
| d) ICP serial dilution provided | N/A | | |
| e) Instrument run logs provided | N/A | | |
| 4.6 Radiochemistry and General Chemistry | N/A | | |
| a) Instrument run logs provided | | | |

Contract Verification Review (Concluded)

5.0 Data Anomaly Report

| Item | Yes | No | Comments |
|---|-----|----|----------|
| 5.1 DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 Problems or outliers noted | N/A | | |
| 5.3 Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

If no, provide nonconformance report or correction request number _____ and date correction request was submitted: _____

Reviewed by: W. Palencia Date: 4.20.2015

Were resolutions adequate and data package complete? ☐ Yes ☐ No

Closed by: _____ Date: _____

MIXED WASTE LANDFILL

RADON MONITORING

April-June 2015 Monitoring Period



Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Albuquerque, New Mexico 87185-

date: July 20, 2015

to: Mike Mitchell (6234), Robert Ziock (4142), Bonnie Little (4142) and Annemarie Rader (4143)

from: Mark Miller (41281), CHP

subject: Review of MWL Radon-in-Air Data – 2nd Quarter of 2015, April through June 2015

The purpose of this memo is to document my review of the radon-in-air monitoring data results for the 2nd Quarter of Calendar Year (CY) 2015, April through June 2015, relative to the data quality objective (DQO) and monitoring objectives specified in the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (Appendix C, *Air Sampling and Analysis Plan for the Mixed Waste Landfill*).

The DQO for this monitoring is to produce representative, accurate, defensible, and comparable analytical results to support the monitoring objective. Monitoring results provide radon emission data from across the site and at two background locations (Figure 1). These results are compared to historic results to evaluate radon air emission trends and for direct comparison to the LTMMMP trigger level of 4 picocuries per liter. This DQO and these monitoring objectives are met through the implementation of standard operating procedures, analytical procedures/methods, quality assurance and control measures, and data evaluation protocol.

The radon-in-air monitoring measurements for the monitoring period April through June 2015 were obtained using Radtrak® radon detectors that were submitted to Landauer® Incorporated for analysis on Analysis Request/Chain of Custody (AR/COC) #616122. On April 2, 2015, the detectors were deployed on and around the MWL (locations RN1 through RN15 at the MWL, background locations RN16 and RN17, and a trip blank that was never exposed, RNTB) in accordance with the requirements of Section 3.2.1 of the LTMMMP. These detectors remained in the field for approximately 3 months (one quarter), and were collected on July 2, 2015. The protective casing and mounting hardware were inspected during the collection effort and repairs were made if needed. The location of these detectors is shown in Figure 1.

I have reviewed the results for this monitoring period along with supporting field documentation and determined the results meet the LTMMMP DQO and monitoring objectives. The radon trigger level was not exceeded by any of the individual sample results; however, it only applies to the results from the perimeter locations (locations RN1 through RN10, Figure 1). The results from this quarterly monitoring event will be presented in the next MWL Annual LTMM Report that will be submitted to NMED in June 2016 (reporting period is April 1, 2015 through March 31, 2016).

Attachments:

Analysis Request/Chain of Custody #616122

Landauer Radon Monitoring Report (analytical laboratory results)

Figure 1 Location of the Radon Track Etch® Detectors at the MWL

Page 1 of 2

AR/COC 616122

*Prior confirmation with SMO required for 7 and 15 day TAT

**CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY (Continuation)**

Page 2 of 2

AR/COC 616122

[illegible]

Analysis Request and Chain of Custody for the 2nd Quarter of CY 2015 at the MWL

SANDIA NATIONAL LABORATORIES
ATTN: RADON REPORTS
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL,100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|---|---------------------|------------------------|--|
| 5501972 | DRNF | 02-APR-15 | 02-JUL-15 | * - LESS THAN INDICATED VALUE 097691-001 RNTB | * 30.0 | * 0.3 ±0.07 | |
| 5502379 | DRNF | 02-APR-15 | 02-JUL-15 | 097689-001 RN 16 | 44.7 ±5.09 | 0.5 ±0.06 | |
| 5502381 | DRNF | 02-APR-15 | 02-JUL-15 | 097677-001 RN 4 | 52.8 ±5.69 | 0.6 ±0.06 | |
| 5502382 | DRNF | 02-APR-15 | 02-JUL-15 | 097674-001 RN 1 | 37.5 ±4.51 | 0.4 ±0.05 | |
| 5502383 | DRNF | 02-APR-15 | 02-JUL-15 | 097683-001 RN 10 | 47.4 ±5.30 | 0.5 ±0.06 | |
| 5502384 | DRNF | 02-APR-15 | 02-JUL-15 | 097688-001 RN 15 | 54.6 ±5.82 | 0.6 ±0.06 | |
| 5502612 | DRNF | 02-APR-15 | 02-JUL-15 | 097685-001 RN 12 | 54.6 ±5.82 | 0.6 ±0.06 | |
| 5502613 | DRNF | 02-APR-15 | 02-JUL-15 | 097682-001 RN 9 | 49.2 ±5.43 | 0.5 ±0.06 | |
| 5502614 | DRNF | 02-APR-15 | 02-JUL-15 | 097675-001 RN 2 | 48.3 ±5.36 | 0.5 ±0.06 | |

RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| LMR | A23282 | 16-JUL-15 | 07-JUL-15 |

Mark Salaskey
Radon Measurement Specialist

SANDIA NATIONAL LABORATORIES
ATTN: RADON REPORTS
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL, 100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|-----------------------|---------------------|------------------------|--|
| 5502615 | DRNF | 02-APR-15 | 02-JUL-15 | 097687-001 RN 14 | 44.7 ±5.09 | 0.5 ±0.06 | |
| 5502616 | DRNF | 02-APR-15 | 02-JUL-15 | 097676-001 RN 3 | 51.9 ±5.63 | 0.6 ±0.06 | |
| 5502617 | DRNF | 02-APR-15 | 02-JUL-15 | 097690-001 RN 17 | 69.0 ±6.76 | 0.8 ±0.07 | |
| 5502642 | DRNF | 02-APR-15 | 02-JUL-15 | 097681-001 RN 8 | 55.5 ±5.88 | 0.6 ±0.06 | |
| 5502643 | DRNF | 02-APR-15 | 02-JUL-15 | 097679-001 RN 6 | 37.5 ±4.51 | 0.4 ±0.05 | |
| 5502644 | DRNF | 02-APR-15 | 02-JUL-15 | 097681-001 RN 11 | 34.8 ±4.28 | 0.4 ±0.05 | |
| 5502645 | DRNF | 02-APR-15 | 02-JUL-15 | 097686-001 RN 13 | 60.9 ±6.24 | 0.7 ±0.07 | |
| 5502646 | DRNF | 02-APR-15 | 02-JUL-15 | 097680-001 RN 7 | 86.1 ±7.76 | 0.9 ±0.09 | |
| 5502648 | DRNF | 02-APR-15 | 02-JUL-15 | 097678-001 RN 5 | 64.5 ±6.48 | 0.7 ±0.07 | |

① ② ③ ④ ⑤ ⑥ ⑦ ⑧
RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| LMR | A23282 | 16-JUL-15 | 07-JUL-15 |

Mark Salaskey
Radon Measurement Specialist

The United States Environmental Protection Agency recommends fixing your home if the results of one long-term test or the average of two short-term tests taken in the lowest lived-in level of the home show radon levels of 4.0 pCi/l or higher. A short term test remains in your home for two days to 90 days, whereas a long-term test remains in your home for more than 90 days under these guidelines.

Column 7 of this report indicates the radon test result, i.e., the average radon concentration in pCi/l for the test period. If you did not provide us the starting and ending dates (days the detector was exposed) we are unable to calculate the average radon concentration. To calculate the average radon concentration, divide the total exposure in pCi/l-days (column 6) by the number of days the detector was exposed.

For more information about the interpretation of your test result or about other radon related issues we suggest you contact your state radon office. Your state radon office should have available the following EPA publications:

- A Citizen's Guide to Radon
- Home Buyer's and Seller's Guide to Radon
- Consumer's Guide to Radon Reduction

DISCLAIMER

Landauer, Inc. makes no warranty of any kind, express or implied, as regards to the use, operation or analysis of any Landauer, Inc. monitor. Landauer, Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Landauer, Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (800) 528-8327 Facsimile: (708) 755-7048
Email: radon@landauer.com Website: www.landauer.com

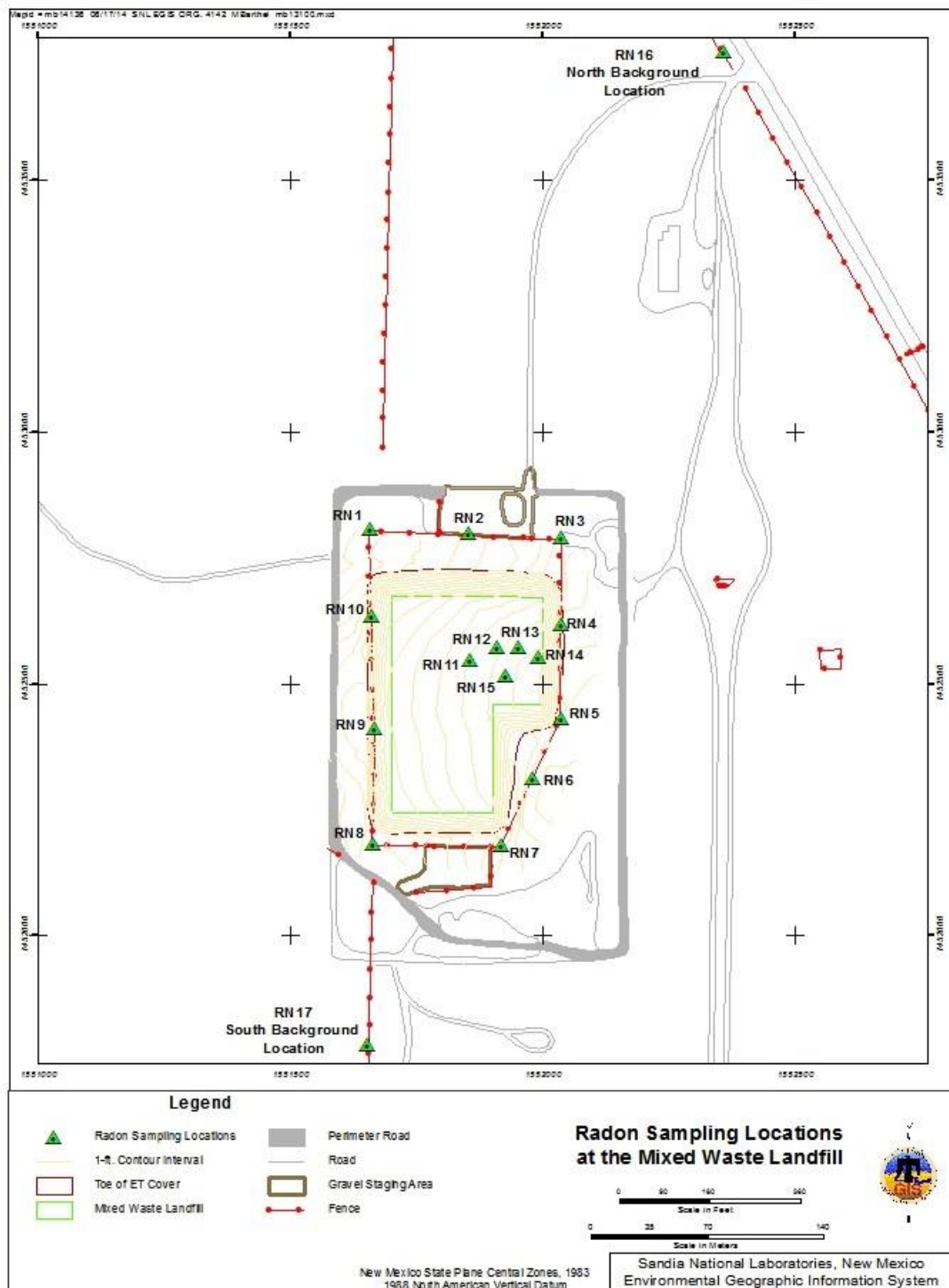


Figure 1. Location of the Radon Track Etch[®] Detectors at the MWL



RADTRAK® RADON TEST DATA SHEET

Company: Sandia Nat'l Labs
 Acct. Number: 0410548
 Contact: Mark Miller
 Phone: 505.284.2107
 Email: mmiller@sandia.gov

Send Radon Report To:

(If different from account settings)

Company: Sandia Nat'l Labs
 Attn: Mark Miller
 Address: PO Box 5800
MS-0729
 City: Albuquerque
 ST/Prov: NM Post Code: 87185
 Country: USA
 Phone: 505-284-2107
 Email: mmiller@sandia.gov

Site Information:

(Please provide information on where detectors are being deployed. Reports will be labeled and sorted by value provided in 'Site Name' below.)

Site Name: SNL/MWL
 Site Type: outdoor
 Additional Information: _____

If Applicable:

Technician Name: A.L. Radar
 Technician Number: _____
 Technician Signature: [Signature]

Please include all detector numbers, exposure periods and location information to appear on report

| Detector Number | Building Name / Nbr | Unit Nbr | Floor | Comment / Note | Start Date mm/dd/yyyy | End Date mm/dd/yyyy |
|-----------------|---------------------|----------|-------|----------------|-----------------------|---------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

please see Attached page

Landauer Use Only: Processed By: _____ Date: _____ Page ____ of ____

**Mixed Waste Landfill
Radon Detector
Deployment / Collection Form**

COC # 616122

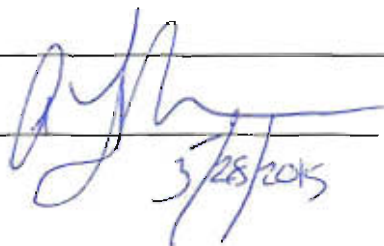
| Detector Serial Number | Sample Number | Sampling Location | Deployment Date | Collection Date | Time | Comments |
|------------------------|---------------|-------------------|-----------------|-----------------|------------|----------|
| 5502382 | 097674-001 | RN1 | 04/02/2015 | 07/02/2015 | 1540 | |
| 5502614 | 097675-001 | RN2 | 04/02/2015 | 07/02/2015 | 1458 | |
| 5502616 | 097676-001 | RN3 | 04/02/2015 | 07/02/2015 | 1535 | |
| 5502381 | 097677-001 | RN4 | 04/02/2015 | 07/02/2015 | 1610 | |
| 5502648 | 097678-001 | RN5 | 04/02/2015 | 07/02/2015 | 1603 | |
| 5502643 | 097679-001 | RN6 | 04/02/2015 | 07/02/2015 | 1600 | |
| 5502646 | 097680-001 | RN7 | 04/02/2015 | 07/02/2015 | 1557 | |
| 5502642 | 097681-001 | RN8 | 04/02/2015 | 07/02/2015 | 1552 | |
| 5502613 | 097682-001 | RN9 | 04/02/2015 | 07/02/2015 | 1548 | |
| 5502383 | 097683-001 | RN10 | 04/02/2015 | 07/02/2015 | 1545 | |
| 5502644 | 097684-001 | RN11 | 04/02/2015 | 07/02/2015 | 1528 | |
| 5502612 | 097685-001 | RN12 | 04/02/2015 | 07/02/2015 | 1523 | |
| 5502645 | 097686-001 | RN13 | 04/02/2015 | 07/02/2015 | 1516 | |
| 5502615 | 097687-001 | RN14 | 04/02/2015 | 07/02/2015 | 1514 | |
| 5502384 | 097688-001 | RN15 | 04/02/2015 | 07/02/2015 | 1510 | |
| 5502379 | 097689-001 | RN16 | 04/02/2015 | 07/02/2015 | 1450 | |
| 5502617 | 097690-001 | RN17 | 04/02/2015 | 07/02/2015 | 1617 | |
| 5501972 | 097691-001 | RNTB | 04/02/2015 | 07/02/2015 | NA 1802 | |

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 05/27/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



3/28/2015

Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Radon Detector Collection Inspection Form**

Name of Inspector Annemarie Rader Collection Date 07/02/2015Deployment Date 04/02/2015Radon Monitoring Frequency: ☒ Quarterly ☐ Semiannually ☐ Annually

| <i>Radon Monitoring Location Inspection Parameters</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Action Required at Location Numbers</i> |
|---|--|------------------------------------|--|
| A. Monitoring location identification labeling. | Yes | No | NA |
| B. Mounting (fence) post condition. | Yes | No | NA |
| C. Radon monitoring outer metal housing securely fastened (mounting bracket and stainless steel clamp). | Yes | No | NA |
| D. Radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, and plastic cup) | Yes | No | NA |
| E. Radon monitoring apparatus interior clean of debris (dirt, insects, spider webs, etc.). | Yes | No | NA |
| F. Radon monitoring apparatus assembled and detector securely fastened with Velcro [®] to inside of plastic cup. | Yes | No | NA |
| <i>Radon Monitoring Detectors Inspection Parameters</i> | | | |
| A. Condition of Radtrak [®] detector at time of collection. | Yes | No | NA |
| B. Condition of Radtrak [®] detector at time of deployment. | Yes | No | NA |

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 07/02/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature


7/2/15

Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Contract Verification Review (CVR)

Project Leader ZIOCK Project Name MWL RADON MONITORING Project/Task No. 146422_10.11.08
 ARCOG No. 616122 Analytical Lab LANDAUER SDG No. A23282

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | N/A | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | N/A | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | N/A | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | N/A | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and L _c | N/A | | |
| 2.6 | QC batch numbers provided | N/A | | |
| 2.7 | Dilution factors provided and all dilution levels reported | N/A | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | N/A | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | N/A | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | N/A | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

Contract Verification Review (Continued)

3.0 Data Quality Evaluation

| Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|--|-----|----|---|
| 3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 Quantitation limit met for all samples | N/A | | |
| 3.3 Accuracy | N/A | | |
| a) Laboratory control sample accuracy reported and met for all samples | | | |
| b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 Precision | | | |
| a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 Blank data | | | |
| a) Method or reagent blank data reported and met for all samples | N/A | | |
| b) Sampling blank (e.g., field, trip, and equipment) data reported and met | N/A | | |
| 3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | N/A | | |
| 3.7 Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 Narrative included, correct, and complete | N/A | | |
| 3.9 Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151 | N/A | | |

Contract Verification Review (Continued)

4.0 Calibration and Validation Documentation

| Item | Yes | No | Comments |
|--|-----|----|----------|
| 4.1 GC/MS (8260 and 8270) | | | |
| a) 12-hour tune check provided | N/A | | |
| b) Initial calibration provided | N/A | | |
| c) Continuing calibration provided | N/A | | |
| d) Internal standard performance data provided | N/A | | |
| e) Instrument run logs provided | N/A | | |
| 4.2 GC/HPLC (8330, 8082, 9070A, and 8010) | N/A | | |
| a) Initial calibration provided | N/A | | |
| b) Continuing calibration provided | N/A | | |
| c) Instrument run logs provided | N/A | | |
| 4.3 HRGC/HRMS (1668) | N/A | | |
| a) 12-hour tune check provided | | | |
| b) Initial calibration provided | N/A | | |
| c) Continuing calibration provided | N/A | | |
| d) Internal standard performance data provided | N/A | | |
| e) Labeled compound recovery data provided | N/A | | |

Contract Verification Review (Continued)

| | | | |
|--|-----|--|--|
| f) RRTs for samples and standards provided | N/A | | |
| g) Ion abundance ratios for samples and standards provided | N/A | | |
| h) Instrument run logs provided | N/A | | |
| 4.4 LC/MS/MS (6850) | | | |
| a) Initial calibration provided | N/A | | |
| b) Continuing calibration provided | N/A | | |
| c) CRI provided | N/A | | |
| d) Internal standard performance data provided | N/A | | |
| e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| f) ICS provided (perchlorate only) | N/A | | |
| 4.5 Inorganics (metals) | | | |
| a) Initial calibration provided | N/A | | |
| b) Continuing calibration provided | N/A | | |
| c) ICP interference check sample data provided | N/A | | |
| d) ICP serial dilution provided | N/A | | |
| e) Instrument run logs provided | N/A | | |
| 4.6 Radiochemistry and General Chemistry | N/A | | |
| a) Instrument run logs provided | | | |

Contract Verification Review (Concluded)

5.0 Data Anomaly Report

| Item | Yes | No | Comments |
|---|-----|----|----------|
| 5.1 DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 Problems or outliers noted | N/A | | |
| 5.3 Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

If no, provide nonconformance report or correction request number _____ and date correction request was submitted: _____

Reviewed by: W. Palencia Date: 8.3.2015

Were resolutions adequate and data package complete? ☐ Yes ☐ No

Closed by: _____ Date: _____

MIXED WASTE LANDFILL

RADON MONITORING

July-September 2015 Monitoring Period



Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Albuquerque, New Mexico 87185-

date: November 5, 2015

to: Mike Mitchell (6234), Robert Ziock (4142), Bonnie Little (4142) and Annemarie Rader (4143)

from: Kelly Green (41283) *Kelly Green*

subject: Review of MWL Radon-in-Air Data – 3rd Quarter of 2015, July through September 2015

The purpose of this memo is to document my review of the radon-in-air monitoring data results for the 3rd Quarter of Calendar Year (CY) 2015, July through September 2015, relative to the data quality objective (DQO) and monitoring objectives specified in the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (Appendix C, *Air Sampling and Analysis Plan for the Mixed Waste Landfill*). The DQO for this monitoring is to produce representative, accurate, defensible, and comparable analytical results to support the monitoring objective. Monitoring results provide radon emission data from across the site and at two background locations (Figure 1). These results are compared to historic results to evaluate radon air emission trends and for direct comparison to the LTMMMP trigger level of 4 picocuries per liter. This DQO and these monitoring objectives are met through the implementation of standard operating procedures, analytical procedures/methods, quality assurance and control measures, and data evaluation protocol.

The radon-in-air monitoring measurements for the monitoring period July through September 2015 were obtained using Radtrak® radon detectors that were submitted to Landauer® Incorporated for analysis on Analysis Request/Chain of Custody (AR/COC) #616366. On July 2, 2015, the detectors were deployed on and around the MWL (locations RN1 through RN15 at the MWL, background locations RN16 and RN17, and a trip blank that was never exposed, RNTB) in accordance with the requirements of Section 3.2.1 of the LTMMMP. These detectors remained in the field for approximately 3 months (one quarter), and were collected on October 5, 2015. The protective casing and mounting hardware were inspected during the collection effort and repairs were made if needed. The location of these detectors is shown in Figure 1.

I have reviewed the results for this monitoring period along with supporting field documentation and determined the results meet the LTMMMP DQO and monitoring objectives. The radon trigger level was not exceeded by any of the individual sample results; however, it only applies to the results from the perimeter locations (locations RN1 through RN10, Figure 1). The results from this quarterly monitoring event will be presented in the next MWL Annual LTMM Report that will be submitted to NMED in June 2016 (reporting period is April 1, 2015 through March 31, 2016).

Attachments:

Analysis Request/Chain of Custody #616366

Landauer Radon Monitoring Report (analytical laboratory results)

Figure 1 Location of the Radon Track Etch® Detectors at the MWL

SMO 2012-ARCO (4-2012)

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

AOP 95-1

Internal Lab

Page 1 of 2

| Batch No. <u>14</u> | | SMO Use | | AR/COC 616366 | | | | | | | | | |
|--|-----------------|--------------------------------------|------------|---|---------------|---|--------|--------------------|-------------------|-----------------------|------------------------------|---------------|--|
| Project Name: MWL Radon monitoring | | Date Samples Shipped: <u>10/7/15</u> | | SMO Authorization: <u>[Signature]</u> | | | | | | | | | |
| Project/Task Manager: Kelly Green | | Carrier/Waybill No. <u>239702</u> | | SMO Contact Phone: Kelly Green/505.845.0787 | | | | | | | | | |
| Project/Task Number: 146422/10.11.08 | | Lab Contact: Landauer 800.528.8327 | | Send Report to SMO | | | | | | | | | |
| Service Order: CFO 378-16 | | Lab Destination: Landauer, INC. | | Wendy palencia/505.844.3132 | | | | | | | | | |
| Contract No. Acct # 0410548 | | | | | | | | | | | | | |
| Tech Area: TA3 MWL | | Operational Site: TA3 MWL | | Bill to: Sandia National Laboratories (Accounts Payable): P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 | | | | | | | | | |
| Building: | | Room: | | | | | | | | | | | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID | |
| 098379 | --001 | RN 1/ 5508721 | N/A | 10/5/15 1440 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098380 | --001 | RN 2/ 5508745 | N/A | 10/5/15 1431 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098381 | --001 | RN 3/ 5508723 | N/A | 10/5/15 1511 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098382 | --001 | RN 4/ 5508724 | N/A | 10/5/15 1517 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098383 | --001 | RN 5/ 5508726 | N/A | 10/5/15 1537 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098384 | --001 | RN 6/ 5508727 | N/A | 10/5/15 1530 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098385 | --001 | RN 7/ 5508734 | N/A | 10/5/15 1525 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098386 | --001 | RN 8/ 5508735 | N/A | 10/5/15 1505 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098387 | --001 | RN 9/ 5508736 | N/A | 10/5/15 1457 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| 098388 | --001 | RN 10/ 5508737 | N/A | 10/5/15 1450 | F | N/A | N/A | None | Collection | Sample | Radon | | |
| Last Chain: <input type="checkbox"/> Yes | | Sample Tracking | | SMO Use | | Special Instructions/QC Requirements: | | Parameter & Method | | Conditions on Receipt | | | |
| Validation Req'd: <input type="checkbox"/> Yes | | Date Entered: | | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | | |
| Background: <input type="checkbox"/> Yes | | Entered by: | | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | | | | | |
| Confirmatory: <input type="checkbox"/> Yes | | QC initials: | | | | Negotiated TAT <input type="checkbox"/> | | | | | | | |
| Sample Team Members | Name | Signature | Init | Company/Organization/Phone/Cell | | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | Return Samples By: | | Lab Use | | | |
| | Annemarie Rader | <u>[Signature]</u> | <u>AR</u> | SNL/4143/844-2640 | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Comments: | | | | | | Samples deployed on 07/02/15 and collected on 10/05/15 | | | | | | | |
| 1. Relinquished by <u>[Signature]</u> | | Org. 4143 | | Date 10-6-15 Time 12:19 | | 3. Relinquished by | | Org. | | Date | | Time | |
| 1. Received by <u>[Signature]</u> | | Org. 4142 | | Date 10-6-15 Time 12:19 | | 3. Received by | | Org. | | Date | | Time | |
| 2. Relinquished by <u>[Signature]</u> | | Org. 4142 | | Date 10-7-15 Time 06:30 | | 4. Relinquished by | | Org. | | Date | | Time | |
| 2. Received by <u>[Signature]</u> | | Org. | | Date 10-14-15 Time 12:30pm | | 4. Received by | | Org. | | Date | | Time | |

*Prior confirmation with SMO required for 7 and 15 day TAT

AOP 95-1

AR/COC 616366

Analysis Request and Chain of Custody for the 3rd Quarter of CY 2015 at the MWL

SANDIA NATIONAL LABORATORIES
ATTN: WENDY PALENCIA
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL, 100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|-----------------------|---------------------|------------------------|--|
| 5508721 | DRNF | 02-JUL-15 | 05-OCT-15 | RN1 | 60.5 ±5.93 | 0.6 ±0.06 | |
| 5508723 | DRNF | 02-JUL-15 | 05-OCT-15 | RN3 | 41.3 ±4.50 | 0.4 ±0.05 | |
| 5508724 | DRNF | 02-JUL-15 | 05-OCT-15 | RN4 | 61.4 ±6.00 | 0.6 ±0.06 | |
| 5508726 | DRNF | 02-JUL-15 | 05-OCT-15 | RN5 | 41.3 ±4.50 | 0.4 ±0.05 | |
| 5508727 | DRNF | 02-JUL-15 | 05-OCT-15 | RN6 | 55.7 ±5.60 | 0.6 ±0.06 | |
| 5508734 | DRNF | 02-JUL-15 | 05-OCT-15 | RN7 | 48.0 ±5.03 | 0.5 ±0.05 | |
| 5508735 | DRNF | 02-JUL-15 | 05-OCT-15 | RN8 | 41.3 ±4.50 | 0.4 ±0.05 | |
| 5508736 | DRNF | 02-JUL-15 | 05-OCT-15 | RN9 | 47.0 ±4.96 | 0.5 ±0.05 | |
| 5508737 | DRNF | 02-JUL-15 | 05-OCT-15 | RN10 | 48.0 ±5.03 | 0.5 ±0.05 | |
| 5508738 | DRNF | 02-JUL-15 | 05-OCT-15 | RN11 | 55.7 ±5.60 | 0.6 ±0.06 | |

①

②

③

④

⑤

⑥

⑦

⑧

RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| KJT | A23332 | 27-OCT-15 | 14-OCT-15 |

Mark Salaskey
Radon Measurement Specialist

SANDIA NATIONAL LABORATORIES
ATTN: WENDY PALENCIA
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL,100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|---|---------------------|------------------------|--|
| 5508739 | DRNF | 02-JUL-15 | 05-OCT-15 | RN12 | 45.1 ±4.81 | 0.5 ±0.05 | |
| 5508740 | DRNF | 02-JUL-15 | 05-OCT-15 | RN13 | 44.2 ±4.73 | 0.5 ±0.05 | |
| 5508741 | DRNF | 02-JUL-15 | 05-OCT-15 | RN14 | 38.4 ±4.27 | 0.4 ±0.04 | |
| 5508742 | DRNF | 02-JUL-15 | 05-OCT-15 | RN15 | 38.4 ±4.27 | 0.4 ±0.04 | |
| 5508743 | DRNF | 02-JUL-15 | 05-OCT-15 | RN16 | 68.2 ±6.44 | 0.7 ±0.07 | |
| 5508744 | DRNF | 02-JUL-15 | 05-OCT-15 | RN17 | 59.5 ±5.86 | 0.6 ±0.06 | |
| 5508745 | DRNF | 02-JUL-15 | 05-OCT-15 | RN2 | 43.2 ±4.66 | 0.5 ±0.05 | |
| 5509057 | DRNF | 02-JUL-15 | 05-OCT-15 | * - LESS THAN INDICATED VALUE NO GOLD SEAL RNTB | * 30.0 | * 0.3 ±0.06 | |

① ② ③ ④ ⑤ ⑥ ⑦ ⑧
RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| KJT | A23332 | 27-OCT-15 | 14-OCT-15 |

Mark Salaskey
Radon Measurement Specialist

The United States Environmental Protection Agency recommends fixing your home if the results of one long-term test or the average of two short-term tests taken in the lowest lived-in level of the home show radon levels of 4.0 pCi/l or higher. A short term test remains in your home for two days to 90 days, whereas a long-term test remains in your home for more than 90 days under these guidelines.

Column 7 of this report indicates the radon test result, i.e., the average radon concentration in pCi/l for the test period. If you did not provide us the starting and ending dates (days the detector was exposed) we are unable to calculate the average radon concentration. To calculate the average radon concentration, divide the total exposure in pCi/l-days (column 6) by the number of days the detector was exposed.

For more information about the interpretation of your test result or about other radon related issues we suggest you contact your state radon office. Your state radon office should have available the following EPA publications:

- A Citizen's Guide to Radon
- Home Buyer's and Seller's Guide to Radon
- Consumer's Guide to Radon Reduction

DISCLAIMER

Landauer, Inc. makes no warranty of any kind, express or implied, as regards to the use, operation or analysis of any Landauer, Inc. monitor. Landauer, Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Landauer, Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (800) 528-8327 Facsimile: (708) 755-7048
Email: radon@landauer.com Website: www.landauer.com

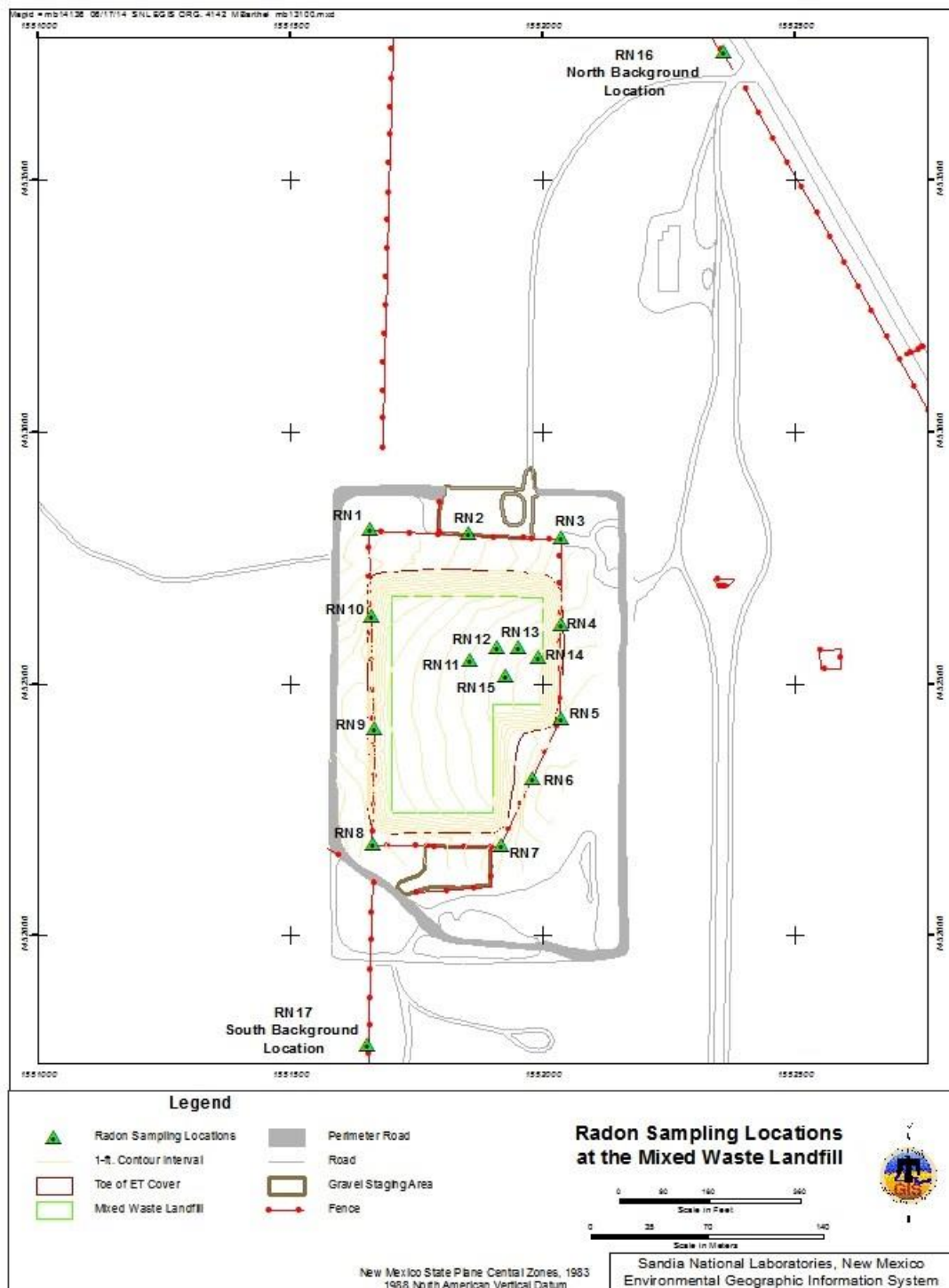


Figure 1. Location of the Radon Track Etch[®] Detectors at the MWL



RADTRAK® RADON TEST DATA SHEET

Company: Sandia Nat'l Labs
 Acct. Number: _____
 Contact: Kelly Green
 Phone: 505-845-0787
 Email: kagreen@sandia.gov

Send Radon Report To:

(If different from account settings)

Company: Sandia Nat'l Labs
 Attn: Kelly Green
 Address: PO Box 5800
MS 1198
 City: Albuquerque
 ST/Prov: NM Post Code: 87185
 Country: USA
 Phone: 505-845-0787
 Email: kagreen@sandia.gov

Site Information:

(Please provide information on where detectors are being deployed. Reports will be labeled and sorted by value provided in 'Site Name' below)

Site Name: SVL/MWL
 Site Type: out door
 Additional Information: _____

If Applicable:

Technician Name: Annamarie Rader
 Technician Number: _____
 Technician Signature: [Signature]

Please include all detector numbers, exposure periods and location information to appear on report

| Detector Number | Building Name / Nbr | Unit Nbr | Floor | Comment / Note | Start Date mm/dd/yyyy | End Date mm/dd/yyyy |
|-----------------|---------------------|----------|-------|----------------|-----------------------|---------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

please see attached list for info.

Landauer Use Only: Processed By: _____ Date: _____ Page ____ of ____

**Mixed Waste Landfill
Radon Detector
Deployment / Collection Form**

COC # 616399

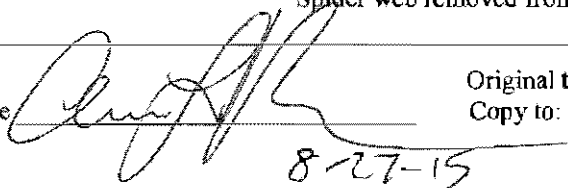
| Detector Serial Number | Sample Number | Sampling Location | Deployment Date | Collection Date | Time | Comments |
|------------------------|---------------|-------------------|-----------------|-----------------|------|----------|
| 5508721 | 098379-001 | RN1 | 07/02/2015 | 10/05/2015 | 1440 | |
| 5508745 | 098380-001 | RN2 | 07/02/2015 | 10/05/2015 | 1431 | |
| 5508723 | 098381-001 | RN3 | 07/02/2015 | 10/05/2015 | 1511 | |
| 5508724 | 098382-001 | RN4 | 07/02/2015 | 10/05/2015 | 1517 | |
| 5508726 | 098383-001 | RN5 | 07/02/2015 | 10/05/2015 | 1537 | |
| 5508727 | 098384-001 | RN6 | 07/02/2015 | 10/05/2015 | 1530 | |
| 5508734 | 098385-001 | RN7 | 07/02/2015 | 10/05/2015 | 1525 | |
| 5508735 | 098386-001 | RN8 | 07/02/2015 | 10/05/2015 | 1505 | |
| 5508736 | 098387-001 | RN9 | 07/02/2015 | 10/05/2015 | 1457 | |
| 5508737 | 098388-001 | RN10 | 07/02/2015 | 10/05/2015 | 1450 | |
| 5508738 | 098389-001 | RN11 | 07/02/2015 | 10/05/2015 | 1542 | |
| 5508739 | 098390-001 | RN12 | 07/02/2015 | 10/05/2015 | 1549 | |
| 5508740 | 098391-001 | RN13 | 07/02/2015 | 10/05/2015 | 1554 | |
| 5508741 | 098392-001 | RN14 | 07/02/2015 | 10/05/2015 | 1600 | |
| 5508742 | 098393-001 | RN15 | 07/02/2015 | 10/05/2015 | 1605 | |
| 5508743 | 098394-001 | RN16 | 07/02/2015 | 10/05/2015 | 1615 | |
| 5508744 | 098395-001 | RN17 | 07/02/2015 | 10/05/2015 | 1415 | |
| 5509057 | 098396-001 | RNTB | 07/02/2015 | 10/05/2015 | 1403 | |

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 08/27/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | Spider web removed from cup, 8/27/15 |
| RN2 | None |
| RN3 | Spider web removed from cup, 8/27/15 |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | Spider web removed from cup, 8/27/15 |
| RN10 | Spider web removed from cup, 8/27/15 |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | Spider web removed from cup, 8/27/15 |

Inspector's Signature



8-27-15

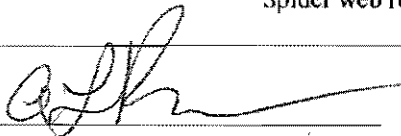
Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 09/17/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | Spider web removed from cup, 9/17/15 |
| RN6 | Spider web removed from cup, 9/17/15 |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | Spider web removed from cup, 9/17/15 |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | Spider web removed from cup, 9/17/15 |

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Radon Detector Collection Inspection Form**

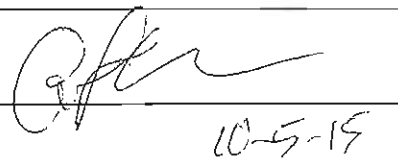
Name of Inspector Annemarie RaderARH 10-5-15Collection Date 10/05/2015Deployment Date 07/02/2015Radon Monitoring Frequency: ~ Quarterly ~ Semiannually ~ Annually

| <i>Radon Monitoring Location Inspection Parameters</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Action Required at Location Numbers</i> |
|---|--|------------------------------------|--|
| A. Monitoring location identification labeling. | Yes | No | |
| B. Mounting (fence) post condition. | Yes | No | |
| C. Radon monitoring outer metal housing securely fastened (mounting bracket and stainless steel clamp). | Yes | No | |
| D. Radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, and plastic cup) | Yes | No | |
| E. Radon monitoring apparatus interior clean of debris (dirt, insects, spider webs, etc.). | Yes | No | |
| F. Radon monitoring apparatus assembled and detector securely fastened with Velcro [®] to inside of plastic cup. | Yes | No | |
| <i>Radon Monitoring Detectors Inspection Parameters</i> | | | |
| A. Condition of Radtrak [®] detector at time of collection. | Yes | No | |
| B. Condition of Radtrak [®] detector at time of deployment. | Yes | No | |

**Mixed Waste Landfill
Radon Detector Collection / Deployment Inspection Form**

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature


10-5-15

Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Contract Verification Form (CVR)

Project Leader Green

Project Name MWL Radon Monitoring

Project/Task No. 146422_10.11.08

ARCOC No. 616366

Analytical Lab Landauer

SDG No. A23332

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | N/A | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | N/A | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | N/A | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | N/A | | |
| 2.7 | Dilution factors provided and all dilution levels reported | N/A | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | N/A | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | N/A | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | N/A | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | N/A | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | N/A | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | N/A | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | N/A | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | N/A | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 11-03-2015 13:05:00

Closed by: Wendy Palencia Date: 11-03-2015 13:05:00

MIXED WASTE LANDFILL

RADON MONITORING

October-December 2015 Monitoring Period



Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Albuquerque, New Mexico 87185-

date: February 8, 2016

to: Mike Mitchell (6234), Robert Ziock (4142), Bonnie Little (4142) and Annemarie Rader (4143)

from: Kelly Green (41283) *Kelly Green*

subject: Review of MWL Radon-in-Air Data – 4th Quarter of 2015, October through December 2015

The purpose of this memo is to document my review of the radon-in-air monitoring data results for the 4th Quarter of Calendar Year (CY) 2015, October through December 2015, relative to the data quality objective (DQO) and monitoring objectives specified in the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (Appendix C, *Air Sampling and Analysis Plan for the Mixed Waste Landfill*). The DQO for this monitoring is to produce representative, accurate, defensible, and comparable analytical results to support the monitoring objective. Monitoring results provide radon emission data from across the site and at two background locations (Figure 1). These results are compared to historic results to evaluate radon air emission trends and for direct comparison to the LTMMMP trigger level of 4 picocuries per liter. This DQO and these monitoring objectives are met through the implementation of standard operating procedures, analytical procedures/methods, quality assurance and control measures, and data evaluation protocol.

The radon-in-air monitoring measurements for the monitoring period October through December 2015 were obtained using Radtrak® radon detectors that were submitted to Landauer® Incorporated for analysis on Analysis Request/Chain of Custody (AR/COC) #616481. On October 5, 2015, the detectors were deployed on and around the MWL (locations RN1 through RN15 at the MWL, background locations RN16 and RN17, and a trip blank that was never exposed, RNTB) in accordance with the requirements of Section 3.2.1 of the LTMMMP. These detectors remained in the field for approximately 3 months (one quarter), and were collected on January 7, 2016. The protective casing and mounting hardware were inspected during the collection effort and repairs were made if needed. The location of these detectors is shown in Figure 1.

I have reviewed the results for this monitoring period along with supporting field documentation and determined the results meet the LTMMMP DQO and monitoring objectives. The radon trigger level was not exceeded by any of the individual sample results; however, it only applies to the results from the perimeter locations (locations RN1 through RN10, Figure 1). The results from this quarterly monitoring event will be presented in the next MWL Annual LTMM Report that will be submitted to NMED in June 2016 (reporting period is April 1, 2015 through March 31, 2016).

Attachments:

Analysis Request/Chain of Custody #616481

Landauer Radon Monitoring Report (analytical laboratory results)

Figure 1 Location of the Radon Track Etch® Detectors at the MWL

AOP 95-16

Batch No.

SMO Use

AR/COC 616481

*Prior confirmation with SMO required for 7 and 15 day TAT

Analysis Request and Chain of Custody for the 4th Quarter of CY 2015 at the MWL

SANDIA NATIONAL LABORATORIES
ATTN: WENDY PALENCIA
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL, 100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|---|---------------------|------------------------|--|
| 5509849 | DRNF | 05-OCT-15 | 07-JAN-16 | * - LESS THAN INDICATED VALUE NO GOLD SEAL 098762-001 RNTB | * 30.0 | * 0.3 ±0.06 | |
| 5511025 | DRNF | 05-OCT-15 | 07-JAN-16 | 098751-001 RN7 | 50.6 ±5.39 | 0.5 ±0.06 | |
| 5511026 | DRNF | 05-OCT-15 | 07-JAN-16 | 098752-001 RN8 | 30.7 ±3.78 | 0.3 ±0.04 | |
| 5511027 | DRNF | 05-OCT-15 | 07-JAN-16 | 098753-001 RN9 | 62.4 ±6.21 | 0.7 ±0.07 | |
| 5511028 | DRNF | 05-OCT-15 | 07-JAN-16 | 098754-001 RN10 | 44.3 ±4.92 | 0.5 ±0.05 | |
| 5511029 | DRNF | 05-OCT-15 | 07-JAN-16 | 098746-001 RN2 | 41.5 ±4.70 | 0.4 ±0.05 | |
| 5511030 | DRNF | 05-OCT-15 | 07-JAN-16 | 098745-001 RN1 | 41.5 ±4.70 | 0.4 ±0.05 | |
| 5511056 | DRNF | 05-OCT-15 | 07-JAN-16 | 098748-001 RN4 | 40.6 ±4.63 | 0.4 ±0.05 | |
| 5511057 | DRNF | 05-OCT-15 | 07-JAN-16 | 098760-001 RN16 | 59.7 ±6.03 | 0.6 ±0.06 | |

① ② ③ ④ ⑤ ⑥ ⑦ ⑧
RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| LMR | A23374 | 02-FEB-16 | 12-JAN-16 |

Mark Salaskey
Radon Measurement Specialist

SANDIA NATIONAL LABORATORIES
ATTN: WENDY PALENCIA
1515 EUBANK SE, ORG 4142
BLDG 1090/120, MS1103
ALBUQUERQUE, NM 87123

Radon Monitoring Report

LICENSES: 101146AL, 100584RT

Acct. No. 0410548

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586
Telephone: (800)528-8327 Facsimile: (708) 755-7048

| Detector Number | Detector Type | Starting Date | Ending Date | Field Data / Comments | Exposure pCi/l-days | Avg. Radon Conc. pCi/l | |
|-----------------|---------------|---------------|-------------|-----------------------|---------------------|------------------------|--|
| 5511059 | DRNF | 05-OCT-15 | 07-JAN-16 | 098750-001 RN6 | 55.1 ±5.72 | 0.6 ±0.06 | |
| 5511060 | DRNF | 05-OCT-15 | 07-JAN-16 | 098749-001 RN5 | 38.8 ±4.48 | 0.4 ±0.05 | |
| 5511061 | DRNF | 05-OCT-15 | 07-JAN-16 | 098761-001 RN17 | 66.0 ±6.44 | 0.7 ±0.07 | |
| 5511156 | DRNF | 05-OCT-15 | 07-JAN-16 | 098757-001 RN13 | 41.5 ±4.70 | 0.4 ±0.05 | |
| 5511157 | DRNF | 05-OCT-15 | 07-JAN-16 | 098759-001 RN15 | 76.9 ±7.11 | 0.8 ±0.08 | |
| 5511158 | DRNF | 05-OCT-15 | 07-JAN-16 | 098747-001 RN3 | 52.4 ±5.52 | 0.6 ±0.06 | |
| 5511159 | DRNF | 05-OCT-15 | 07-JAN-16 | 098756-001 RN12 | 38.8 ±4.48 | 0.4 ±0.05 | |
| 5511160 | DRNF | 05-OCT-15 | 07-JAN-16 | 098755-001 RN11 | 80.5 ±7.32 | 0.9 ±0.08 | |
| 5511161 | DRNF | 05-OCT-15 | 07-JAN-16 | 098758-001 RN14 | 52.4 ±5.52 | 0.6 ±0.06 | |

①

②

③

④

⑤

⑥

⑦

⑧

RESULTS RELATED ONLY TO MONITORS
AS RECEIVED BY LANDAUER. RADON IN
AIR BY ALPHA TRACK - EPA 402-R92-004.

| Q.C. Release | Process No. | Report Date | Date Received |
|--------------|-------------|-------------|---------------|
| LMR | A23374 | 02-FEB-16 | 12-JAN-16 |

Mark Salaskey
Radon Measurement Specialist

The United States Environmental Protection Agency recommends fixing your home if the results of one long-term test or the average of two short-term tests taken in the lowest lived-in level of the home show radon levels of 4.0 pCi/l or higher. A short term test remains in your home for two days to 90 days, whereas a long-term test remains in your home for more than 90 days under these guidelines.

Column 7 of this report indicates the radon test result, i.e., the average radon concentration in pCi/l for the test period. If you did not provide us the starting and ending dates (days the detector was exposed) we are unable to calculate the average radon concentration. To calculate the average radon concentration, divide the total exposure in pCi/l-days (column 6) by the number of days the detector was exposed.

For more information about the interpretation of your test result or about other radon related issues we suggest you contact your state radon office. Your state radon office should have available the following EPA publications:

- A Citizen's Guide to Radon
- Home Buyer's and Seller's Guide to Radon
- Consumer's Guide to Radon Reduction

DISCLAIMER

Landauer, Inc. makes no warranty of any kind, express or implied, as regards to the use, operation or analysis of any Landauer, Inc. monitor. Landauer, Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Landauer, Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

LANDAUER®

Landauer, Inc. 2 Science Road Glenwood, Illinois 60425-1586 Telephone: (800) 528-8327 Facsimile: (708) 755-7048
Email: radon@landauer.com Website: www.landauer.com

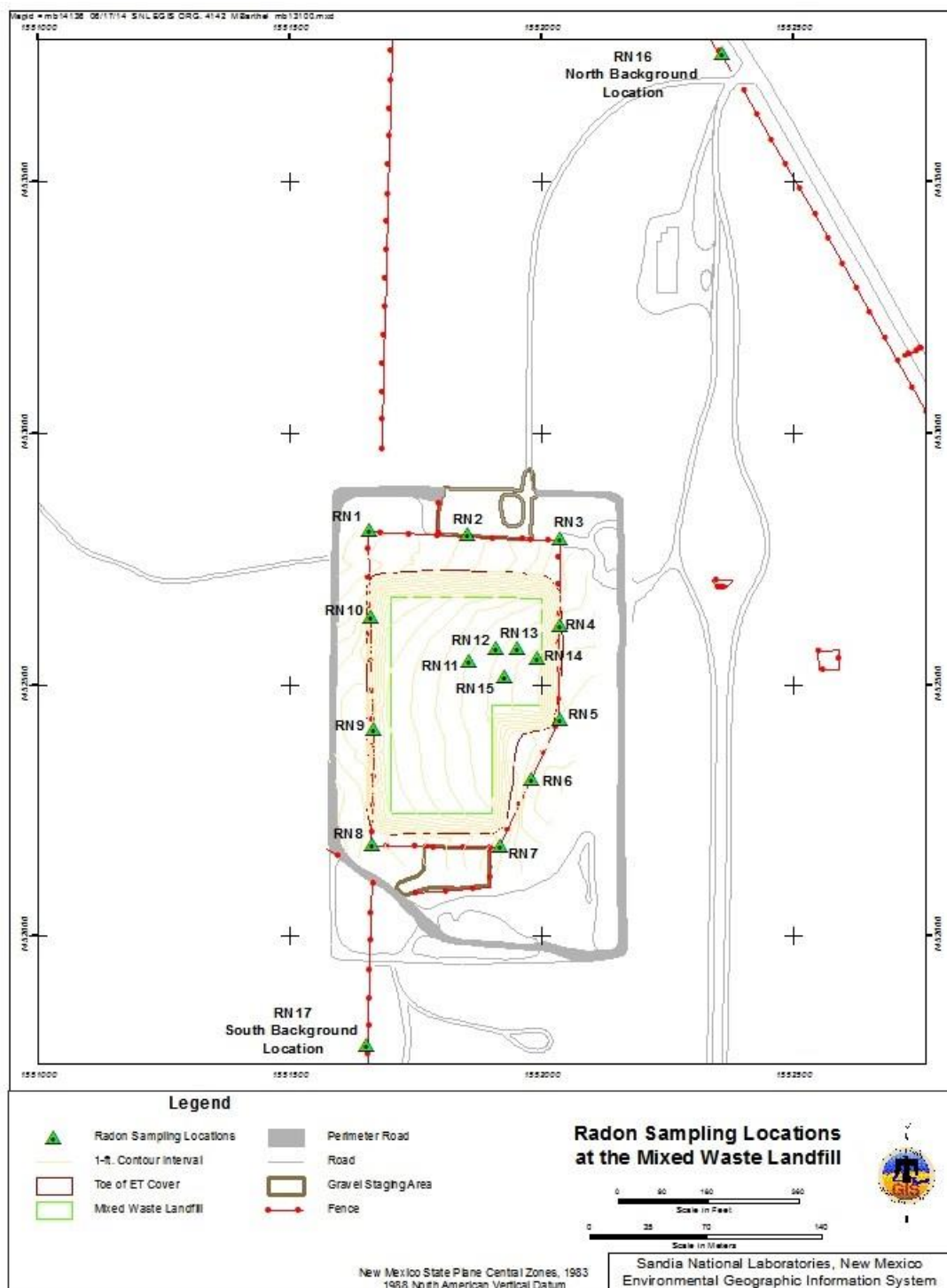


Figure 1. Location of the Radon Track Etch[®] Detectors at the MWL



RADTRAK® RADON TEST DATA SHEET

Company: Sandia Nat'l Labs
 Acct. Number: _____
 Contact: Kelly Green
 Phone: 505-845-0787
 Email: kagreen@sandia.gov

Send Radon Report To:

(If different from account settings)

Company: Sandia Nat'l Labs
 Attn: Kelly Green
 Address: PO Box 5800
MS 1198
 City: Albuquerque
 ST/Prov: NM Post Code: 87185
 Country: USA
 Phone: 505-845-0787
 Email: kagreen@sandia.gov

Site Information:

(Please provide information on where detectors are being deployed. Repens will be labeled and sorted by value provided in "Site Name" below.)

Site Name: SWL/MWL
 Site Type: out door
 Additional Information: _____

If Applicable:

Technician Name: Annemari Rader
 Technician Number: _____
 Technician Signature: [Signature]

Please include all detector numbers, exposure periods and location information to appear on report

| Detector Number | Building Name / Nbr | Unit Nbr | Floor | Comment / Note | Start Date mm/dd/yyyy | End Date mm/dd/yyyy |
|-----------------|---------------------|----------|-------|----------------|-----------------------|---------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

please see attached list for info

R-10305-0114

Landauer Use Only: Processed By: _____ Date: _____ Page _____ of _____

**Mixed Waste Landfill
Radon Detector
Deployment / Collection Form**

COC # 616481

| Detector Serial Number | Sample Number | Sampling Location | Deployment Date | Collection Date | Time | Comments |
|------------------------|---------------|-------------------|-----------------|-----------------|------|----------|
| 5511030 | 098745-001 | RN1 | 10/05/2015 | 01/07/2016 | 1530 | |
| 5511029 | 098746-001 | RN2 | 10/05/2015 | 01/07/2016 | 1529 | |
| 5511158 | 098747-001 | RN3 | 10/05/2015 | 01/07/2016 | 1611 | |
| 5511056 | 098748-001 | RN4 | 10/05/2015 | 01/07/2016 | 1606 | |
| 5511060 | 098749-001 | RN5 | 10/05/2015 | 01/07/2016 | 1609 | |
| 5511059 | 098750-001 | RN6 | 10/05/2015 | 01/07/2016 | 1601 | |
| 5511025 | 098751-001 | RN7 | 10/05/2015 | 01/07/2016 | 1558 | |
| 5511026 | 098752-001 | RN8 | 10/05/2015 | 01/07/2016 | 1547 | |
| 5511027 | 098753-001 | RN9 | 10/05/2015 | 01/07/2016 | 1543 | |
| 5511028 | 098754-001 | RN10 | 10/05/2015 | 01/07/2016 | 1538 | |
| 5511160 | 098755-001 | RN11 | 10/05/2015 | 01/07/2016 | 1528 | |
| 5511159 | 098756-001 | RN12 | 10/05/2015 | 01/07/2016 | 1626 | |
| 5511156 | 098757-001 | RN13 | 10/05/2015 | 01/07/2016 | 1624 | |
| 5511161 | 098758-001 | RN14 | 10/05/2015 | 01/07/2016 | 1621 | |
| 5511157 | 098759-001 | RN15 | 10/05/2015 | 01/07/2016 | 1630 | |
| 5511057 | 098760-001 | RN16 | 10/05/2015 | 01/07/2016 | 1640 | |
| 5511061 | 098761-001 | RN17 | 10/05/2015 | 01/07/2016 | 1550 | |
| 5509849 | 098762-001 | RNTB | 10/05/2015 | 01/07/2016 | 1515 | |

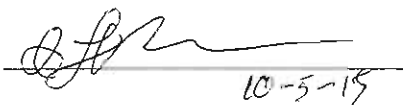
Mixed Waste Landfill Radon Monitoring Location Monthly Inspection Form

Name of Inspector Annemarie RaderDate of Inspection 10/05/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



10-5-15

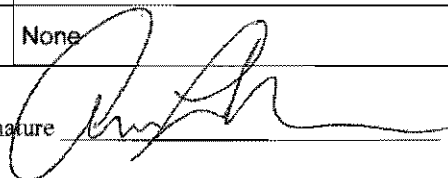
Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 11/25/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



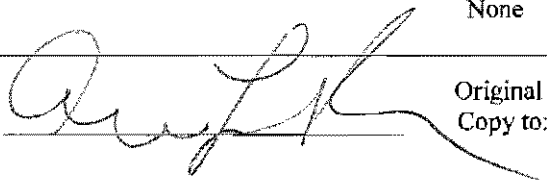
Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Mixed Waste Landfill Radon Monitoring Location Monthly Inspection FormName of Inspector Annemarie RaderDate of Inspection 12/24/2015

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Radon Detector Collection Inspection Form**

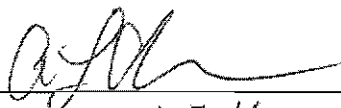
Name of Inspector Annemarie RaderCollection Date 01/07/2016Deployment Date 10/05/2015Radon Monitoring Frequency: Quarterly ~ Semiannually ~ Annually

| <i>Radon Monitoring Location Inspection Parameters</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Action Required at Location Numbers</i> |
|---|---|---|---|
| A. Monitoring location identification labeling. | Yes | No | |
| B. Mounting (fence) post condition. | Yes | No | |
| C. Radon monitoring outer metal housing securely fastened (mounting bracket and stainless steel clamp). | Yes | No | |
| D. Radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, and plastic cup) | Yes | No | |
| E. Radon monitoring apparatus interior clean of debris (dirt, insects, spider webs, etc.). | Yes | No | |
| F. Radon monitoring apparatus assembled and detector securely fastened with Velcro [®] to inside of plastic cup. | Yes | No | |
| <i>Radon Monitoring Detectors Inspection Parameters</i> | | | |
| A. Condition of Radtrak [®] detector at time of collection. | Yes | No | |
| B. Condition of Radtrak [®] detector at time of deployment. | Yes | No | |

**Mixed Waste Landfill
Radon Detector Collection / Deployment Inspection Form**

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|-----------------|---|
| RN1 | None |
| RN2 | None |
| RN3 | None |
| RN4 | None |
| RN5 | None |
| RN6 | None |
| RN7 | None |
| RN8 | None |
| RN9 | None |
| RN10 | None |
| RN11 | None |
| RN12 | None |
| RN13 | None |
| RN14 | None |
| RN15 | None |
| RN16 | None |
| RN17 | None |

Inspector's Signature


1-7-16

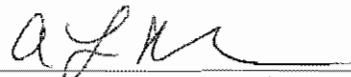
Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

Mixed Waste Landfill Radon Monitoring Location Supplemental Inspection FormName of Inspector Annemarie RaderDate of Inspection 01/07/2016

Inspection parameters: Identification labeling; mounting post; mounting bracket and stainless steel clamp; radon monitoring apparatus components (outer metal housing, 2 wing nuts, plastic retaining ring, plastic cup, Velcro[®], Radtrak[®] detector).

| Location | Action Required (Note any action required and date resolved, otherwise note "None") |
|----------|--|
| RN1 | NONE |
| RN2 | NONE |
| RN3 | NONE |
| RN4 | NONE |
| RN5 | NONE |
| RN6 | NONE |
| RN7 | NONE |
| RN8 | NONE |
| RN9 | NONE |
| RN10 | NONE |
| RN11 | NONE |
| RN12 | NONE |
| RN13 | NONE |
| RN14 | NONE |
| RN15 | NONE |
| RN16 | NONE |
| RN17 | NONE |

Inspector's Signature


1-7-16

Original to: Mixed Waste Landfill Operating Record
Copy to: SNL/NM Records Center

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Contract Verification Form (CVR)

Project Leader Green

Project Name MWL Radon Monitoring

Project/Task No. 146422_10.11.08

ARCOC No. 616481

Analytical Lab LAND

SDG No. A23374

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | N/A | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | N/A | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | N/A | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | N/A | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | N/A | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | N/A | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | N/A | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | N/A | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | N/A | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | N/A | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | N/A | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 02-04-2016 10:13:00

Closed by: Wendy Palencia Date: 02-04-2016 10:13:00

ANNEX B

**Mixed Waste Landfill
Surface Soil Tritium and Biota Monitoring Forms and Reports**

April 2015-March 2016

Data Evaluation Memo

Data Validation Reports

Contract Verification Reviews



date: October 18, 2015

to: Mike Mitchell (6234), Robert Ziock (4142), and Bonnie Little (4142)

from: Kelly Green (41281) *Kelly Green*

subject: Review of Tritium-in-Soil Results for LTMMP Monitoring at the Mixed Waste Landfill

The purpose of this memo is to document my review of the tritium-in-soil monitoring data results for the 8/04/15 sample event.

Summary of Tritium Results (EPA Method 906.0^a)
Mixed Waste Landfill Surface Soil Monitoring
August 4, 2015

| Sample Location | Result (pCi/L) | Percent Soil Moisture | Laboratory Qualifier ^b | Validation Qualifier ^b | Trigger Level (pCi/L) |
|------------------------|----------------|-----------------------|-----------------------------------|-----------------------------------|-----------------------|
| MWL TS-2NW | 719 ± 171 | 1.92 | -- | -- | 20,000 |
| MWL TS-2SW | 527 ± 152 | 2.51 | -- | J, FR7 | |
| MWL TS-2SE | 369 ± 136 | 2.60 | -- | J, FR7 | |
| MWL TS-2SE (Duplicate) | 269 ± 131 | 2.78 | -- | J, FR7 | |
| MWL TS-2NE | 550 ± 153 | 2.33 | -- | J, FR7 | |

Notes:

^aU.S. Environmental Protection Agency, 1986 (and updates), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd edition.

^bBlank (--) cell means all quality control samples met acceptance criteria.

BD = Result is below the MDA.

EPA = U.S. Environmental Protection Agency.

FR7 = Result is ≥ the MDA and <3X the MDA (Reason code).

J = The associated value is an estimated quantity

MDA = Minimum detectable activity.

MWL = Mixed Waste Landfill.

pCi/L = Picocuries per liter.

These results are consistent with the January 2015 monitoring data (MWL Annual LTMM Report, June 2015) which ranged from 1010 pCi/L to 1830 pCi/L and are far below the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (LTMMP) trigger level of 20,000 pCi/L. The results are also consistent with historic monitoring data collected at the MWL as part of the routine Terrestrial Surveillance Program where the data collected between 2000 and 2014 ranged from 182 pCi/L ("not detected, or "U" qualified) to 6140 pCi/L.

I recommend results be presented in tabular form and be evaluated relative to the historic data set and the LTMMP trigger level of 20,000 pCi/L. If the tritium flux from the disposal areas increases in the future due to changing conditions, they will be detected, compared to the trigger level, and reported appropriately.

cc: CFRC

Mixed Waste Landfill
Surface Soil Tritium and Biota Monitoring
August 2015 Sampling Event

Memorandum

Date: September 28, 2015
To: File
From: Linda Thal
Subject: Inorganic Data Review and Validation – SNL
Site: MWL Biota
AR/COC: 616324
SDG: 379275
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

Three samples were prepared and analyzed with approved procedures using methods SW846 6010B (ICP-AES) and 7471A (CVAA). Data were reported for all required analytes. Problems were identified with the data package that resulted in the qualification of data.

ICP-AES:

1. The MS %R was >125% for Ba. The associated sample results were detects and will be **qualified J+,MS2** due to high MS recovery.
2. The original V result for the serial dilution parent sample was >50X the MDL and the serial dilution %D was >10%. The associated sample results were detects and will be **qualified J,D1**.

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 prepared and analyzed within the prescribed holding times and properly preserved.

ICP-MS Instrument Tune

Tunes were not a method requirement.

Calibration

All initial and continuing calibration criteria met QC acceptance criteria.

Reporting Limit Verification

All CRA/CRI recoveries met QC acceptance criteria except as follows. The CRI %R was >130% for Zn. The associated sample results were detects >5X the PQL and will not be qualified.

It should be noted that the CRI was analyzed at the PQL and not at 2X the PQL for all target analytes.

Blanks

No target analyte was detected in the blanks.

ICP -MS Internal Standards

Internal standards were not a method requirement.

Matrix Spike (MS)

The MS met all QC acceptance criteria except as noted above in the Summary section.

Laboratory Replicate

The replicate met all QC acceptance criteria except as follows. The replicate RPD was >20% for Pb and both the parent sample result and the replicate result were >5X the PQL. The replicate RPD was <35% and since the samples were soils, no data were qualified based on professional judgment.

Laboratory Control Sample (LCS)

The LCS met all QC acceptance criteria.

Detection Limits/Dilutions

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

ICP Interference Check Sample (ICS A and AB)

Results of the ICS A and AB analyses were not evaluated because the sample concentrations of Ca, Mg, Al and Fe were < those in the ICS solution.

ICP Serial Dilution

The serial dilution met all QC acceptance criteria except as noted above in the Summary section.

Other QC

A field duplicate pair was submitted with AR/COC 616324. 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.

Reviewed by: Mary Donivan

Level: I

Date: 09/30/15

Memorandum

Date: September 28, 2015

To: File

From: Linda Thal

Subject: Radiochemical Data Review and Validation – SNL
Site: MWL Biota
AR/COC: 616324
SDG: 379275
Laboratory: GEL
Project/Task: 146422.10.11.08
Analysis: RAD

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 4.

Summary

Three samples were prepared and analyzed with approved procedures using method DOE HASL 300, 4.5.2.3/Ga-01-R (gamma spec). Problems were identified with the data package that resulted in the qualification of data.

1. The U-235 result for sample 379275006 was rejected by the laboratory due to high counting uncertainty and will be **qualified R,Z2**.
2. The Th-234 and U-238 results for sample -002 were rejected by the laboratory due to the peak not meeting identification criteria and will be **qualified R,Z2**.
3. All sample results which were either < the associated 2-sigma TPU or < the associated MDA will be **qualified BD,FR3**.
4. All sample results that were > the MDA but $\leq 3X$ the MDA will be **qualified J,FR7**.

Holding Times and Preservation

The samples were prepared and analyzed within the prescribed holding times.

Quantification

All quantification criteria were met except as noted above in the Summary section.

Calibration

The case narratives stated that the instruments used were properly calibrated.

Blanks

No target analytes were detected in the blanks at concentrations > the MDA and 2-sigma TPU.

Tracer/Carrier Recovery

Tracers/carriers were not a method requirement.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

An MS was not a method requirement.

Laboratory Replicate

All replicate error ratio acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

The samples were not diluted. All required detection limits were met.

Other QC

A field duplicate pair was submitted with AR/COC 616324. 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.

Reviewed by: Mary Donovan

Level: I

Date: 09/30/15



Sample Findings Summary



AR/COC: 616324

Page 1 of 3

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|---------------------------|-----------------------------|----------------------------|---------------|
| DOE HASL 300, 4.5.2.3/Ga- | | | |
| | 098241-002/MWL AHSS-01-2015 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Beryllium-7 (13966-02-4) | J, FR7 |
| | 098241-002/MWL AHSS-01-2015 | Bismuth-212 (14913-49-6) | J, FR7 |
| | 098241-002/MWL AHSS-01-2015 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Neptunium-237 (13994-20-2) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Radium-223 (15623-45-7) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Radium-224 (13233-32-4) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Sodium-22 (13966-32-0) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Thorium-227 (15623-47-9) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Thorium-231 (14932-40-2) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Thorium-234 (15065-10-8) | R, Z2 |
| | 098241-002/MWL AHSS-01-2015 | Uranium-235 (15117-96-1) | BD, FR3 |
| | 098241-002/MWL AHSS-01-2015 | Uranium-238 (7440-61-1) | R, Z2 |
| | 098242-002/MWL AHSS-02-2015 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Beryllium-7 (13966-02-4) | J, FR7 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|-----------------------------|----------------------------|---------------|
| | 098242-002/MWL AHSS-02-2015 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Neptunium-237 (13994-20-2) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Radium-223 (15623-45-7) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Sodium-22 (13966-32-0) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Thorium-227 (15623-47-9) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Thorium-231 (14932-40-2) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Thorium-234 (15065-10-8) | J, FR7 |
| | 098242-002/MWL AHSS-02-2015 | Uranium-235 (15117-96-1) | BD, FR3 |
| | 098242-002/MWL AHSS-02-2015 | Uranium-238 (7440-61-1) | J, FR7 |
| | 098243-002/MWL AHSS-02-2015 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Beryllium-7 (13966-02-4) | J, FR7 |
| | 098243-002/MWL AHSS-02-2015 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Neptunium-237 (13994-20-2) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Radium-223 (15623-45-7) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Sodium-22 (13966-32-0) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Thorium-227 (15623-47-9) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Thorium-231 (14932-40-2) | BD, FR3 |
| | 098243-002/MWL AHSS-02-2015 | Thorium-234 (15065-10-8) | BD, FR3 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|-----------------------------|--------------------------|---------------|
| | 098243-002/MWL AHSS-02-2015 | Uranium-235 (15117-96-1) | R, Z2 |
| | 098243-002/MWL AHSS-02-2015 | Uranium-238 (7440-61-1) | BD, FR3 |
| SW846 3050B/6010B | | | |
| | 098241-001/MWL AHSS-01-2015 | Barium (7440-39-3) | J+, MS2 |
| | 098241-001/MWL AHSS-01-2015 | Vanadium (7440-62-2) | J, D1 |
| | 098242-001/MWL AHSS-02-2015 | Barium (7440-39-3) | J+, MS2 |
| | 098242-001/MWL AHSS-02-2015 | Vanadium (7440-62-2) | J, D1 |
| | 098243-001/MWL AHSS-02-2015 | Barium (7440-39-3) | J+, MS2 |
| | 098243-001/MWL AHSS-02-2015 | Vanadium (7440-62-2) | J, D1 |

All other analyses met QC acceptance criteria; no further data should be qualified.

Sandia Data Validation Summary Worksheet

| | | |
|--|--------------------------------|-----------------------------|
| ARCOC#: 616324 | Site/Project: MWL Biota | Validation Date: 09/28/2015 |
| SDG #:379275 | Laboratory: GEL | Validator: Linda Thal |
| Matrix: Soil | # of Samples: 6 | CVR present: Yes |
| ARCOC(s) present: Yes | Sample Container Integrity: OK | |
| Analysis Type: <input type="checkbox"/> Organic <input checked="" type="checkbox"/> Metals <input type="checkbox"/> Genchem <input checked="" type="checkbox"/> Rad | | |

| Requested Analyses Not Reported | | | |
|---------------------------------|---------------|----------|----------|
| Client Sample ID | Lab Sample ID | Analysis | Comments |
| none | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|----------|-------|-----------------|------------------|---------------|-----------------|-----------------|
| Client Sample ID | Lab Sample ID | Analysis | Pres. | Collection Date | Preparation Date | Analysis Date | Analysis <2X HT | Analysis ≥2X HT |
| none | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Sampled 08/11/2015

Validated by:

L. Thal

Sandia Inorganic Metals Worksheet

| | | |
|--|-----------------|--------------|
| ARCO #s:616324 | SDG #(s):379275 | Matrix: Soil |
| Laboratory Sample IDs:379275001, -003, -005 | | |
| Method/Batch #s:SW846 3050B/6010B: 1500303/1500304; SW846 7471A: 1503109/1503110 | | |

ICPMS Mass Cal: ☐ Pass ☐ Fail ☒ NA ICPMS Resolution: ☐ Pass ☐ Fail ☒ NA

| Analyte (outliers) | Calibration | | | | | | MB mg/L | 5X Blank (5X MDL) mg/L | LCS %R | MS %R | Lab Rep RPD | Serial Dil. %D | ICS AB %R | ICS A ±MDL ug/L (x50) | CRA CRI %R | | | | |
|-----------------------|--------------|----------------|-----|-----|-------------|-------------|------------|------------------------------------|-----------|----------|-------------------|----------------------|-----------------|-----------------------------|------------------|--|--|--|--|
| | Int. mg/L | R ² | ICV | CCV | ICB ug/L | CCB ug/L | | | | | | | | | | | | | |
| Ba | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | 133 | ✓ | ✓ | NA | NA | ✓ | | | | |
| Pb | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 28 | ✓ | NA | NA | ✓ | | | | |
| V | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 18 | NA | NA | ✓ | | | | |
| Zn | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | NA | NA | 172 | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

| IS Outliers 60-125% | | | | IS Outliers 80-120% | | | |
|---------------------|-----------|-----------|-----------|---------------------|-----------|-----------|-----------|
| Sample ID | %Recovery | %Recovery | %Recovery | CCV/CCB ID | %Recovery | %Recovery | %Recovery |
| NA | | | | | | | |

Comments: HTs OK; Matrix QC -001
All samples < 500 000 for Al, Ca, Mg and <200 000 for Fe

Sandia Radiochemistry Worksheet

| | | |
|--|--------------|-------------|
| ARCOC #(s): 616324 | SDG #:379275 | Matrix:Soil |
| Laboratory Sample IDs:379275002, -004, -006 | | |
| Method/Batch#s: DOE HASL 300, 4.5.2.3/Ga-01-R (gammascpec) 1500294/1500329 | | |
| Method/Batch#s: | | |
| Method/Batch#s: | | |
| Method/Batch#s: | | |
| Method/Batch#s: | | |

| Analyte (outliers) | Control Freq. | Control Eval. | Method Blank | 5X Blank or 5X MDC | LCS %R | MS %R | MSD %R | MS/ MSD RER | Lab Rep. RER | | | | |
|----------------------------------|------------------|------------------|-----------------|--------------------------|-----------|-----------|----------------|-------------------|--------------------|----------------|----|-----------|----------------|
| None | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Tracer/Carrier Recovery Outliers | | | | | | | | | | | | | |
| Sample ID | Tracer/Carrier | %R | Sample ID | Tracer/Carrier | %R | Sample ID | Tracer/Carrier | %R | Sample ID | Tracer/Carrier | %R | Sample ID | Tracer/Carrier |
| NA | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Comments: HTs OK; DUP -002

Data rejected due to high counting uncertainty: U-235 sample -006

Data rejected due to peak not meeting identification criteria: Th-234, U-238 sample -002; K-40, Th-234, U-238 DUP

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. MA

SMO Use

AR/COC **616324**

| | | | |
|--------------------------------------|--------------------------------------|---------------------------------------|---|
| Project Name: MWL Biota | Date Samples Shipped: <u>8/12/15</u> | SMO Authorization: <u>[Signature]</u> | <input type="checkbox"/> Waste Characterization |
| Project/Task Manager: R. Ziock | Carrier/Waybill No. <u>237285</u> | SMO Contact Phone: <u>SMO</u> | <input type="checkbox"/> RMMA |
| Project/Task Number: 146422/10.11.08 | Lab Contact: Edie Kent | Wendy Palencia/505.844.3132 | <input checked="" type="checkbox"/> Released by COC No. |
| Service Order: CF426-15 | Lab Destination: GEL | Send Report to SMO: | <input checked="" type="checkbox"/> 4° Celsius |
| | Contract No.: 1303873 | Stephanie Montano/505.284.2553 | |

| | | |
|------------|-------------------|---|
| Tech Area: | Operational Site: | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 <u>379275</u> |
| Building: | Room: | |

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|--------|--------------|-------------------|-------------|------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 098241 | -001 | MWL AHSS-01-2015 | N/A | 8/11/15 <u>0913</u> | S | P | 250 ml | None | G | SA | RCRA Metals ¹ | <u>001</u> |
| 098241 | -002 | MWL AHSS-01-2015 | N/A | 8/11/15 <u>0913</u> | S | P | 250 ml | None | G | SA | Gamma Spec ² | <u>002</u> |
| 098242 | -001 | MWL AHSS-02-2015 | N/A | 8/11/15 <u>0907</u> | S | P | 250 ml | None | G | SA | RCRA Metals ¹ | <u>003</u> |
| 098242 | -002 | MWL AHSS-02-2015 | N/A | 8/11/15 <u>0907</u> | S | P | 250 ml | None | G | SA | Gamma Spec ² | <u>004</u> |
| 098243 | -001 | MWL AHSS-02-2015 | N/A | 8/11/15 <u>0907</u> | S | P | 250 ml | None | G | DU | RCRA Metals ¹ | <u>005</u> |
| 098243 | -002 | MWL AHSS-02-2015 | N/A | 8/11/15 <u>0907</u> | S | P | 250 ml | None | G | DU | Gamma Spec ² | <u>006</u> |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Last Chain: <input type="checkbox"/> Yes | Sample Tracking | SMO Use | Special Instructions/QC Requirements: | Conditions on Receipt | | | | | | | | | | | | | | | | | | | |
|---|-------------------|--------------------|---|----------------------------------|---------------------------------|--------------|--------------------|--|-------------------|-------------------|--------------------|--|----------------------------------|--|--|--|--|--|--|--|--|--|--------------------|
| Validation Req'd: <input type="checkbox"/> Yes | Date Entered: | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | | | | | | | | | | | | | | | |
| Background: <input type="checkbox"/> Yes | Entered by: | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | | | | | | | | | | | | | | | | | | |
| Confirmatory: <input type="checkbox"/> Yes | QC inits.: | | Negotiated TAT <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |
| Sample Team Members <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Name</th> <th>Signature</th> <th>Init.</th> <th>Company/Organization/Phone/Cell</th> </tr> <tr> <td>Robert Ziock</td> <td><u>[Signature]</u></td> <td></td> <td>SNL/4142/845-0485</td> </tr> <tr> <td>Danielle M. Nieto</td> <td><u>[Signature]</u></td> <td></td> <td>SNL/4143/845-7706 <u>8/11/15</u></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table> | Name | Signature | Init. | | Company/Organization/Phone/Cell | Robert Ziock | <u>[Signature]</u> | | SNL/4142/845-0485 | Danielle M. Nieto | <u>[Signature]</u> | | SNL/4143/845-7706 <u>8/11/15</u> | | | | | | | | | Sample Disposal <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab | Return Samples By: |
| | Name | Signature | Init. | Company/Organization/Phone/Cell | | | | | | | | | | | | | | | | | | | |
| | Robert Ziock | <u>[Signature]</u> | | SNL/4142/845-0485 | | | | | | | | | | | | | | | | | | | |
| | Danielle M. Nieto | <u>[Signature]</u> | | SNL/4143/845-7706 <u>8/11/15</u> | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | | ¹ Include Cu, Ni, V, Zn Co, and Be ² Use Pb-212 to determine Th-232 | | | | | | | | | | | | | | | | | | | | |
| Lab Use | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|---|
| 1. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>8/11/15</u> Time <u>1024</u> | 3. Relinquished by _____ Org. _____ Date _____ Time _____ |
| 1. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>8/11/15</u> Time <u>1024</u> | 3. Received by _____ Org. _____ Date _____ Time _____ |
| 2. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>8/12/15</u> Time <u>0645</u> | 4. Relinquished by _____ Org. _____ Date _____ Time _____ |
| 2. Received by <u>[Signature]</u> Org. _____ Date <u>8/13/15</u> Time <u>0845</u> | 4. Received by _____ Org. _____ Date _____ Time _____ |

*Prior confirmation with SMO required for 7 and 15 day TAT

Contract Verification Form (CVR)

Project Leader Ziock

Project Name MWL Biota

Project/Task No. 146422_10.11.08

ARCOC No. 616324

Analytical Lab GEL

SDG No. 379275

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | X | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| | c) Matrix spike recovery data reported and met | X | | Barium failed recovery limits for matrix spike (QC1203373955) |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | | X | RPD for lead outside acceptance range for duplicate (QC1203373954) |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | X | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | N/A | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | X | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | X | | |
| | c) ICP interference check sample data provided | X | | |
| | d) ICP serial dilution provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.6 | Radiochemistry and General Chemistry | X | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 09-22-2015 09:30:00

Closed by: Wendy Palencia Date: 09-22-2015 09:30:00

Memorandum

Date: September 11, 2015

To: File

From: Linda Thal

Subject: Radiochemical Data Review and Validation – SNL
Site: MWL Surface Soil
AR/COC: 616317
SDG: 378762
Laboratory: GEL
Project/Task: 146422.10.11.08
Analysis: RAD

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 4.

Summary

Five samples were prepared and analyzed with approved procedures using method GL-RAD-A-002 (tritium). Problems were identified with the data package that resulted in the qualification of data.

1. The associated results for all samples *except* 378762001 were > the MDA but $\leq 3X$ the MDA and will be **qualified J,FR7**.

Holding Times and Preservation

The samples were prepared and analyzed within the prescribed holding times.

Quantification

All quantification criteria were met except as noted above in the Summary section.

Calibration

The case narratives stated that the instruments used were properly calibrated.

Blanks

No target analytes were detected in the blanks at concentrations > the MDA and 2-sigma TPU.

Tracer/Carrier Recovery

Tracers/carriers were not a method requirement.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS met all QC acceptance criteria.

Laboratory Replicate

All replicate error ratio acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

The samples were not diluted. All required detection limits were met.

Other QC

A field duplicate pair was submitted with AR/COC 616317. 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.

Reviewed by: Mary Donovan

Level: I

Date: 09/11/15



Sample Findings Summary



AR/COC: 616317

Page 1 of 1

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|-----------------------|----------------------|---------------|
| GL-RAD-A-002 | | | |
| | 098221-002/MWL TS-2SW | Tritium (10028-17-8) | J, FR7 |
| | 098221-003/MWL TS-2SE | Tritium (10028-17-8) | J, FR7 |
| | 098221-004/MWL TS-2SE | Tritium (10028-17-8) | J, FR7 |
| | 098221-005/MWL TS-2NE | Tritium (10028-17-8) | J, FR7 |

All other analyses met QC acceptance criteria; no further data should be qualified.

Sandia Data Validation Summary Worksheet

| | | |
|---|--------------------------------|-----------------------------|
| ARCOC#: 616317 | Site/Project: MWL Surface Soil | Validation Date: 09/11/2015 |
| SDG #:378762 | Laboratory: GEL | Validator: Linda Thal |
| Matrix: Soil | # of Samples: 5 | CVR present: Yes |
| ARCOC(s) present: Yes | Sample Container Integrity: OK | |
| Analysis Type: <input type="checkbox"/> Organic <input type="checkbox"/> Metals <input type="checkbox"/> Genchem <input checked="" type="checkbox"/> Rad | | |

| Requested Analyses Not Reported | | | |
|---------------------------------|---------------|----------|----------|
| Client Sample ID | Lab Sample ID | Analysis | Comments |
| none | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|----------|-------|-----------------|------------------|---------------|-----------------|-----------------|
| Client Sample ID | Lab Sample ID | Analysis | Pres. | Collection Date | Preparation Date | Analysis Date | Analysis <2X HT | Analysis ≥2X HT |
| none | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Sampled 08/04/2015

Validated by:

L. Thal

Sandia Radiochemistry Worksheet

| | | |
|--|--------------|-------------|
| ARCOC #(s):616317 | SDG #:378762 | Matrix:Soil |
| Laboratory Sample IDs:378762001 through -005 | | |
| Method/Batch#s: GL-RAD-A-002 (Tritium)/1500008 | | |
| Method/Batch#s: | | |
| Method/Batch#s: | | |
| Method/Batch#s: | | |
| Method/Batch#s: | | |

[illegible]

Comments: HTs OK. MS and DUP -002.

All samples realiquotted and recounted to verify results. The realiquot results are similar to the original results. Original results reported.

Page 1 of 1

SMO Use

616317

☒ 4° Celsius

Albuquerque, NM 87185-0154

Operational Site:

378762

Conditions on
Receipt

Lab Use

*Prior confirmation with SMO required for 7 and 15 day TAT

Contract Verification Form (CVR)

Project Leader Ziock

Project Name MWL Surface Soil

Project/Task No. 146422_10.11.08

ARCOC No. 616317

Analytical Lab GEL

SDG No. 378762

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | X | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| | c) Matrix spike recovery data reported and met | X | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | N/A | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | N/A | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | X | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 09-11-2015 07:21:00

Closed by: Wendy Palencia Date: 09-11-2015 07:21:00

ANNEX C

**Mixed Waste Landfill
Soil-Vapor Monitoring Forms and Reports**

April 2015-March 2016

Field Forms

Data Validation Reports

Contract Verification Reviews

Certificates of Analysis – provided on compact disc in plastic sleeve insert

FIELD SAMPLING FORMS
MIXED WASTE LANDFILL
LONG-TERM MONITORING AND MAINTENANCE
SOIL-VAPOR MONITORING

| Form Title | Corresponding Procedure |
|--|--------------------------------|
| Tailgate Safety Briefing | PLA 05-09 |
| SUMMA [®] Canister Log | FOP 08-22 |
| Soil Vapor Sampling Form | FOP 08-22 |
| Analysis Request and Chain of Custody* | LOP 94-03 |

*Completed AR/COC forms are provided in the Data Validation Section of this Annex.

FIELD SAMPLING FORMS
APRIL 2015 SOIL-VAPOR MONITORING

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWLDate: 04/14/15Time: 0800Activities: Soil Vapor Sampling

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 52 °F Wind Speed: 2 MPHHumidity: 79.7 %

Chemicals Used: _____

Other: _____

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert T Lynch
Printed Name

ALFRED SANTILLANES
Printed Name

William Gibson
Printed Name

Gilbert L. Quintana
Printed Name

Tim Jackson
Printed Name

Sue Collins
Printed Name

[Signature]
Signature

[Signature]
Signature

[Signature]
Signature

[Signature]
Signature

[Signature]
Signature

[Signature]
Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORMDept: 4142 Well Location: MWLDate: 04/15/15Time: 0839Activities: Soil Vapor Sampling

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 61.3 °F Wind Speed: 6 MPHHumidity: 25.8 %

Chemicals Used: _____

Other: _____

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911*Attendees*William Gibson
Printed NameALFRED SANTILLANES
Printed NameRobert Lynch
Printed Name_____
Printed Name_____
Printed NameWilliam Gibson
SignatureAlfred Santillanes
SignatureRobert Lynch
Signature_____
Signature_____
Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

SUMMA[®] Canister Log

| Serial # | Date Received | Date Tested for Initial VAC | Initial VAC at 5400 ft (in. Hg) | Date Used | End VAC at 5400 ft (in. Hg) | Date Returned to SMO |
|--------------|---------------|-----------------------------|---------------------------------|-----------|-----------------------------|----------------------|
| 3400 1143 | 4/10/15 | 4/14/15 | -26 | 4/14/15 | -8 | 4/14/15 |
| 3400 1276 | | | -24 | | -8 | |
| 3400 0370 | | | -24 | | -8 | |
| 34000 411 | | | -25 | | -8 | |
| 340000 95 | | | -25 | | -8 | |
| 3400 2050 | | | -25 | | -8 | |
| 34000 475 | | | -24 | | -8 | |
| 3400 1662 | | | -24 | | -8 | |
| 34000 781 | | | -25 | | -8 | |
| 3400 1609 | | | -25 | | -8 | |
| 3400 1304 | | | -24 | | -8 | |
| 3400 1386 | | | -24 | | -8 | |
| 3400 1360 | | | -26 | | -8 | |
| 3400 1662 | | | -24 | | -8 | |
| 3400 1513 | | | -24 | | -8 | |
| 3400 1178 | | | -25 | | -8 | |
| 3400 2109 | | | -25 | | -8 | |
| 3400 1465 | | | -24 | | -8 | |
| FB 3400 1339 | | | -25 | | -8 | |
| 3400 1528 | | | -24 | | -8 | |
| 34000 717 | | | -24 | | -8 | |
| 34000 565 | | | -24 | | -8 | 4/14/15 |
| 8243 | | | -25 | | -8 | -7 |
| 34000 472 | | | -25 -24 | | -8 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

SUMMA[®] Canister Log completed by:

Robert Lynch

Printed Name

Signature

[illegible]

ALFRED SANTILLANES

Signature Alfred S. Tillman

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page

- continuous PID readings at each monitoring well
- final/stable PID reading

Soil Vapor Sampling Log

| Location | Date | Time | Canister # | PID (ppm) | Starting Vacuum (in. Hg) | Ending Vacuum (in. Hg) | Location Comments |
|--------------|---------|-------|------------|-----------|--------------------------|------------------------|-------------------|
| MWL-SV03-FB3 | 4/14/15 | 0835 | 34001143 | 0. | -26 | -8 | |
| MWL-SV03-50 | | 0850 | 34001776 | 0.0 | -24 | -8 | SA WM |
| MWL-SV03-50 | | 0850 | 34000370 | | -24 | -8 | DU WM |
| MWL-SV03-50 | | 0855 | 34000411 | | -25 | -8 | SA WO/m |
| MWL-SV03-50 | | 0855 | 34000095 | | -25 | -8 | DU WO/m |
| MWL-SV03-100 | | 0900 | 34002056 | | -25 | -8 | |
| MWL-SV03-200 | | 0905 | 34000475 | | -24 | -8 | SA WO/m |
| MWL-SV03-200 | | 0905 | 34001662 | | -24 | -8 | DU WO/m |
| MWL-SV03-200 | | 0910 | 34000878 | | -25 | -8 | SA WO/m |
| MWL-SV03-200 | | 0910 | 34001609 | | -25 | -8 | DU WO/m |
| MWL-SV03-300 | | 0928 | 34001364 | | -24 | -8 | |
| MWL-SV03-400 | | 0956 | 34001326 | ✓ | -24 | -8 | |
| MWL-SV04-FB | 4/14/15 | 10:16 | 34001360 | NA | -26 | -8 | |
| MWL-SV04-50 | | 1030 | 34001060 | 0.0 | -24 | -8 | |
| MWL-SV04-100 | | 1032 | 34001513 | 0.0 | -24 | -8 | |
| MWL-SV04-200 | | 1035 | 34001178 | 0.0 | -25 | -8 | |
| MWL-SV04-300 | | 1038 | 34002109 | 0.0 | -25 | -8 | |
| MWL-SV04-400 | | 1041 | 34001465 | 0.6 | -24 | -8 | |
| MWL-SV05-50 | 4/14/15 | 1112 | 34001528 | 0.0 | -24 | -8 | |
| MWL-SV05-100 | | 1115 | 34000717 | | -24 | -8 | |
| MWL-SV05-200 | | 1120 | 34000565 | | -24 | -8 | |
| MWL-SV05-300 | | 1129 | 34000472 | | -24 | -8 | |
| MWL-SV05-400 | | 1133 | 8243 | ✓ | -25 | -7 | |
| MWL-SV05-FB | | 1107 | 34001339 | NA | -25 | -8 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[illegible]

SUMMARY SHEET FOR
APRIL 2015 SOIL-VAPOR SAMPLES

Sample Summary for April 2015 MWL Soil Vapor Monitoring

| Well ID | Sample Date | Sample ID / Port | SUMMA Number | ARCOC | Sample Number | Sample Type | Associated Field Blank (ARCOC #/Sample #) | Comments |
|--|-------------|------------------|--------------|--------|---------------|---------------|---|---------------------------|
| Mixed Waste Landfill Soil Vapor Monitoring: Project Task Number 146422.10.11.08 / Service Order Number CF 01-15 | | | | | | | | |
| MWL-SV01 | 15-Apr-15 | MWL-SV01-42.5 | 34000107 | 616085 | 097531 | Environmental | 616085 / 097532 | |
| | | MWL-SV-FB1 | 34001486 | | 097532 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV02 | 15-Apr-15 | MWL-SV02-41.5 | 34000202 | 616086 | 097533 | Environmental | 616086 / 097534 | |
| | | MWL-SV-FB2 | 34000595 | | 097534 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV03 | 14-Apr-15 | MWL-SV03-50 | 34001276 | 616087 | 097535 | Environmental | 616087 / 097546 | collected with manifold |
| | | MWL-SV03-50 | 34000370 | | 097536 | Duplicate | | collected with manifold |
| | | MWL-SV03-50 | 34000411 | | 097537 | Environmental | | no manifold - in sequence |
| | | MWL-SV03-50 | 34000095 | | 097538 | Duplicate | | no manifold - in sequence |
| | | MWL-SV03-100 | 34002050 | | 097539 | Environmental | | |
| | | MWL-SV03-200 | 34000475 | | 097540 | Environmental | | collected with manifold |
| | | MWL-SV03-200 | 34001662 | | 097541 | Duplicate | | collected with manifold |
| | | MWL-SV03-200 | 34000781 | | 097542 | Environmental | | no manifold - in sequence |
| | | MWL-SV03-200 | 34001609 | | 097543 | Duplicate | | no manifold - in sequence |
| | | MWL-SV03-300 | 34001304 | | 097544 | Environmental | | |
| | | MWL-SV03-400 | 34001386 | | 097545 | Environmental | | |
| | | MWL-SV-FB3 | 34001143 | | 097546 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV04 | 14-Apr-15 | MWL-SV04-50 | 34001062 | 616088 | 097547 | Environmental | 616088 / 097552 | |
| | | MWL-SV04-100 | 34001513 | | 097548 | Environmental | | |
| | | MWL-SV04-200 | 34001178 | | 097549 | Environmental | | |
| | | MWL-SV04-300 | 34002109 | | 097550 | Environmental | | |
| | | MWL-SV04-400 | 34001465 | | 097551 | Environmental | | |
| | | MWL-SV-FB4 | 34001360 | | 097552 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV05 | 14-Apr-15 | MWL-SV05-50 | 34001528 | 616089 | 097553 | Environmental | 616089 / 097558 | |
| | | MWL-SV05-100 | 34000717 | | 097554 | Environmental | | |
| | | MWL-SV05-200 | 34000565 | | 097555 | Environmental | | |
| | | MWL-SV05-300 | 34000472 | | 097556 | Environmental | | |
| | | MWL-SV05-400 | 8243 | | 097557 | Environmental | | |
| | | MWL-SV-FB5 | 34001339 | | 097558 | Field QC | n/a | Ultra Pure N2 |

DATA VALIDATION REPORTS FOR ENVIRONMENTAL SAMPLES

SOIL-VAPOR MONITORING

APRIL 2015

AR/COC NUMBERS 616085, 616086, 616087, 616088, 616089

Memorandum

Date: May 14, 2015

To: File

From: Linda Thal

Subject: GC/MS Organic Data Review and Validation – SNL
Site: MWL-SVM
AR/COC: 616085, 616086, 616087, 616088 and 616089
SDG: 320-12611-1; 320-12612-1; 320-12599-1; 320-12597-1 and 320-12598-1
Laboratory: TestAmerica Laboratories, Inc. -West Sacramento
Project/Task: 146422.10.11.08
Analysis: VOCs by method TO-15

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 4.

Summary

Twenty-eight samples were prepared and analyzed with accepted procedures using method EPA TO-15 (Determination of VOCs in Air collected in specially prepared canisters and analyzed by GC-MS). All compounds were successfully analyzed. Problems were identified with the data package that resulted in the qualification of data.

1. Toluene was detected at < practical quantitation limit (PQL) in the FB, sample 320-12599-12, associated with samples 320-12599-1 through -11. The associated results for samples 320-12599-5 through -10 were detects < the PQL and $\leq 10X$ the FB result and will be **qualified U,B2** at the PQL.
2. Toluene was detected at < PQL in the FB, sample 320-12597-6, associated with samples 320-12597-1 through -5. The associated results for samples 320-12597-1, and -3 through -5 were detects < the PQL and $\leq 10X$ the FB result and will be **qualified U,B2** at the PQL.
3. Toluene was detected at < PQL in the FB, sample 320-12598-6, associated with samples 320-12598-1 through -5. The associated results for samples 320-12598-1 and -3 were detects < the PQL and $\leq 10X$ the FB result and will be **qualified U,B2** at the PQL.
4. The acetone; methylene chloride; 1,1-dichloroethene; 2-butanone; carbon disulfide and vinyl acetate RPDs were > acceptance criteria for the LCS/LCSD associated with samples 320-12611-1 and -2; 320-12612-1 and -2 and 320-12599-9 through -12. The acetone and 1,1-dichloroethene results for sample 320-12611-1 and 320-12612-1; the acetone and methylene chloride results for sample 320-12611-2; the methylene chloride and toluene results for sample 320-12612-2; the acetone, methylene chloride and 1,1-dichloroethene results for samples 320-12599-9 through -11

and the carbon disulfide result for sample 320-12599-10 were detects and will be **qualified J,L5**. The remaining associated sample results were non-detects and will be **qualified UJ,L5**.

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 analyzed within the prescribed holding time and properly preserved.

Instrument Tune

All instrument tune requirements were met.

Calibration

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

Blanks

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

Acetone, toluene and methylene chloride were detected at < the PQL in the FB, sample 320-12611-2, associated with sample 320-12611-1. The associated sample result for acetone was a detect 10X > the FB result and will not be qualified. The associated sample results for toluene and methylene chloride were non-detects and will not be qualified.

Toluene and methylene chloride were detected at < the PQL in the FB, sample 320-12612-2, associated with sample 320-12612-1. The associated sample results for toluene and methylene chloride were non-detects and will not be qualified.

Toluene and tetrachloroethene were detected at < the PQL in the FB, sample 320-12599-12, associated with samples 320-12599-1 through -11. The toluene results for samples -1 through -4 were non-detects and will not be qualified. The toluene result for sample -11 was a detect >10X the FB result and will not be qualified. The tetrachloroethene results for all samples were detects >10X the FB result and will not be qualified.

Toluene was detected at < PQL in the FB, sample 320-12597-6, associated with samples 320-12597-1 through -5. The associated result for sample -2 was non-detect and will not be qualified. Acetone was detected at < PQL in the FB, sample 320-12597-6, associated with samples 320-12597-1 through -5. The associated result for sample -2 was a detect >10X the FB result and will not be qualified.

Toluene was detected at < PQL in the FB, sample 320-12598-6, associated with samples 320-12598-1 through -5. The associated result for sample -2 was non-detect and will not be qualified. The associated results for samples -4 and -5 were detects >10X the FB result and will not be qualified.

1,2-Dichlorobenzene and 1,3-dichlorobenzene were detected at < the PQL in the method blank associated with samples 320-12599-1 through -8. The associated sample results were non-detects and will not be qualified.

Surrogates

All surrogate acceptance criteria were met.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

An MS/MSD was not performed.

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

The LCS/LCSD met all QC acceptance criteria except as noted above in the Summary section and as follows. The chloromethane and 1,2-dichloro-1,1,2,2-tetrafluoroethane recoveries were > the upper acceptance limit for the LCS or LCSD associated with samples 320-12611-1 and -2; 320-12612-1 and -2 and 320-12599-9 through -12. The 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 except as follows.

Sample 320-12611-1 was diluted 11.8X and sample 320-12612-1 7.67X for all target analytes .
Sample 320-12599-1 was diluted 5.98X; sample -2 4.92X; sample -3 4.88X; sample -4 5.93X; sample -5 7.45X; sample -6 9.95X; sample -7 10.1X; sample -8 9.7X; sample -9 8.62X; sample -10 9.19X and sample -11 9.71X for all target analytes.

Sample 320-12597-1 was diluted 1.86X for tetrachloroethane; 1,1,2-trichloro-1,2,2-trifluoroethane and trichloroethene only; sample -2 5.21X; sample -3 8.68X; sample -4 3.83X and sample -5 5.06X for all target analytes.

Sample 320-12598-1 was diluted 2.96X; sample -2 6.26X; sample -3 9.77X; sample -4 3.11X and sample -5 2.79X for all target analytes.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

Mass spectra acceptability were verified during data validation and met QC acceptance criteria.

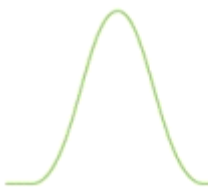
FBs were submitted with each AR/COC. Four field duplicate pairs were submitted with ARCO 616087. There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result.

No other specific issues that affect data quality were identified.

Reviewed by: Monica Dymerski

Level I

Date: 05/19/15



Sample Findings Summary



AR/COC: 616085, 616086, 616087, 616088, 616089

Page 1 of 6

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|--------------------------|------------------------------|---------------|
| TO15 | | | |
| | 097531-001/MWL-SV01-42.5 | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097531-001/MWL-SV01-42.5 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097531-001/MWL-SV01-42.5 | ACETONE (67-64-1) | J, L5 |
| | 097531-001/MWL-SV01-42.5 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097531-001/MWL-SV01-42.5 | METHYLENE CHLORIDE (75-09-2) | UJ, L5 |
| | 097531-001/MWL-SV01-42.5 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097532-001/MWL-SV-FB1 | 1,1-DICHLOROETHENE (75-35-4) | UJ, L5 |
| | 097532-001/MWL-SV-FB1 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097532-001/MWL-SV-FB1 | ACETONE (67-64-1) | J, L5 |
| | 097532-001/MWL-SV-FB1 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097532-001/MWL-SV-FB1 | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097532-001/MWL-SV-FB1 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097533-001/MWL-SV02-41.5 | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097533-001/MWL-SV02-41.5 | 2-BUTANONE (MEK) (78-93-3) | J, L5 |
| | 097533-001/MWL-SV02-41.5 | ACETONE (67-64-1) | J, L5 |
| | 097533-001/MWL-SV02-41.5 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097533-001/MWL-SV02-41.5 | METHYLENE CHLORIDE (75-09-2) | UJ, L5 |
| | 097533-001/MWL-SV02-41.5 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097534-001/MWL-SV-FB2 | 1,1-DICHLOROETHENE (75-35-4) | UJ, L5 |
| | 097534-001/MWL-SV-FB2 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097534-001/MWL-SV-FB2 | ACETONE (67-64-1) | UJ, L5 |
| | 097534-001/MWL-SV-FB2 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097534-001/MWL-SV-FB2 | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097534-001/MWL-SV-FB2 | VINYL ACETATE (108-05-4) | UJ, L5 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|--------------------------------|------------------------------|---------------|
| | 097535-001/MWL-SV03-50 W/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097535-001/MWL-SV03-50 W/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097535-001/MWL-SV03-50 W/M | ACETONE (67-64-1) | J, L5 |
| | 097535-001/MWL-SV03-50 W/M | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097535-001/MWL-SV03-50 W/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097535-001/MWL-SV03-50 W/M | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097536-001/MWL-SV03-50 W/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097536-001/MWL-SV03-50 W/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097536-001/MWL-SV03-50 W/M | ACETONE (67-64-1) | J, L5 |
| | 097536-001/MWL-SV03-50 W/M | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097536-001/MWL-SV03-50 W/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097536-001/MWL-SV03-50 W/M | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097537-001/MWL-SV03-50 WO/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097537-001/MWL-SV03-50 WO/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097537-001/MWL-SV03-50 WO/M | ACETONE (67-64-1) | J, L5 |
| | 097537-001/MWL-SV03-50 WO/M | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097537-001/MWL-SV03-50 WO/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097537-001/MWL-SV03-50 WO/M | VINYL ACETATE (108-05-4) | UJ, L5 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|--------------------------------|------------------------------|---------------|
| | 097538-001/MWL-SV03-50 WO/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097538-001/MWL-SV03-50 WO/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097538-001/MWL-SV03-50 WO/M | ACETONE (67-64-1) | J, L5 |
| | 097538-001/MWL-SV03-50 WO/M | CARBON DISULFIDE (75-15-0) | J, L5 |
| | 097538-001/MWL-SV03-50 WO/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097538-001/MWL-SV03-50 WO/M | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097539-001/MWL-SV03-100 | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097539-001/MWL-SV03-100 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097539-001/MWL-SV03-100 | ACETONE (67-64-1) | J, L5 |
| | 097539-001/MWL-SV03-100 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097539-001/MWL-SV03-100 | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097539-001/MWL-SV03-100 | TOLUENE (108-88-3) | 3.0U, B2 |
| | 097539-001/MWL-SV03-100 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097540-001/MWL-SV03-200 W/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097540-001/MWL-SV03-200 W/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097540-001/MWL-SV03-200 W/M | ACETONE (67-64-1) | J, L5 |
| | 097540-001/MWL-SV03-200 W/M | CARBON DISULFIDE (75-15-0) | J, L5 |
| | 097540-001/MWL-SV03-200 W/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097540-001/MWL-SV03-200 W/M | TOLUENE (108-88-3) | 4.0U, B2 |
| | 097540-001/MWL-SV03-200 W/M | VINYL ACETATE (108-05-4) | UJ, L5 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|---------------------------------|------------------------------|---------------|
| | 097541-001/MWL-SV03-200 W/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097541-001/MWL-SV03-200 W/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097541-001/MWL-SV03-200 W/M | ACETONE (67-64-1) | J, L5 |
| | 097541-001/MWL-SV03-200 W/M | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097541-001/MWL-SV03-200 W/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097541-001/MWL-SV03-200 W/M | TOLUENE (108-88-3) | 4.0U, B2 |
| | 097541-001/MWL-SV03-200 W/M | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097542-001/MWL-SV03-200 WO/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097542-001/MWL-SV03-200 WO/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097542-001/MWL-SV03-200 WO/M | ACETONE (67-64-1) | J, L5 |
| | 097542-001/MWL-SV03-200 WO/M | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097542-001/MWL-SV03-200 WO/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097542-001/MWL-SV03-200 WO/M | TOLUENE (108-88-3) | 3.9U, B2 |
| | 097542-001/MWL-SV03-200 WO/M | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097543-001/MWL-SV03-200 WO/M | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097543-001/MWL-SV03-200 WO/M | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097543-001/MWL-SV03-200 WO/M | ACETONE (67-64-1) | J, L5 |
| | 097543-001/MWL-SV03-200 WO/M | CARBON DISULFIDE (75-15-0) | UJ, L5 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|---------------------------------|------------------------------|---------------|
| | 097543-001/MWL-SV03-200 WO/M | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097543-001/MWL-SV03-200 WO/M | TOLUENE (108-88-3) | 3.4U, B2 |
| | 097543-001/MWL-SV03-200 WO/M | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097544-001/MWL-SV03-300 | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097544-001/MWL-SV03-300 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097544-001/MWL-SV03-300 | ACETONE (67-64-1) | J, L5 |
| | 097544-001/MWL-SV03-300 | CARBON DISULFIDE (75-15-0) | J, L5 |
| | 097544-001/MWL-SV03-300 | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097544-001/MWL-SV03-300 | TOLUENE (108-88-3) | 3.7U, B2 |
| | 097544-001/MWL-SV03-300 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097545-001/MWL-SV03-400 | 1,1-DICHLOROETHENE (75-35-4) | J, L5 |
| | 097545-001/MWL-SV03-400 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097545-001/MWL-SV03-400 | ACETONE (67-64-1) | J, L5 |
| | 097545-001/MWL-SV03-400 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097545-001/MWL-SV03-400 | METHYLENE CHLORIDE (75-09-2) | J, L5 |
| | 097545-001/MWL-SV03-400 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097546-001/MWL-SV-FB3 | 1,1-DICHLOROETHENE (75-35-4) | UJ, L5 |
| | 097546-001/MWL-SV-FB3 | 2-BUTANONE (MEK) (78-93-3) | UJ, L5 |
| | 097546-001/MWL-SV-FB3 | ACETONE (67-64-1) | UJ, L5 |
| | 097546-001/MWL-SV-FB3 | CARBON DISULFIDE (75-15-0) | UJ, L5 |
| | 097546-001/MWL-SV-FB3 | METHYLENE CHLORIDE (75-09-2) | UJ, L5 |
| | 097546-001/MWL-SV-FB3 | VINYL ACETATE (108-05-4) | UJ, L5 |
| | 097547-001/MWL-SV04-50 | TOLUENE (108-88-3) | 0.4U, B2 |
| | 097549-001/MWL-SV04-200 | TOLUENE (108-88-3) | 3.5U, B2 |
| | 097550-001/MWL-SV04-300 | TOLUENE (108-88-3) | 1.5U, B2 |
| | 097551-001/MWL-SV04-400 | TOLUENE (108-88-3) | 2.0U, B2 |
| | 097553-001/MWL-SV05-50 | TOLUENE (108-88-3) | 1.2U, B2 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|-------------------------|---------------------|---------------|
| | 097555-001/MWL-SV05-200 | TOLUENE (108-88-3) | 3.9U, B2 |

All other analyses met QC acceptance criteria; no further data should be qualified.

Data Validation Summary Worksheet

AR/COC #: 616085, 616086, 616087, 616088 and 616089

Site/Project: MWL-SVM

Validation Date: 05/14/2015

SDG #: 320-12611-1; 320-12612-1; 320-12599-1; 320-12597-1 and 320-12598-1

Laboratory: TA West Sacramento, CA

Validator: Linda Thal

Matrix: Air

of Samples: 28 CVR present: Yes

Analysis Type: X ☐ Organic ☐ Metals

AR/COC(s) present: Yes

Sample Container Integrity: OK

☐ Rad ☐ Gen Chem

| Requested Analyses Not Reported | | | | | | |
|---------------------------------|---------------|---------|---------|--------|-----|----------|
| Sample Number | Laboratory ID | organic | genchem | metals | rad | Comments |
| None | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|----------|-------|------------|------------|------------|--------------------|--------------------|
| Sample Number | Laboratory ID | Analysis | Pres. | Coll. Date | Prep. Date | Anal. Date | Anal. within 2X HT | Anal. beyond 2X HT |
| None | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Collected 04/14/2015 and 04/15/2015

Validated by: 

Revised 7/2007

Organic Worksheet (GC/MS) Page 1 of 5

AR/COC #: 616085

SDG #: 320-12611-1

Matrix: Air

Laboratory Sample IDs: 320-12611-1 and -2

Method/Batch #s: TO-15:72755

Tuning (pass/fail): Pass TICs Required? (yes/no): NA

| Analyte (outliers) | Calibration | | | | Method Blank | 5X (10X) MB | LCS %R | LCSD %R | LCS LCSD RPD | FB -2 | 5X (10X) FB | | | |
|--|-------------|-----------|------------------------|--------------------|-----------------|-------------------|-------------|------------|--------------------|-----------|-------------------|-----------|--|--|
| | Int. | RF | RSD/ R ² | (ICV) CCV %D | | | | | | | | | | |
| 72755 | | | | | | | | | | | | | | |
| Acetone | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 29 | .23J | (2.3) | | | |
| Toluene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | .25J | (2.5) | | | |
| Methylene chloride | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 39 | .086J | (.86) | | | |
| Chloromethane | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | 129 | ✓ | ✓ | NA | | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | NA | ✓ | ✓ | ✓ | ✓ | NA | 127 | ✓ | ✓ | ✓ | NA | | | |
| 1,1-Dichloroethene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 30 | ✓ | NA | | | |
| 2-Butanone | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 26 | ✓ | NA | | | |
| Carbon Disulfide | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 27 | ✓ | NA | | | |
| Vinyl acetate | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 31 | ✓ | NA | | | |
| Surrogate Recovery Outliers | | | | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | |
| IS Outliers | | | | | | | | | | | | | | |
| Sample ID | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | | |
| None | | | | | | | | | | | | | | |

Comments: HTs OK. Mass spectra validated. MDLs and RLS reported. Samples spiked with 3 surrogates. Instrument ATMS 2 ICAL 03/18/2015.

Canister Certifications were provided in the data package.

Revised 7/2007

Organic Worksheet (GC/MS) page 2 of 5

AR/COC #: 616086

SDG #: 320-12612-1

Matrix: Air

Laboratory Sample IDs: 320-12612-1 and -2

Method/Batch #s: TO-15:72755

Tuning (pass/fail): Pass TICs Required? (yes/no): NA

| Analyte (outliers) | Calibration | | | | Method Blank | 5X (10X) MB | LCS %R | LCSD %R | LCS LCSD RPD | FB -2 | 5X (10X) FB | | | |
|--|-------------|-----------|------------------------|--------------------|-----------------|-------------------|-------------|------------|--------------------|-----------|-------------------|-----------|--|--|
| | Int. | RF | RSD/ R ² | (ICV) CCV %D | | | | | | | | | | |
| 72755 | | | | | | | | | | | | | | |
| Acetone | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 29 | ✓ | NA | | | |
| Toluene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | .22J | (2.2) | | | |
| Methylene chloride | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 39 | .084J | (.84) | | | |
| Chloromethane | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | 129 | ✓ | ✓ | NA | | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | NA | ✓ | ✓ | ✓ | ✓ | NA | 127 | ✓ | ✓ | ✓ | NA | | | |
| 1,1-Dichloroethene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 30 | ✓ | NA | | | |
| 2-Butanone | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 26 | ✓ | NA | | | |
| Carbon Disulfide | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 27 | ✓ | NA | | | |
| Vinyl acetate | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 31 | ✓ | NA | | | |
| Surrogate Recovery Outliers | | | | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | |
| IS Outliers | | | | | | | | | | | | | | |
| Sample ID | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | | |
| None | | | | | | | | | | | | | | |

Comments: HTs OK. Mass spectra validated. MDLs and RLS reported. Samples spiked with 3 surrogates. Instrument ATMS 2 ICAL 03/18/2015.

Canister Certifications were provided in the data package.

Revised 7/2007

Organic Worksheet (GC/MS) page 3 of 5

AR/COC #: 616087

SDG #: 320-12599-1

Matrix: Air

Laboratory Sample IDs: 320-12599-1 through -12

Method/Batch #s: TO-15:72525 and 72755

Tuning (pass/fail): Pass

TICs Required? (yes/no): NA

| Analyte (outliers) | Calibration | | | | Method Blank | 5X (10X) MB | LCS %R | LCSD %R | LCS LCSD RPD | FB -12 | 5X (10X) FB | | | |
|--|-------------|----|------------------------|--------------------|-----------------|-------------------|-----------|------------|--------------------|-----------|-------------------|----|------|----|
| | Int. | RF | RSD/ R ² | (ICV) CCV %D | | | | | | | | | | |
| 72755 -9 thru -12 | | | | | | | | | | | | | | |
| Acetone | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 29 | ✓ | NA | | | |
| Tetrachloroethene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 0.056J | 0.28 | | | |
| Toluene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 0.25J | (2.5) | | | |
| Methylene chloride | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 39 | ✓ | NA | | | |
| Chloromethane | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | 129 | ✓ | ✓ | NA | | | |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | NA | ✓ | ✓ | ✓ | ✓ | NA | 127 | ✓ | ✓ | ✓ | NA | | | |
| 1,1-Dichloroethene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 30 | ✓ | NA | | | |
| 2-Butanone | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 26 | ✓ | NA | | | |
| Carbon Disulfide | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 27 | ✓ | NA | | | |
| Vinyl acetate | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | 31 | ✓ | NA | | | |
| 72525 -1 thru -8 | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | NA | ✓ | ✓ | ✓ | .136J | NA | ✓ | ✓ | ✓ | ✓ | NA | | | |
| 1,3-Dichlorobenzene | NA | ✓ | ✓ | ✓ | .121J | NA | ✓ | ✓ | ✓ | ✓ | NA | | | |
| Surrogate Recovery Outliers | | | | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | |
| IS Outliers | | | | | | | | | | | | | | |
| Sample ID | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT |
| None | | | | | | | | | | | | | | |

Comments: HTs OK. Mass spectra validated. MDLs and RLS reported. Samples spiked with 3 surrogates. Instrument ATMS 2 ICAL 03/18/2015.

Canister Certifications were provided in the data package.

No case narrative for batch 72525

Organic Worksheet (GC/MS) page 4 of 5

AR/COC #: 616088

SDG #: 320-12597-1

Matrix: Air

Laboratory Sample IDs: 320-12597-1 through -6

Method/Batch #s: TO-15:71804

Tuning (pass/fail): Pass TICs Required? (yes/no): NA

[illegible]

Comments: HTs OK. Mass spectra validated. MDLs and RLS reported. Samples spiked with 3 surrogates. Instrument ATMS 2 ICAL 03/18/2015.

Canister Certifications were provided in the data package.

Revised 7/2007

Organic Worksheet (GC/MS) page 5 of 5

AR/COC #: 616089

SDG #: 320-12598-1

Matrix: Air

Laboratory Sample IDs: 320-12598-1 through -6

Method/Batch #s: TO-15:72057

Tuning (pass/fail): Pass TICs Required? (yes/no): NA

[illegible]

Comments: HTs OK. Mass spectra validated. MDLs and RLS reported. Samples spiked with 3 surrogates. Instrument ATMS 2 ICAL 03/18/2015.

Canister Certifications were provided in the data package.

Revised 7/2007

ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. *N/A*

SMO Use

| | |
|--------|--------|
| AR/COC | 616086 |
|--------|--------|

| | | | | | | | | | | | | |
|---|--------------------|--------------------------------------|-----------------|---|--------------------|--|---|---|-------------------|---|------------------------------|---------------|
| Project Name: MWL-SVM | | Date Samples Shipped: 4/15/15 | | SMO Authorization: [Signature] | | <input type="checkbox"/> Waste Characterization | | | | | | |
| Project/Task Manager: Tim Jackson | | Carrier/Waybill No. 232336 | | SMO Contact Phone: Wendy Palencia/505-844-3132 | | <input type="checkbox"/> RMMA | | | | | | |
| Project/Task Number: 146422.10.11.08 | | Lab Contact: Beth Riley/916-373-5600 | | Send Report to SMO: Rita Kavanaugh/505-284-2553 | | <input type="checkbox"/> Released by COC No. <input type="checkbox"/> 4° Celsius | | | | | | |
| Service Order: CF01-15 | | Lab Destination: TA/West Sacramento | | | | Bill to: Sandra National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154, Albuquerque, NM 87185-0154 | | | | | | |
| Tech Area: | | Contract No.: PO 691437 | | | | | | | | | | |
| Building: | | Room: | | Operational Site: | | | | | | | | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
| 097533 | -001 | MWL-SV02-41.5 | | 4/15/15 9:11 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097534 | -001 | MWL-SV-FB2 | | 4/15/15 9:06 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| <div>320-12612 Chain of Custody</div> | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Last Chain: <input checked="" type="checkbox"/> Yes | | | Sample Tracking | | SMO Use | | Special Instructions/QC Requirements: | | | | Conditions on Receipt | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | | | Date Entered: | | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | |
| Background: <input type="checkbox"/> Yes | | | Entered by: | | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | | | |
| Confirmatory: <input type="checkbox"/> Yes | | | QC inits.: | | | | Negotiated TAT <input type="checkbox"/> | | | | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | | Sample Disposal | | Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> | | Return Samples By: Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 | | |
| | Robert Lynch | [Signature] | RL | SNL/4142/505-844-4013/505-250-7090 | | Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> | | | | | | |
| | Alfred Santillanes | [Signature] | AS | SNL/4142/505-284-6870/505-228-0710 | | | | | | | | |
| | William Gibson | [Signature] | WG | SNL/4142/505-284-3307/505-239-7367 | | | | | | | | |
| | | | | | | | | | | | | |
| 1. Relinquished by [Signature] | | Org. 4142 | Date 4/15/15 | Time 1000 | 3. Relinquished by | | Org. | Date | Time | Lab Use | | |
| 1. Received by [Signature] | | Org. 4142 | Date 4/15/15 | Time 1000 | 3. Received by | | Org. | Date | Time | | | |
| 2. Relinquished by [Signature] | | Org. 4142 | Date 4/15/15 | Time 1100 | 4. Relinquished by | | Org. | Date | Time | | | |
| 2. Received by [Signature] | | Org. 4142 | Date 4/15/15 | Time 910 | 4. Received by | | Org. | Date | Time | | | |

*Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY



Internal Lab

Batch No. N/A

SMO Use

AR/COC **616087**

Project Name: MWL-SVM

Project/Task Manager: Tim Jackson

Project/Task Number: 146422.10.11.08

Service Order: CF01-15

Date Samples Shipped: 4/14/15

Carrier/Waybill No. 232265

Lab Contact: Beth Riley/916-373-5600

Lab Destination: TA/West Sacramento

Contract No.: PO 691437

SMO Authorization: [Signature]

SMO Contact Phone: Wendy Palencia/505-844-3132

Send Report to SMO: Rita Kavanaugh/505-284-2553

☐ Waste Characterization

☐ RMMA

☐ Released by COC No. ☐ 4° Celsius

Bill to: Sandia National Laboratories (Accounts Payable),

P.O. Box 5800, MS-0154

Albuquerque, NM 87185-0154

Tech Area:

Building: Room: Operational Site:

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|--------|--------------|-------------------|-------------|------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 097535 | -001 | MWL-SV03-50 W/M | | 4/14/15 8:50 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097536 | -001 | MWL-SV03-50 W/M | | 4/14/15 8:50 | SG | SC | 6 L | None | G | DU | VOC-TO-15 | |
| 097537 | -001 | MWL-SV03-50 WO/M | | 4/14/15 8:55 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097538 | -001 | MWL-SV03-50 WO/M | | 4/14/15 8:55 | SG | SC | 6 L | None | G | DU | VOC-TO-15 | |
| 097539 | -001 | MWL-SV03-100 | | 4/14/15 9:00 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097540 | -001 | MWL-SV03-200 W/M | | 4/14/15 9:05 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097541 | -001 | MWL-SV03-200 W/M | | 4/14/15 9:05 | SG | SC | 6 L | None | G | DU | VOC-TO-15 | |
| 097542 | -001 | MWL-SV03-200 WO/M | | 4/14/15 9:10 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097543 | -001 | MWL-SV03-200 WO/M | | 4/14/15 9:10 | SG | SC | 6 L | None | G | DU | VOC-TO-15 | |
| 097544 | -001 | MWL-SV03-300 | | 4/14/15 9:28 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |

Last Chain: ☐ Yes

Validation Req'd: ☒ Yes

Background: ☐ Yes

Confirmatory: ☐ Yes

Sample Tracking

Date Entered:

Entered by:

QC initials:

SMO Use

Special Instructions/QC Requirements:

EDD ☒ Yes ☐ No

Turnaround Time ☐ 7 Day* ☐ 15 Day* ☒ 30 Day

Negotiated TAT

Sample Disposal ☐ Return to Client ☒ Disposal by Lab

Return Samples By:

Comments: Send report to Tim Jackson/4142/MS 0729/284-2547

Conditions on Receipt

Sample Team Members

| Name | Signature | Init. | Company/Organization/Phone/Cell |
|--------------------|-------------|-------|------------------------------------|
| Robert Lynch | [Signature] | RL | SNL/4142/505-844-4013/505-250-7090 |
| Alfred Santillanes | [Signature] | AS | SNL/4142/505-284-6870/505-228-0710 |
| William Gibson | [Signature] | WG | SNL/4142/505-284-3307/505-239-7367 |
| Gilbert Quintana | [Signature] | GQ | SNL/4143/505-284-2507/505-228-2606 |

1. Relinquished by [Signature] Org. 4142 Date 4/14/15 Time 1338

2. Received by [Signature] Org. 4142 Date 4/14/15 Time 1338

3. Relinquished by [Signature] Org. 4142 Date 4/14/15 Time 1405

4. Received by [Signature] Org. 4142 Date 4/14/15 Time 945

Prior confirmation with SMO required for 7 and 15 day TAT

Lab Use

Page 811 of 813

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY (Continuation)

AR/COC 616087

| | | | | | | | | | | | | | | |
|--------------------------|----------|------------------------|-----------------------------------|---------------------|---------------|-----------------------------------|--------|--------------|-------------------|-------------|------------------------------|---------------|---------|--|
| Project Name: MWL-SVM | | | Project/Task Manager: Tim Jackson | | | Project/Task No.: 146422.10.11.08 | | | | | | | | |
| Tech Area: | | | | | | | | | | | | | | |
| Building: | | Room: | | | | | | | | | | | Lab use | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID | | |
| | | | | | | Type | Volume | | | | | | | |
| 097545 | -001 | MWL-SV03-400 | | 4/14/15 9:56 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | | | |
| 097546 | -001 | MWL-SV-FB3 | | 4/14/15 8:35 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Recipient Initials _____ | | | | | | | | | | | | | | |

Page 812 of 813

05/06/2015

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. NA

SMO Use

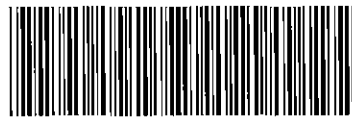
AR/COC

616088

| | | | |
|--------------------------------------|--------------------------------------|--|--|
| Project Name: MWL-SVM | Date Samples Shipped: <u>4/14/15</u> | SMO Authorization: <u>[Signature]</u> | <input type="checkbox"/> Waste Characterization |
| Project/Task Manager: Tim Jackson | Carrier/Waybill No: <u>232265</u> | SMO Contact Phone: <u>Wendy Palencia/505-844-3132</u> | <input type="checkbox"/> RMMA |
| Project/Task Number: 146422.10.11.08 | Lab Contact: Beth Riley/916-373-5600 | Send Report to SMO: <u>Rita Kavanaugh/505-284-2553</u> | <input type="checkbox"/> Released by COC No. <input type="checkbox"/> 4° Celsius |
| Service Order: CF01-15 | Lab Destination: TA/West Sacramento | | |
| | Contract No.: PO 691437 | | |

| | | | | |
|------------|-----------|-------|-------------------|--|
| Tech Area: | Building: | Room: | Operational Site: | Bill to Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 |
|------------|-----------|-------|-------------------|--|

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|----------------|--------|--------------|-------------------|-------------|------------------------------|---------------|
| 097547 | -001 | MWL-SV04-50 | | 4/14/15 10:30 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097548 | -001 | MWL-SV04-100 | | 4/14/15 10:32 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097549 | -001 | MWL-SV04-200 | | 4/14/15 10:35 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097550 | -001 | MWL-SV04-300 | | 4/14/15 10:38 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097551 | -001 | MWL-SV04-400 | | 4/14/15 10:41 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097552 | -001 | MWL-SV-FB4 | | 4/14/15 10:16 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |



320-12597 Chain of Custody

| | | | | | |
|---|--------------------|--------------------|---|------------------------------------|---|
| Last Chain: <input type="checkbox"/> Yes | Sample Tracking | SMO Use | Special Instructions/QC Requirements: | Conditions on Receipt | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | Date Entered: | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Background: <input type="checkbox"/> Yes | Entered by: | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| Confirmatory: <input type="checkbox"/> Yes | QC initials: | | Negotiated TAT <input type="checkbox"/> | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab |
| | Robert Lynch | <u>[Signature]</u> | <u>RL</u> | SNL/4142/505-844-4013/505-250-7090 | Return Samples By: Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 |
| | Alfred Santillanes | <u>[Signature]</u> | <u>AS</u> | SNL/4142/505-284-6870/505-228-0710 | |
| | William Gibson | <u>[Signature]</u> | <u>WG</u> | SNL/4142/505-284-3307/505-239-7367 | |
| Gilbert Quintana | <u>[Signature]</u> | <u>GQ</u> | SNL/4142/505-284-2507/505-228-2606 | | |
| | | | | | Lab Use |

| | | | | |
|---|--------------------|------|------|------|
| 1. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/14/15</u> Time <u>1338</u> | 3. Relinquished by | Org. | Date | Time |
| 2. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/14/15</u> Time <u>1338</u> | 4. Received by | Org. | Date | Time |
| 2. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/14/15</u> Time <u>1405</u> | 4. Relinquished by | Org. | Date | Time |
| 3. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/14/15</u> Time <u>1405</u> | 4. Received by | Org. | Date | Time |

Prior confirmation with SMO required for 7 and 15 day TAT

Page 410 of 441

15

Internal Lab


Page 1 of 1

Batch No. 1/A

SMO Use

AR/COC 616089

616089

| | | | | | | |
|-----------------------|-----------------|-----------------------|-------------------------|---------------------|---|--|
| Project Name: | MWL-SVM | Date Samples Shipped: | 1/14/15 | SMO Authorization: |  | <input type="checkbox"/> Waste Characterization |
| Project/Task Manager: | Tim Jackson | Carrier/Waybill No | 232265 | SMO Contact Phone: | | <input type="checkbox"/> RMMA |
| Project/Task Number: | 146422.10.11.08 | Lab Contact: | Beth Riley/916-373-5600 | | Wendy Palencia/505-844-3132 | <input type="checkbox"/> Released by COC No. |
| Service Order: | CF01-15 | Lab Destination: | TA/West Sacramento | Send Report to SMO: | | <input type="checkbox"/> 4° Celsius |
| | | Contract No : | PO 691437 | | Rita Kavanaugh/505-284-2553 | Bill to Sandia National Laboratories (Accounts Payable), |

Tech Area:

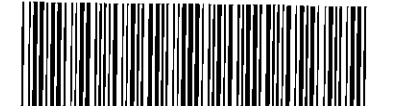
Building:

Room:

Operational Site:

Bill to: Sandia National Laboratories (Accounts Payable),
P O Box 5800, MS-0154
Albuquerque, NM 87185-0154

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|--------|--------------|-------------------|-------------|------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 097553 | -001 | MWL-SV05-50 | | 4/14/15 11:12 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097554 | -001 | MWL-SV05-100 | | 4/14/15 11:15 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097555 | -001 | MWL-SV05-200 | | 4/14/15 11:20 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097556 | -001 | MWL-SV05-300 | | 4/14/15 11:29 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097557 | -001 | MWL-SV05-400 | | 4/14/15 11:33 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 097558 | -001 | MWL-SV-FB5 | | 4/14/15 11:07 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |



320-12598 Chain of Custody

320-12598 Chain of Custody

| | | | | | | | | |
|---------------------|--------------------|---|-----------------|------------------------------------|---------|---|---|---|
| Last Chain: | | <input type="checkbox"/> Yes | Sample Tracking | | SMO Use | Special Instructions/QC Requirements: | | Comments on Receipt |
| Validation Req'd: | | <input checked="" type="checkbox"/> Yes | Date Entered: | | | EDD | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| Background: | | <input type="checkbox"/> Yes | Entered by: | | | Turnaround Time | <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | |
| Confirmatory: | | <input type="checkbox"/> Yes | QC inits.: | | | Negotiated TAT | <input type="checkbox"/> | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | | Sample Disposal | | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 |
| | Robert Lynch | <i>Robert Lynch</i> | RL | SNL/4142/505-844-4013/505-250-7090 | | <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | |
| | Alfred Santillanes | <i>Alfred Santillanes</i> | AS | SNL/4142/505-284-6870/505-228-0710 | | | | |
| | William Gibson | <i>William Gibson</i> | WG | SNL/4142/505-284-3307/505-239-7367 | | | | |
| | Gilbert Quintana | <i>Gilbert Quintana</i> | GQ | SNL/4143/505-284-2507/505-228-2606 | | | | |
| Lab Use | | | | | | | | |

Lab Use

| | | | | | | | | | | | | | | | |
|--------------------|----------|------|------|------|---------|------|------|--------------------|--|------|--|------|--|------|--|
| 1. Relinquished by | Aldridge | Org. | 4142 | Date | 4/14/15 | Time | 1338 | 3. Relinquished by | | Org. | | Date | | Time | |
| 2. Received by | Groves | Org. | 4142 | Date | 4/14/15 | Time | 1338 | 3. Received by | | Org. | | Date | | Time | |
| 1. Relinquished by | Groves | Org. | 4142 | Date | 4/14/15 | Time | 1405 | 4. Relinquished by | | Org. | | Date | | Time | |
| 2. Received by | | Org. | | Date | 4/14/15 | Time | 745 | 4. Received by | | Org. | | Date | | Time | |

CPrior confirmation with SMO required for 7 and 15 day TAT

75

CONTRACT VERIFICATION REVIEW FORMS

SOIL-VAPOR MONITORING

APRIL 2015

| AR/COC Number | Sample Type |
|----------------------|--------------------|
| 616085 | Environmental* |
| 616086 | Environmental* |
| 616087 | Environmental* |
| 616088 | Environmental* |
| 616089 | Environmental* |

* AR/COC forms are provided in the Data Validation Section of this Annex.

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL SVM

Project/Task No. 146422_10.11.08

ARCOC No. 616085

Analytical Lab TA West Sacramento

SDG No. 320-12611-1

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | | X | Chloromethane and 1,2-Dichloro-1,1,2,2-tetrafluoroethane failed recovery limits for LCS/LCSD (Batch 72755) |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Acetone, methylene chloride and toluene detected in FB1 |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | X | | |
| 5.2 | Problems or outliers noted | X | | |
| 5.3 | Verification or reanalysis requested from lab | | X | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 05-11-2015 13:41:00

Closed by: Wendy Palencia Date: 05-11-2015 15:01:00

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL SVM

Project/Task No. 146422_10.11.08

ARCOC No. 616086

Analytical Lab TA West Sacramento

SDG No. 320-12612-1

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | | X | Chloromethane and 1,2-Dichloro-1,1,2,2-tetrafluoroethane failed recovery limits for LCS/LCSD (Batch 72755) |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Methylene chloride and toluene detected in FB2 |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) | X | | |
| | a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | X | | |
| 5.2 | Problems or outliers noted | X | | |
| 5.3 | Verification or reanalysis requested from lab | | X | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 05-12-2015 08:06:00

Closed by: Wendy Palencia Date: 05-12-2015 08:06:00

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL SVM

Project/Task No. 146422_10.11.08

ARCOC No. 616087

Analytical Lab TA West Sacramento

SDG No. 320-12599-1

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | | X | Chloromethane and 1,2-Dichloro-1,1,2,2-tetrafluoroethane failed recovery limits for LCS/LCSD (Batch 72755) |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Tetrachloroethene and toluene detected in FB3 |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) | X | | |
| | a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | X | | |
| 5.2 | Problems or outliers noted | X | | |
| 5.3 | Verification or reanalysis requested from lab | | X | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 05-12-2015 14:17:00

Closed by: Wendy Palencia Date: 05-12-2015 14:24:00

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL SVM

Project/Task No. 146422_10.11.08

ARCOC No. 616088

Analytical Lab TA West Sacramento

SDG No. 320-12597-1

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|------------------------------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | | X | LCS data not provided with package |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Acetone and toluene detected in FB4 |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) | X | | |
| | a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | X | | |
| 5.2 | Problems or outliers noted | X | | |
| 5.3 | Verification or reanalysis requested from lab | | X | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
| LCS | TO-15 | LCS not provided |
| x | | |

Were deficiencies unresolved? ☒ Yes ☐ No

Based on the review, this data package is complete. ☐ Yes ☒ No

If no, provide nonconformance report or correction request number and date correction request was submitted: 04-30-2015

Reviewed by: Wendy Palencia Date: 04-30-2015 13:47:00

Were resolutions adequate and data package complete? ☒ Yes ☐ No

Closed by: Wendy Palencia Date: 05-05-2015 08:20:00

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL SVM

Project/Task No. 146422_10.11.08

ARCOC No. 616089

Analytical Lab TA West Sacramento

SDG No. 320-12598-1

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Toluene detected in FB5 |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) | X | | |
| | a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | X | | |
| 5.2 | Problems or outliers noted | X | | |
| 5.3 | Verification or reanalysis requested from lab | | X | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 05-04-2015 08:08:00

Closed by: Wendy Palencia Date: 05-04-2015 08:08:00

FIELD SAMPLING FORMS
OCTOBER 2015 SOIL-VAPOR MONITORING

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL Date: 10/08/15 Time: 0805Activities: Soil vapor monitoring and sampling
(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: _____ °F Wind Speed: _____ MPH Humidity: _____ %

Chemicals Used: _____

Other: Be aware of possible UXO

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert T Lynch
Printed NameTim Jackson
Printed NameALFRED SANTILLANES
Printed NameWilliam Gibson
Printed NameJessica Morning
Printed NameSue Collins
Luke deArast

Signature

T. Jackson

Signature

Alfred Santillanes

Signature

William Gibson

Signature

Sue Collins
Luke deArast

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

SUMMA® Canister Log

| | Serial # | Date Received | Date Tested for Initial VAC | Initial VAC at 5400 ft (in. Hg) | Date Used | End VAC at 5400 ft (in. Hg) | Date Returned to SMO |
|-----------|----------|---------------|-----------------------------|---------------------------------|-----------|-----------------------------|----------------------|
| SV01 - FB | 34002106 | 10/7/15 | 10/8/15 | -26 | 10/8/15 | -8 | 10/8/15 |
| SV02 - FB | 34000299 | | | -26 | | -8 | |
| | 1443 | | | -24 | | -8 | |
| | 1503 | | | -24 | | -8 | |
| | 0019 | | | -24 | | -8 | |
| | 0815 | | | -25 | | -8 | |
| | 0558 | | | -24 | | -8 | |
| | 1127 | | | -24 | | -8 | |
| | 0424 | | | -24 | | -8 | |
| | 0345 | | | -24 | | -8 | |
| | 0299 | | | -26 | | -8 | |
| SV03 - FB | 2014 | | | -26 | | -8 | |
| | 1210 | | | -24 | | -8 | |
| | ✓ 1508 | | | -24 | | -8 | |
| | 7761 | | | -24 | | -8 | |
| | 34001658 | | | -24 | | -8 | |
| | 8246 | | | -24 | | -8 | |
| SV04 - FB | 34000492 | | | -26 | | -8 | |
| | 1548 | | | -25 | | -8 | |
| | 0609 | | | -25 | | -8 | |
| | 0564 | | | -23 | | -8 | |
| | 1591 | | | -25 | | -8 | |
| | 0523 | | | -25 | | -8 | |
| SV05 - FB | 0456 | | | -26 | | -8 | |
| | 1395 | | | -26 | | -8 | |
| | 0695 | | | -26 | | -8 | |
| | 1389 | | | -26 | | -8 | |
| | ✓ 2097 | | | -26 | | -8 | |
| | 7533 | ↓ | ↓ | -26 | ↓ | -8 | ↓ |

→ duplicate information

SUMMA® Canister Log completed by:

Tim Jackson
Printed Name

Tim Jackson
Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandio Restricted Network (SRN), department home page

Background = 0.0 ppm

continuous purge readings
w/ PID

PID # RAE PGM7370
17221
11/7 EV

Soil Vapor Sampling Log

1 of 3

| Location | Date | Time | Canister # | PID (ppm) | Starting Vacuum (in. Hg) | Ending Vacuum (in. Hg) | Location Comments |
|--------------|---------|-----------|------------|-----------|--------------------------|------------------------|----------------------------------|
| MWL-5001 | 10/8/15 | | | | | | |
| FB | | 0819 | 34002106 | NA | -26 | -8 | FB |
| MWL-5001 | | 0836 | NA | 0.0 | NA | NA | |
| | | 0838 | 34001443 | NA | -24 | -8 | w/ manifold SA |
| | | ↓ | 1503 | ↓ | -24 | -8 | ↓ DU |
| | | 0840 | 0019 | ↓ | -24 | -8 | w/o manifold SA |
| | | 0841 | ↓ 0815 | ↓ | -25 | -8 | ↓ DU |
| MWL-5002 | | | | | | | |
| FB | | 0820 | 34000299 | NA | -24 | -8 | FB |
| MWL-5002 | | 0852 | NA | 0.0 | NA | NA | |
| | | 0856 | 34000558 | NA | -24 | -8 | w/ manifold SA |
| | | | 1127 | ↓ | -24 | -8 | ↓ DU |
| | | 0857 | 0424 | ↓ | -24 | -8 | w/o manifold SA |
| | | 0859 | ↓ 0345 | ↓ | -24 | -8 | ↓ DU |
| MWL-5003 | | | | | | | |
| FB | | 0920 | 34002014 | NA | -26 | -8 | FB |
| MWL-5003-50 | | 0934 | NA | 0.0 | NA | NA | |
| | | 0936 | 34001210 | NA | -24 | -8 | |
| MWL-5003-100 | | 0937 | NA | 0.0 | NA | NA | |
| | | 0938 | NA | 0.0 | NA | NA | |
| | | 0940 | 34001508 | NA | -24 | -8 | |
| MWL-5003-200 | | 0941 | NA | 0.0 | NA | NA | |
| | | 0943 | NA | 0.0 | NA | NA | |
| | | 0944 | 7761 | NA | -24 | -8 | |
| MWL-5003-300 | | 0946 | NA | 0.1 | NA | NA | |
| | | 0948 | NA | 0.1 | NA | NA | |
| | | 0952-0949 | 34001655 | NA | -24 | -8 | slow sample fill begin @ 0949 |
| | | 11/10/15 | | | | | |

Soil Vapor Sampling Log

2 of 3

| Location | Date | Time | Canister # | PID (ppm) | Starting Vacuum (in. Hg) | Ending Vacuum (in. Hg) | Location Comments |
|--------------|---------|------|------------|-----------|--------------------------|------------------------|---------------------------|
| MWL-5003-400 | 10/8/15 | 0957 | NA | 0.0 | NA | NA | |
| ↓ | | 0958 | NA | 0.0 | NA | NA | |
| ↓ | | 1010 | 8246 | NA | -24 | -8 | 0954 shift fill slow fill |
| MWL-5004 | | | | | | | |
| FB | | 1035 | 34000492 | NA | -26 | -8 | |
| MWL-5004-50 | | 1037 | NA | 0.0 | NA | NA | |
| ↓ | | 1040 | 34001548 | NA | -25 | -8 | |
| MWL-5004-100 | | 1042 | NA | 0.0 | NA | NA | |
| ↓ | | 1044 | 34001609 | NA | -25 | -8 | |
| MWL-5004-200 | | 1045 | NA | 0.0 | NA | NA | |
| ↓ | | 1046 | NA | 0.0 | NA | NA | |
| ↓ | | 1048 | 34000564 | NA | -23 | -8 | |
| MWL-5004-300 | | 1049 | NA | 0.0 | NA | NA | |
| ↓ | | 1050 | NA | 0.0 | NA | NA | |
| ↓ | | 1052 | 34001591 | NA | -25 | -8 | |
| MWL-5004-400 | | 1056 | NA | 0.0 | NA | NA | |
| ↓ | | 1057 | NA | 0.0 | NA | NA | |
| ↓ | | 1058 | NA | 0.0 | NA | NA | |
| ↓ | | 1100 | 34000523 | NA | -25 | -8 | |
| MWL-5005 | | | | | | | |
| FB | | 1124 | 34000456 | NA | -26 | -8 | FB |
| MWL-5005-50 | | 1127 | NA | 0.0 | NA | NA | |
| ↓ | | 1128 | 34001395 | NA | -26 | -8 | |
| MWL-5005-100 | | 1129 | NA | 0.0 | NA | NA | |
| ↓ | | 1132 | 34000695 | NA | -26 | -8 | |
| MWL-5005-200 | | 1133 | NA | 0.0 | NA | NA | |
| ↓ | | 1134 | NA | 0.0 | NA | NA | |
| ↓ | | 1135 | 34001389 | NA | -26 | -8 | |

3 of 3

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page

**SUMMARY SHEET FOR
OCTOBER 2015 SOIL-VAPOR SAMPLES**

Sample Summary for October 2015 MWL Soil Vapor Monitoring

| Well ID | Sample Date | Sample ID / Port | SUMMA Number | ARCOC | Sample Number | Sample Type | Associated Field Blank (ARCOC #/Sample #) | Comments |
|--|-------------|-------------------|--------------|--------|---------------|---------------|---|---------------------------|
| Mixed Waste Landfill Soil Vapor Monitoring: Project Task Number 146422.10.11.08 / Service Order Number CF 01-16 | | | | | | | | |
| MWL-SV01 | 8-Oct-15 | MWL-SV01-42.5 W/M | 34001443 | 616350 | 098316 | Environmental | 616350 / 098315 | collected with manifold |
| | | MWL-SV01-42.5 W/M | 34001503 | | 098317 | Duplicate | | collected with manifold |
| | | MWL-SV01-42.5 I/S | 34000019 | | 098318 | Environmental | | no manifold - in sequence |
| | | MWL-SV01-42.5 I/S | 34000815 | | 098319 | Duplicate | | no manifold - in sequence |
| | | MWL-SV-FB1 | 34002106 | | 098315 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV02 | 8-Oct-15 | MWL-SV02-41.5 W/M | 34000558 | 616351 | 098321 | Environmental | 616351 / 098320 | collected with manifold |
| | | MWL-SV02-41.5 W/M | 34001127 | | 098322 | Duplicate | | collected with manifold |
| | | MWL-SV02-41.5 I/S | 34000424 | | 098323 | Environmental | | no manifold - in sequence |
| | | MWL-SV02-41.5 I/S | 34000345 | | 098324 | Duplicate | | no manifold - in sequence |
| | | MWL-SV-FB2 | 34000299 | | 098320 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV03 | 8-Oct-15 | MWL-SV03-50 | 34001210 | 616352 | 098326 | Environmental | 616352 / 098325 | |
| | | MWL-SV03-100 | 34001508 | | 098327 | Environmental | | |
| | | MWL-SV03-200 | 7761 | | 098328 | Environmental | | |
| | | MWL-SV03-300 | 34001658 | | 098329 | Environmental | | |
| | | MWL-SV03-400 | 8246 | | 098330 | Environmental | | |
| | | MWL-SV-FB3 | 34002014 | | 098325 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV04 | 8-Oct-15 | MWL-SV04-50 | 34001548 | 616353 | 098332 | Environmental | 616353 / 098331 | |
| | | MWL-SV04-100 | 34000609 | | 098333 | Environmental | | |
| | | MWL-SV04-200 | 34000564 | | 098334 | Environmental | | |
| | | MWL-SV04-300 | 34001591 | | 098335 | Environmental | | |
| | | MWL-SV04-400 | 34000523 | | 098336 | Environmental | | |
| | | MWL-SV-FB4 | 34000492 | | 098331 | Field QC | n/a | Ultra Pure N2 |
| MWL-SV05 | 8-Oct-15 | MWL-SV05-50 | 34001395 | 616354 | 098338 | Environmental | 616354 / 098337 | |
| | | MWL-SV05-100 | 34000695 | | 098339 | Environmental | | |
| | | MWL-SV05-200 | 34001389 | | 098340 | Environmental | | |
| | | MWL-SV05-300 | 34002097 | | 098341 | Environmental | | |
| | | MWL-SV05-400 | 7533 | | 098342 | Environmental | | |
| | | MWL-SV-FB5 | 34000456 | | 098337 | Field QC | n/a | Ultra Pure N2 |

DATA VALIDATION REPORTS FOR ENVIRONMENTAL SAMPLES

SOIL-VAPOR MONITORING

OCTOBER 2015

AR/COC NUMBERS 616350, 616351, 616352, 616353, 616354

Memorandum

Date: November 18, 2015

To: File

From: Mary Donovan

Subject: GC/MS Organic Data Review and Validation – SNL
Site: MWL SVM
AR/COC: 616350, 616351, 616352, 616353 and 616354
SDG: 320-15492-1
Laboratory: TestAmerica Laboratories, Inc. - West Sacramento
Project/Task: 146422.10.11.08
Analysis: VOCs by method TO-15

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 4.

Summary

Twenty-eight samples were prepared and analyzed with accepted procedures using method EPA TO-15 (Determination of VOCs in Air collected in specially prepared canisters and analyzed by GC/MS). All compounds were successfully analyzed. No problems were identified with the data package that resulted 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

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

Instrument Tune

All instrument tune requirements were met.

Calibration

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

Blanks

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

Methylene chloride was detected at < the PQL in FB1, sample 320-15492-1, associated with samples 320-15492-2 through -5. The associated sample results were non-detects and will not be qualified.

Tetrachloroethene was detected at < the PQL in FB4, sample 320-15492-17, associated with samples 320-15492-18 through -22. The associated sample results were detects >5X the FB result and will not be qualified.

Surrogates

All surrogate acceptance criteria were met.

Internal Standards

All internal standards met QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

An MS/MSD was not performed.

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

The LCS/LCSD met all QC acceptance criteria except as follows. The 1,3-dichlorobenzene and 1,4-dichlorobenzene recoveries were > the upper acceptance limits for the LCS and/or LCSD associated with samples 320-15492-24 through -28. The 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 except as follows.

Samples 320-15492-2 and -3 were diluted 26X, sample -4 was diluted 16.7X, sample -5 was diluted 18.9X, samples -7 and -8 were diluted 10.1X, sample -9 was diluted 10.5X, sample -10 was diluted 10.4X, sample -12 was diluted 3.43X, sample -13 was diluted 6.06X, sample -14 was diluted 7.58X, sample -15 was diluted 9.75X, sample -16 was diluted 10.5X, sample -18 was diluted 2.9X, sample -19 was diluted 3.62X, sample -20 was diluted 4.85X, sample -21 was diluted 3.6X, sample -22 was diluted 4.33X, sample -24 was diluted 4.2X, sample -25 was diluted 4.83X, sample -26 was diluted 7.19X, sample -27 was diluted 4.01X and sample -28 was diluted 3.5X for all target analytes.

Tentatively Identified Compounds (TICs)

TIC reports were not required.

Other QC

Mass spectra were verified during data validation and met QC acceptance criteria.

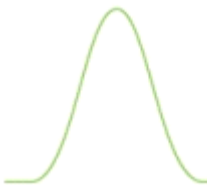
FBs were submitted with each AR/COC. Four field duplicate pairs were submitted, two with ARCO 616350 and two with ARCO 616351. There are no "required" review criteria for field duplicate analyses comparability; no data will be qualified as a result.

No other specific issues that affect data quality were identified.

Reviewed by: Linda Thal

Level I

Date: 11/30/2015



Sample Findings Summary



AR/COC: 616350, 616351, 616352, 616353, 616354

Page 1 of 1

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|-----------|---------------------|---------------|
| | | | |

All other analyses met QC acceptance criteria; no further data should be qualified.

Sandia Data Validation Summary Worksheet

| | | |
|---|---|---------------------------|
| ARCOC#: 616350, 616351, 616352, 616353 and 616354 | Site/Project: MWL SVM | Validation Date: 11/18/15 |
| SDG #: 320-15492-1 | Laboratory: TestAmerica – West Sacramento | Validator: Mary Donovan |
| Matrix: Air | # of Samples: 28 | CVR present: Yes |
| ARCOC(s) present: Yes | Sample Container Integrity: OK | |
| Analysis Type: <input checked="" type="checkbox"/> Organic <input type="checkbox"/> Metals <input type="checkbox"/> Genchem <input type="checkbox"/> Rad | | |

| Requested Analyses Not Reported | | | |
|---------------------------------|---------------|----------|----------|
| Client Sample ID | Lab Sample ID | Analysis | Comments |
| None | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|----------|-------|-----------------|------------------|---------------|-----------------|-----------------|
| Client Sample ID | Lab Sample ID | Analysis | Pres. | Collection Date | Preparation Date | Analysis Date | Analysis <2X HT | Analysis ≥2X HT |
| None | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Collected: 10/08/2015

Validated by:

Mary A. Donovan

Sandia Organic Worksheet (GC/MS VOC)

| | | |
|---|-------------------------|----------------------------|
| ARCOC #:616350, 616351, 616352, 616353 and 616354 | SDG: 320-15492-1 | Matrix: Air |
| Laboratory Sample IDs: 320-15492-1 through -28 | | |
| Method/Batch #s: TO-15 /91165 (samples 1-5); 91290 (samples 6-23); 91424 (samples 24-28) | Tuning (pass/fail):pass | TICs Required? (yes/no):no |

| Analyte (outliers) | | Calibration | | | | MB | 5X (10X) MB | LCS %R | LCSD %R | LCS/ LCSD RPD | FB1* | FB4** | | | | |
|-----------------------------|---------------|---------------|--------------|--------------------|-----------------|-----------|-------------|---------------|---------------|---------------------|--------|--------|--|--|--|--|
| | | Int. | RF/ Slope | RSD/r ² | (ICV)/CCV %D | | | | | | | | | | | |
| methylene chloride | | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 0.078J | ✓ | | | | |
| tetrachloroethene | | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | 0.054J | | | | |
| 1,3-dichlorobenzene | | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | 137^ | ✓ | ✓ | ✓ | | | | |
| 1,4-dichlorobenzene | | NA | ✓ | ✓ | ✓ | ✓ | NA | 144^ | 146^ | ✓ | ✓ | ✓ | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| Surrogate Recovery Outliers | | | | | | | | | | | | | | | | |
| Sample ID | 1,2-DCA-d4 %R | Toluene-d8 %R | BFB %R | | | Sample ID | | 1,2-DCA-d4 %R | Toluene-d8 %R | | BFB %R | | | | | |
| None | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| IS Outliers | | | | | | | | | | | | | | | | |
| | CBM | | DFB | | CBZ | | | | | | | | | | | |
| Sample ID | Area | RT | Area | RT | Area | RT | | | | | | | | | | |
| None | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

Comments: HTs OK. ICAL ATMS7 10/20-21/15. Mass spectra validated. MDLs and RLS reported. Samples spiked with 3 surrogates. Canister Certifications were provided in the data package.

*associated with samples -2 through -5; **associated with samples -18 through -22

^aassociated with batch 91424 (samples -24 through -28)

Internal Lab

Page 1 of 1

Batch No.


SMO Use

AR/COC 616350

| | | | | | | |
|-----------------------|-----------------|-----------------------|-------------------------|---------------------|--------------------------------|---|
| Project Name: | MWL SVM | Date Samples Shipped: | 229173 | SMO Authorization: | <i>[Signature]</i> | <input type="checkbox"/> Waste Characterization |
| Project/Task Manager: | Tim Jackson | Carrier/Waybill No. | 181215 | SMO Contact Phone: | Wendy Palencia/505-844-3132 | <input type="checkbox"/> RMMA |
| Project/Task Number: | 146422.10.11.08 | Lab Contact: | Beth Riley-916-373-5600 | | | <input type="checkbox"/> Released by COC No. |
| Service Order: | CF01-16 | Lab Destination: | TA/West Sacramento, CA | Send Report to SMO: | Stephanie Montano/505-284-2553 | <input type="checkbox"/> 4° Celsius |
| | | Contract No.: | PO 691437 | | | Bill to: Sandia National Laboratories (Accounts Payable), |





| | | | |
|-------------------|--------------|-------------------|----------------------------|
| Tech Area: | | Operational Site: | P O. Box 5800, MS-0154 |
| Building: | Room: | | Albuquerque, NM 87185-0154 |

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|--------|--------------|-------------------|-------------|------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 098315 | -001 | MWL-SV-FB1 | | 10/8/15 8:19 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| 098316 | -001 | MWL-SV01-42.5 W/M | | 10/8/15 8:38 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098317 | -001 | MWL-SV01-42.5 W/M | | 10/8/15 8:38 | SG | SC | 6 L | None | G | DU | VOC-TO-15 | |
| 098318 | -001 | MWL-SV01-42.5 I/S | | 10/8/15 8:40 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098319 | -001 | MWL-SV01-42.5 I/S | | 10/8/15 8:41 | SG | SC | 6 L | None | G | DU | VOC-TO-15 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |



320-15492 Chain of Custody

Page 1476 of 1481

| | | | | | | | | |
|----------------------------|--------------------|---|------------------------|--|----------------|---|--|------------------------------|
| Last Chain: | | <input type="checkbox"/> Yes | Sample Tracking | | SMO Use | Special Instructions/QC Requirements: | | Conditions on Receipt |
| Validation Req'd: | | <input checked="" type="checkbox"/> Yes | Date Entered: | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Background: | | <input type="checkbox"/> Yes | Entered by: | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| Confirmatory: | | <input type="checkbox"/> Yes | QC inits.: | | | Negotiated TAT <input type="checkbox"/> | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | Lab Use |
| | Robert Lynch |  | RL | SNL/4142/505-844-4013/505-250-7090 | | Return Samples By: | | |
| | Alfred Santillanes |  | AS | SNL/4142/505-284-6870/505-228-0710 | | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 | | |
| | William Gibson |  | WG | SNL/4142/505-284-3307/505-239-7367 | | Elevation and ambient pressure information on attached forms. | | |
| | Tim Jackson |  | TJ | SNL/4142/505-284-2547/505-263-6639 | | | | |

| | | | | | | | |
|---|------------------|---------------------|------------------|--------------------|------|------|------|
| 1. Relinquished by <i>H. G. S. Miller</i> | Org. <i>4142</i> | Date <i>10/9/15</i> | Time <i>0837</i> | 3. Relinquished by | Org. | Date | Time |
| 1. Received by <i>H. G. S. Miller</i> | Org. <i>4142</i> | Date <i>10/9/15</i> | Time <i>0837</i> | 3. Received by | Org. | Date | Time |
| 2. Relinquished by <i>H. G. S. Miller</i> | Org. <i>4142</i> | Date <i>10/9/15</i> | Time <i>0900</i> | 4. Relinquished by | Org. | Date | Time |
| 2. Received by <i>H. G. S. Miller</i> | Org. | Date <i>10/9/15</i> | Time <i>1020</i> | 4. Received by | Org. | Date | Time |

Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY

ANALYSIS REQUEST AND CHAIN OF CUSTODY

Page 1 of 1

SMO Use

AR/COC | 616351

| | | | | |
|--------------------------------------|-------|---|--|--|
| Project Name: MWL SVM | | Date Samples Shipped: 10/12/15 | SMO Authorization: [Signature] | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. |
| Project/Task Manager: Tim Jackson | | Carrier/Waybill No. 229123 | SMO Contact Phone: Wendy Palencia/505-844-3132 | |
| Project/Task Number: 146422.10.11.08 | | Lab Contact: Beth Riley-916-373-5600 | Send Report to SMO: Stephanie Montano/505-284-2553 | |
| Service Order: CF01-16 | | Lab Destination: TA/West Sacramento, CA | | |
| Contract No.: PO 691437 | | | | <input checked="" type="checkbox"/> 4° Celsius Bill to Sandia National Laboratories (Accounts Payable), P O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 |
| Tech Area: | | Operational Site: | | |
| Building: | Room: | | | |

[illegible]

| | | | | | | | | | | | |
|---------------------|--------------------|---|---------------------------|-----------------|-------|------------------------------------|--|---|--|-----------------------|--|
| Last Chain: | | <input checked="" type="checkbox"/> Yes | | Sample Tracking | | SMO Use | | Special Instructions/QC Requirements: | | Conditions on Receipt | |
| Validation Req'd: | | <input checked="" type="checkbox"/> Yes | | Date Entered: | | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Background: | | <input type="checkbox"/> Yes | | Entered by: | | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | |
| Confirmatory: | | <input type="checkbox"/> Yes | | QC initials: | | | | Negotiated TAT <input type="checkbox"/> | | | |
| Sample Team Members | Name | | Signature | | Init. | Company/Organization/Phone/Cell | | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | Lab Use | |
| | Robert Lynch | | <i>Robert Lynch</i> | | RL | SNL/4142/505-844-4013/505-250-7090 | | Return Samples By: | | | |
| | Alfred Santillanes | | <i>Alfred Santillanes</i> | | AS | SNL/4142/505-284-6870/505-228-0710 | | Comments: Send report to Tim Jackson/4142/MS 07/29/284-2547 | | | |
| | William Gibson | | <i>William Gibson</i> | | WG | SNL/4142/505-284-3307/505-239-7367 | | Elevation and ambient pressure information on attached forms. | | | |
| | Tim Jackson | | <i>Tim Jackson</i> | | TJ | SNL/4142/505-284-2547/505-263-6639 | | | | | |

| | | | | | | | |
|---|------------------|----------------------|------------------|--------------------|------|------|------|
| 1. Relinquished by <u>H. J. S. S. S. S.</u> | Org. <u>4142</u> | Date <u>10/9/15</u> | Time <u>0837</u> | 3. Relinquished by | Org. | Date | Time |
| 1. Received by <u>C. J. S. S. S.</u> | Org. <u>4142</u> | Date <u>10/9/15</u> | Time <u>0837</u> | 3. Received by | Org. | Date | Time |
| 2. Relinquished by <u>M. J. S. S. S.</u> | Org. <u>4142</u> | Date <u>10/12/15</u> | Time <u>0900</u> | 4. Relinquished by | Org. | Date | Time |
| 2. Received by <u>H. J. S. S. S.</u> | Org. | Date <u>10/15/15</u> | Time <u>1030</u> | 4. Received by | Org. | Date | Time |

22) **Prior confirmation with SMO required for 7 and 15 day TAT**

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. *N/A*

SMO Use

AR/COC **616352**

| | | | |
|--------------------------------------|---|--|--|
| Project Name: MWL SVM | Date Samples Shipped: <i>10/12/15</i> | SMO Authorization: <i>[Signature]</i> | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. <input type="checkbox"/> 4° Celsius |
| Project/Task Manager: Tim Jackson | Carrier/Waybill No. <i>229123</i> | SMO Contact Phone: Wendy Palencia/505-844-3132 | |
| Project/Task Number: 146422.10.11.08 | Lab Contact: Beth Riley-916-373-5600 | Send Report to SMO. | |
| Service Order: CF01-16 | Lab Destination: TA/West Sacramento, CA | Stephanie Montano/505-284-2553 | |
| Contract No.: PO 691437 | | Bill to Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 | |

| Tech Area: | | Operational Site: | | | | | | | | | | P.O. Box 5800, MS-0154 | |
|------------|----------|------------------------|----------------------------|---------------------|-------|---------------|-----------|--------|---------------|-------------------|-------------|------------------------------|---------------|
| Building: | | Room: | Albuquerque, NM 87185-0154 | | | | | | | | | | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | | Sample Matrix | Container | | Preserv-ative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
| | | | | | | | Type | Volume | | | | | |
| 098325 | -001 | MWL-SV-FB3 | | 10/8/15 | 9:20 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| 098326 | -001 | MWL-SV03-50 (port 1) | | 10/8/15 | 9:36 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098327 | -001 | MWL-SV03-100 (port 2) | | 10/8/15 | 9:40 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098328 | -001 | MWL-SV03-200 (port 3) | | 10/8/15 | 9:44 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098329 | -001 | MWL-SV03-300 (port 4) | | 10/8/15 | 9:52 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098330 | -001 | MWL-SV03-400 (port 5) | | 10/8/15 | 10:10 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| | | | | | | | | |
|---|--------------------|--------------------|---------------|---|---|--|--|-----------------------|
| Last Chain: <input type="checkbox"/> Yes | | Sample Tracking | | SMO Use | Special Instructions/QC Requirements: | | | Conditions on Receipt |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | | Date Entered: | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | |
| Background: <input type="checkbox"/> Yes | | Entered by: | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | | |
| Confirmatory: <input type="checkbox"/> Yes | | QC inits.: | | Negotiated TAT | | | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | | Lab Use |
| | Robert Lynch | | | SNL/4142/505-844-4013/505-250-7090 | Return Samples By: | | | |
| | Alfred Santillanes | <i>[Signature]</i> | <i>[Init]</i> | SNL/4142/505-284-6870/505-228-0710 | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 | | | |
| | William Gibson | <i>[Signature]</i> | <i>[Init]</i> | SNL/4142/505-284-3307/505-239-7367 | Elevation and ambient pressure information on attached forms. | | | |
| | Tim Jackson | <i>[Signature]</i> | <i>[Init]</i> | SNL/4142/505-284-2547/505-263-6639 | | | | |

| | | | | |
|--|--------------------|------|------|------|
| 1. Relinquished by <i>Alfred Santillanes</i> Org. <i>4142</i> Date <i>10/9/15</i> Time <i>0837</i> | 3. Relinquished by | Org. | Date | Time |
| 2. Received by <i>Wendy Palencia</i> Org. <i>4142</i> Date <i>10/9/15</i> Time <i>0837</i> | 3. Received by | Org. | Date | Time |
| 4. Relinquished by <i>Wendy Palencia</i> Org. <i>7142</i> Date <i>10/12/15</i> Time <i>0900</i> | 4. Relinquished by | Org. | Date | Time |
| 5. Received by <i>[Signature]</i> Org. Date Date Time Time | 4. Received by | Org. | Date | Time |

Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

| | | | | | | | | | | | | |
|---|----------|---|------------------------------------|--|---------------|--|--------|--------------|-------------------|---|------------------------------|---------------|
| Batch No. | | SMO Use | | AR/COC | | 616353 | | | | | | |
| Project Name: MWL SVM | | Date Samples Shipped: 10/12/15 | | SMO Authorization: [Signature] | | <input type="checkbox"/> Waste Characterization | | | | | | |
| Project/Task Manager: Tim Jackson | | Carrier/Waybill No. 229173 | | SMO Contact Phone: Wendy Palencia/505-844-3132 | | <input type="checkbox"/> RMMA | | | | | | |
| Project/Task Number: 146422.10.11.08 | | Lab Contact: Beth Riley-916-373-5600 | | Send Report to SMO. | | <input type="checkbox"/> Released by COC No. <input type="checkbox"/> 4° Celsius | | | | | | |
| Service Order: CF01-16 | | Lab Destination: TA/West Sacramento, CA | | Stephanie Montano/505-284-2553 | | Bill to Sandia National Laboratories (Accounts Payable), P O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 | | | | | | |
| Contract No.: PO 691437 | | | | | | | | | | | | |
| Tech Area: | | Building: | | Room: | | Operational Site: | | | | | | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
| 098331 | -001 | MWL-SV-FB4 | | 10/8/15 10:35 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| 098332 | -001 | MWL-SV04-50 (port 1) | | 10/8/15 10:40 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098333 | -001 | MWL-SV04-100 (port 2) | | 10/8/15 10:44 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098334 | -001 | MWL-SV04-200 (port 3) | | 10/8/15 10:48 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098335 | -001 | MWL-SV04-300 (port 4) | | 10/8/15 10:52 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098336 | -001 | MWL-SV04-400 (port 5) | | 10/8/15 11:00 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| Last Chain: <input type="checkbox"/> Yes | | | | | | | | | | | | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | | | | | | | | | | | | |
| Background: <input type="checkbox"/> Yes | | | | | | | | | | | | |
| Confirmatory: <input type="checkbox"/> Yes | | | | | | | | | | | | |
| Sample Tracking | | | SMO Use | | | Special Instructions/QC Requirements: | | | | Conditions on Receipt | | |
| Date Entered: | | | Entered by: | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| QC Inits.: | | | Negotiated TAT | | | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | | | Return Samples By: | | |
| Sample Team Members | | | Company/Organization/Phone/Cell | | | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 Elevation and ambient pressure information on attached forms | | | | Lab Use | | |
| Robert Lynch | | | SNL/4142/505-844-4013/505-250-7090 | | | | | | | | | |
| Alfred Santillanes | | | SNL/4142/505-284-6870/505-228-0710 | | | | | | | | | |
| William Gibson | | | SNL/4142/505-284-3307/505-239-7367 | | | | | | | | | |
| Tim Jackson | | | SNL/4142/505-284-2547/505-263-6639 | | | | | | | | | |
| 1 Relinquished by [Signature] Org. 4142 Date 10/9/15 Time 0837 | | | | | | | | | | | | |
| 1 Received by [Signature] Org. 4142 Date 10/9/15 Time 0837 | | | | | | | | | | | | |
| 2 Relinquished by [Signature] Org. 4142 Date 10/12/15 Time 0805 | | | | | | | | | | | | |
| 2 Received by [Signature] Org. 4142 Date 10/15/15 Time 1030 | | | | | | | | | | | | |
| 3 Relinquished by Org. Date Time | | | | | | | | | | | | |
| 3 Received by Org. Date Time | | | | | | | | | | | | |
| 4 Relinquished by Org. Date Time | | | | | | | | | | | | |
| 4 Received by Org. Date Time | | | | | | | | | | | | |

Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY

Page 1 of 1

SMO Use

| | |
|--------|--------|
| AR/COC | 616354 |
|--------|--------|

616354

| | | | | | | | | | | | | |
|---|----------|---|------------|--|---------------|---|--------|--------------|-------------------|-----------------------|------------------------------|---------------|
| Project Name: MWL SVM | | Date Samples Shipped: 10/12/15 | | SMO Authorization: [Signature] | | <input type="checkbox"/> Waste Characterization | | | | | | |
| Project/Task Manager: Tim Jackson | | Carrier/Waybill No: 229123 | | SMO Contact Phone: Wendy Palencia/505-844-3132 | | <input type="checkbox"/> RMMA | | | | | | |
| Project/Task Number: 146422.10.11.08 | | Lab Contact: Beth Riley-916-373-5600 | | Send Report to SMO: Stephanie Montano/505-284-2553 | | <input type="checkbox"/> Released by COC No. | | | | | | |
| Service Order: CF01-16 | | Lab Destination: TA/West Sacramento, CA | | | | 4° Celsius | | | | | | |
| Contract No.: PO 691437 | | | | | | Bill to: Sandra National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 | | | | | | |
| Tech Area: | | Operational Site: | | | | | | | | | | |
| Building: | | Room: | | | | | | | | | | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
| 098337 | -001 | MWL-SV-FB5 | | 10/8/15 11:24 | UPN | SC | 6 L | None | G | FB | VOC-TO-15 | |
| 098338 | -001 | MWL-SV05-50 (port 1) | | 10/8/15 11:28 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098339 | -001 | MWL-SV05-100 (port 2) | | 10/8/15 11:32 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098340 | -001 | MWL-SV05-200 (port 3) | | 10/8/15 11:35 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098341 | -001 | MWL-SV05-300 (port 4) | | 10/8/15 11:41 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| 098342 | -001 | MWL-SV05-400 (port 5) | | 10/8/15 11:48 | SG | SC | 6 L | None | G | SA | VOC-TO-15 | |
| Last Chain: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | | | | | | | | | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | | | | | | | |
| Background: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | | | | | | | | | |
| Confirmatory: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | | | | | | | | | |
| Sample Tracking | | | SMO Use | | | Special Instructions/QC Requirements: | | | | Conditions on Receipt | | |
| Date Entered: | | | | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| Entered by: | | | | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | | | | |
| QC inits.: | | | | | | Negotiated TAT <input type="checkbox"/> | | | | | | |
| Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | | | | | | | | | | | |
| Return Samples By: | | | | | | | | | | | | |
| Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 | | | | | | | | | | | | |
| Elevation and ambient pressure information on attached forms. | | | | | | | | | | | | |
| Lab Use | | | | | | | | | | | | |
| 1. Relinquished by [Signature] Org. 4142 Date 10/9/15 Time 0837 | | | | | | 3. Relinquished by Org. Date Time | | | | | | |
| 1. Received by [Signature] Org. 4142 Date 10/9/15 Time 0837 | | | | | | 3. Received by Org. Date Time | | | | | | |
| 2. Relinquished by [Signature] Org. 4142 Date 10/12/15 Time 0900 | | | | | | 4. Relinquished by Org. Date Time | | | | | | |
| 2. Received by [Signature] Org. Date 10/15/15 Time 1030 | | | | | | 4. Received by Org. Date Time | | | | | | |

Ⓢ Prior confirmation with SMO required for 7 and 15 day TAT

15

CONTRACT VERIFICATION REVIEW FORMS
SOIL-VAPOR MONITORING
OCTOBER 2015

| AR/COC Number | Sample Type |
|----------------------|--------------------|
| 616350 | Environmental* |
| 616351 | Environmental* |
| 616352 | Environmental* |
| 616353 | Environmental* |
| 616354 | Environmental* |

* AR/COC forms are provided in the Data Validation Section of this Annex.

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL SVM **Project/Task No.** 146422_10.11.08

ARCOC No. 616350, 616351, 616352, 616353 & 616354

Analytical Lab TAL-WS

SDG No. 320-15492-1

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | N/A | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | N/A | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | | X | 1,3-dichlorobenzene and 1,4-dichlorobenzene failed recovery limits for LCS/LCSD (320-91424) |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | N/A | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | N/A | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Methylene chloride detected in MWL-SV-FB1. Tetrachloroethene detected in MWL-SV-FB4. |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) | X | | |
| | a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | N/A | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 11-18-2015 08:07:00

Closed by: Wendy Palencia Date: 11-18-2015 08:07:00

**SOIL-VAPOR SAMPLING RESULTS
CERTIFICATES OF ANALYSIS**

Mixed Waste Landfill

April 2015-March 2016 Reporting Period

Note: Certificates of Analysis are provided on compact disc only,
for printed copies of this report.

APRIL 2015 SOIL-VAPOR SAMPLING RESULTS
CERTIFICATES OF ANALYSIS

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12611-1

Client Sample ID: 097531-001/MWL-SV01-42.5

Lab Sample ID: 320-12611-1

Date Collected: 04/15/15 08:55

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|------------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 6.0 | J * | 59 | 2.1 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Benzene | ND | | 4.7 | 0.93 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Benzyl chloride | ND | | 9.4 | 1.9 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Bromodichloromethane | ND | | 3.5 | 0.78 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Bromoform | ND | | 4.7 | 0.83 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Bromomethane | ND | | 9.4 | 4.0 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 2-Butanone (MEK) | ND | * | 9.4 | 2.3 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Carbon disulfide | ND | * | 9.4 | 0.92 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Carbon tetrachloride | ND | | 9.4 | 0.76 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Chlorobenzene | ND | | 3.5 | 0.76 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Chloroethane | ND | | 9.4 | 3.6 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Chloroform | 14 | | 3.5 | 1.1 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Chloromethane | ND | * | 9.4 | 2.3 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Dibromochloromethane | ND | | 4.7 | 0.93 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2-Dibromoethane (EDB) | ND | | 9.4 | 0.89 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 4.7 | 1.8 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2-Dichlorobenzene | ND | | 4.7 | 1.5 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,3-Dichlorobenzene | ND | | 4.7 | 1.3 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,4-Dichlorobenzene | ND | | 4.7 | 1.8 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Dichlorodifluoromethane | 130 | | 4.7 | 1.7 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,1-Dichloroethane | 3.6 | | 3.5 | 0.85 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2-Dichloroethane | ND | | 9.4 | 1.0 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,1-Dichloroethene | 10 | * | 9.4 | 1.5 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| cis-1,2-Dichloroethene | 1.1 | J | 4.7 | 1.1 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| trans-1,2-Dichloroethene | ND | | 4.7 | 1.2 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2-Dichloropropane | ND | | 4.7 | 2.8 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| cis-1,3-Dichloropropene | ND | | 4.7 | 1.2 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| trans-1,3-Dichloropropene | ND | | 4.7 | 1.0 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Ethylbenzene | ND | | 4.7 | 0.74 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 4-Ethyltoluene | ND | | 4.7 | 2.2 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Hexachlorobutadiene | ND | | 24 | 5.1 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 2-Hexanone | ND | | 4.7 | 1.0 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.7 | 1.6 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Methylene Chloride | ND | * | 4.7 | 0.85 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Styrene | ND | | 4.7 | 0.70 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.7 | 0.81 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Tetrachloroethene | 460 | | 4.7 | 0.60 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Toluene | ND | | 4.7 | 0.60 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 99 | | 4.7 | 1.9 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2,4-Trichlorobenzene | ND | | 24 | 5.1 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,1,1-Trichloroethane | 54 | | 3.5 | 0.77 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,1,2-Trichloroethane | ND | | 4.7 | 0.79 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Trichloroethene | 99 | | 4.7 | 1.2 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Trichlorofluoromethane | 240 | | 4.7 | 2.3 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,2,4-Trimethylbenzene | ND | | 9.4 | 1.9 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| 1,3,5-Trimethylbenzene | ND | | 4.7 | 1.5 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Vinyl acetate | ND | * | 9.4 | 1.7 | ppb v/v | | | 05/01/15 23:15 | 11.8 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12611-1

Client Sample ID: 097531-001/MWL-SV01-42.5

Lab Sample ID: 320-12611-1

Date Collected: 04/15/15 08:55

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| Vinyl chloride | ND | | 4.7 | 1.4 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| m,p-Xylene | ND | | 9.4 | 1.2 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| o-Xylene | ND | | 4.7 | 0.64 | ppb v/v | | | 05/01/15 23:15 | 11.8 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 102 | | 70 - 130 | | | | | 05/01/15 23:15 | 11.8 |
| 1,2-Dichloroethane-d4 (Surr) | 108 | | 70 - 130 | | | | | 05/01/15 23:15 | 11.8 |
| Toluene-d8 (Surr) | 95 | | 70 - 130 | | | | | 05/01/15 23:15 | 11.8 |

Client Sample ID: 097532-001/MWL-SV-FB1

Lab Sample ID: 320-12611-2

Date Collected: 04/15/15 08:50

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | 0.23 | J * | 5.0 | 0.18 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 2-Butanone (MEK) | ND | * | 0.80 | 0.20 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Carbon disulfide | ND | * | 0.80 | 0.078 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Chloromethane | ND | * | 0.80 | 0.20 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 0.40 | 0.16 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,1-Dichloroethene | ND | * | 0.80 | 0.13 | ppb v/v | | | 05/02/15 00:01 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 05/02/15 00:01 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 05/02/15 00:01 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 05/02/15 00:01 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 05/02/15 00:01 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12611-1

Client Sample ID: 097532-001/MWL-SV-FB1

Lab Sample ID: 320-12611-2

Date Collected: 04/15/15 08:50

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|-------|---------|---|----------|----------------|---------|
| Methylene Chloride | 0.086 | J * | 0.40 | 0.072 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Toluene | 0.25 | J | 0.40 | 0.051 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 05/02/15 00:01 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Vinyl acetate | ND | * | 0.80 | 0.15 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 05/02/15 00:01 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 05/02/15 00:01 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 05/02/15 00:01 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 117 | | 70 - 130 | | | | | 05/02/15 00:01 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 109 | | 70 - 130 | | | | | 05/02/15 00:01 | 1 |
| Toluene-d8 (Surr) | 101 | | 70 - 130 | | | | | 05/02/15 00:01 | 1 |

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616086

TestAmerica Job ID: 320-12612-1

Client Sample ID: 097533-001/MWL-SV02-41.5

Lab Sample ID: 320-12612-1

Date Collected: 04/15/15 09:11

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|------------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 6.2 | J * | 38 | 1.4 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Benzene | ND | | 3.1 | 0.61 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Benzyl chloride | ND | | 6.1 | 1.3 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Bromodichloromethane | ND | | 2.3 | 0.51 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Bromoform | ND | | 3.1 | 0.54 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Bromomethane | ND | | 6.1 | 2.6 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 2-Butanone (MEK) | 2.3 | J * | 6.1 | 1.5 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Carbon disulfide | ND | * | 6.1 | 0.60 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Carbon tetrachloride | ND | | 6.1 | 0.49 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Chlorobenzene | ND | | 2.3 | 0.49 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Chloroethane | ND | | 6.1 | 2.4 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Chloroform | 3.2 | | 2.3 | 0.73 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Chloromethane | ND | * | 6.1 | 1.5 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Dibromochloromethane | ND | | 3.1 | 0.61 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2-Dibromoethane (EDB) | ND | | 6.1 | 0.58 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 3.1 | 1.2 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2-Dichlorobenzene | ND | | 3.1 | 1.0 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,3-Dichlorobenzene | ND | | 3.1 | 0.84 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,4-Dichlorobenzene | ND | | 3.1 | 1.1 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Dichlorodifluoromethane | 110 | | 3.1 | 1.1 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,1-Dichloroethane | 2.2 | J | 2.3 | 0.55 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2-Dichloroethane | ND | | 6.1 | 0.67 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,1-Dichloroethene | 11 | * | 6.1 | 0.99 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| cis-1,2-Dichloroethene | 0.80 | J | 3.1 | 0.68 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| trans-1,2-Dichloroethene | ND | | 3.1 | 0.77 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2-Dichloropropane | ND | | 3.1 | 1.8 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| cis-1,3-Dichloropropene | ND | | 3.1 | 0.80 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| trans-1,3-Dichloropropene | ND | | 3.1 | 0.67 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Ethylbenzene | ND | | 3.1 | 0.48 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 4-Ethyltoluene | ND | | 3.1 | 1.4 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Hexachlorobutadiene | ND | | 15 | 3.3 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 2-Hexanone | ND | | 3.1 | 0.67 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.1 | 1.0 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Methylene Chloride | ND | * | 3.1 | 0.55 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Styrene | ND | | 3.1 | 0.45 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.1 | 0.53 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Tetrachloroethene | 75 | | 3.1 | 0.39 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Toluene | ND | | 3.1 | 0.39 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 50 | | 3.1 | 1.3 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2,4-Trichlorobenzene | ND | | 15 | 3.3 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,1,1-Trichloroethane | 77 | | 2.3 | 0.50 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,1,2-Trichloroethane | ND | | 3.1 | 0.51 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Trichloroethene | 67 | | 3.1 | 0.81 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Trichlorofluoromethane | 360 | | 3.1 | 1.5 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,2,4-Trimethylbenzene | ND | | 6.1 | 1.2 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| 1,3,5-Trimethylbenzene | ND | | 3.1 | 0.96 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| Vinyl acetate | ND | * | 6.1 | 1.1 | ppb v/v | | | 05/02/15 00:42 | 7.67 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616086

TestAmerica Job ID: 320-12612-1

Client Sample ID: 097533-001/MWL-SV02-41.5

Lab Sample ID: 320-12612-1

Date Collected: 04/15/15 09:11

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Vinyl chloride | ND | | 3.1 | 0.92 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| m,p-Xylene | ND | | 6.1 | 0.77 | ppb v/v | | | 05/02/15 00:42 | 7.67 |
| o-Xylene | ND | | 3.1 | 0.41 | ppb v/v | | | 05/02/15 00:42 | 7.67 |

| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|--|--|--|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 123 | | 70 - 130 | | | | | 05/02/15 00:42 | 7.67 |
| 1,2-Dichloroethane-d4 (Surr) | 97 | | 70 - 130 | | | | | 05/02/15 00:42 | 7.67 |
| Toluene-d8 (Surr) | 95 | | 70 - 130 | | | | | 05/02/15 00:42 | 7.67 |

Client Sample ID: 097534-001/MWL-SV-FB2

Lab Sample ID: 320-12612-2

Date Collected: 04/15/15 09:06

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | * | 5.0 | 0.18 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 2-Butanone (MEK) | ND | * | 0.80 | 0.20 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Carbon disulfide | ND | * | 0.80 | 0.078 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Chloromethane | ND | * | 0.80 | 0.20 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 0.40 | 0.16 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,1-Dichloroethene | ND | * | 0.80 | 0.13 | ppb v/v | | | 05/02/15 01:29 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 05/02/15 01:29 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 05/02/15 01:29 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 05/02/15 01:29 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 05/02/15 01:29 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616086

TestAmerica Job ID: 320-12612-1

Client Sample ID: 097534-001/MWL-SV-FB2

Lab Sample ID: 320-12612-2

Date Collected: 04/15/15 09:06

Matrix: Air

Date Received: 04/20/15 09:10

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------------|------------|----------|-------|---------|---|----------|----------------|---------|
| Methylene Chloride | 0.084 | J * | 0.40 | 0.072 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Toluene | 0.22 | J | 0.40 | 0.051 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 05/02/15 01:29 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Vinyl acetate | ND * | | 0.80 | 0.15 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 05/02/15 01:29 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 05/02/15 01:29 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 05/02/15 01:29 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 95 | | 70 - 130 | | | | | 05/02/15 01:29 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 102 | | 70 - 130 | | | | | 05/02/15 01:29 | 1 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | | | | 05/02/15 01:29 | 1 |

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097535-001/MWL-SV03-50 W/M

Lab Sample ID: 320-12599-1

Date Collected: 04/14/15 08:50

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 6.0 | J | 30 | 1.1 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Benzene | 1.8 | J | 2.4 | 0.47 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Benzyl chloride | ND | | 4.8 | 0.97 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Bromodichloromethane | ND | | 1.8 | 0.39 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Bromoform | ND | | 2.4 | 0.42 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Bromomethane | ND | | 4.8 | 2.0 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 2-Butanone (MEK) | ND | | 4.8 | 1.2 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Carbon disulfide | ND | | 4.8 | 0.47 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Carbon tetrachloride | ND | | 4.8 | 0.38 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Chlorobenzene | ND | | 1.8 | 0.38 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Chloroethane | ND | | 4.8 | 1.8 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Chloroform | 1.5 | J | 1.8 | 0.57 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Chloromethane | ND | | 4.8 | 1.2 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Dibromochloromethane | ND | | 2.4 | 0.47 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2-Dibromoethane (EDB) | ND | | 4.8 | 0.45 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.4 | 0.93 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2-Dichlorobenzene | ND | | 2.4 | 0.78 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,3-Dichlorobenzene | ND | | 2.4 | 0.66 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,4-Dichlorobenzene | ND | | 2.4 | 0.89 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Dichlorodifluoromethane | 24 | | 2.4 | 0.87 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,1-Dichloroethane | 2.5 | | 1.8 | 0.43 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2-Dichloroethane | ND | | 4.8 | 0.53 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,1-Dichloroethene | 9.2 | | 4.8 | 0.77 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| cis-1,2-Dichloroethene | 1.4 | J | 2.4 | 0.53 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| trans-1,2-Dichloroethene | ND | | 2.4 | 0.60 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2-Dichloropropane | ND | | 2.4 | 1.4 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| cis-1,3-Dichloropropene | ND | | 2.4 | 0.62 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| trans-1,3-Dichloropropene | ND | | 2.4 | 0.53 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Ethylbenzene | ND | | 2.4 | 0.38 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 4-Ethyltoluene | ND | | 2.4 | 1.1 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Hexachlorobutadiene | ND | | 12 | 2.6 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 2-Hexanone | ND | | 2.4 | 0.52 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.4 | 0.81 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Methylene Chloride | 0.67 | J | 2.4 | 0.43 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Styrene | ND | | 2.4 | 0.35 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.4 | 0.41 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Tetrachloroethene | 140 | | 2.4 | 0.30 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Toluene | ND | | 2.4 | 0.30 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 51 | | 2.4 | 0.97 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2,4-Trichlorobenzene | ND | | 12 | 2.6 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,1,1-Trichloroethane | 5.3 | | 1.8 | 0.39 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,1,2-Trichloroethane | ND | | 2.4 | 0.40 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Trichloroethene | 92 | | 2.4 | 0.63 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Trichlorofluoromethane | 23 | | 2.4 | 1.2 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,2,4-Trimethylbenzene | ND | | 4.8 | 0.97 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| 1,3,5-Trimethylbenzene | ND | | 2.4 | 0.75 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Vinyl acetate | ND | | 4.8 | 0.87 | ppb v/v | | | 04/30/15 01:51 | 5.98 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097535-001/MWL-SV03-50 W/M

Lab Sample ID: 320-12599-1

Date Collected: 04/14/15 08:50

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| Vinyl chloride | ND | | 2.4 | 0.72 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| m,p-Xylene | ND | | 4.8 | 0.60 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| o-Xylene | ND | | 2.4 | 0.32 | ppb v/v | | | 04/30/15 01:51 | 5.98 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 100 | | 70 - 130 | | | | | 04/30/15 01:51 | 5.98 |
| 1,2-Dichloroethane-d4 (Surr) | 104 | | 70 - 130 | | | | | 04/30/15 01:51 | 5.98 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | | | | 04/30/15 01:51 | 5.98 |

Client Sample ID: 097536-001/MWL-SV03-50 W/M

Lab Sample ID: 320-12599-2

Date Collected: 04/14/15 08:50

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 6.9 | J | 25 | 0.88 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Benzene | 1.6 | J | 2.0 | 0.39 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Benzyl chloride | ND | | 3.9 | 0.80 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Bromodichloromethane | ND | | 1.5 | 0.32 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Bromoform | ND | | 2.0 | 0.34 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Bromomethane | ND | | 3.9 | 1.6 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 2-Butanone (MEK) | ND | | 3.9 | 0.98 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Carbon disulfide | ND | | 3.9 | 0.38 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Carbon tetrachloride | ND | | 3.9 | 0.31 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Chlorobenzene | ND | | 1.5 | 0.31 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Chloroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Chloroform | 1.3 | J | 1.5 | 0.47 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Chloromethane | ND | | 3.9 | 0.97 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Dibromochloromethane | ND | | 2.0 | 0.39 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2-Dibromoethane (EDB) | ND | | 3.9 | 0.37 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.0 | 0.76 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2-Dichlorobenzene | ND | | 2.0 | 0.64 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,3-Dichlorobenzene | ND | | 2.0 | 0.54 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,4-Dichlorobenzene | ND | | 2.0 | 0.73 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Dichlorodifluoromethane | 21 | | 2.0 | 0.71 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,1-Dichloroethane | 2.0 | | 1.5 | 0.35 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2-Dichloroethane | ND | | 3.9 | 0.43 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,1-Dichloroethene | 7.9 | | 3.9 | 0.63 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| cis-1,2-Dichloroethene | 1.1 | J | 2.0 | 0.44 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| trans-1,2-Dichloroethene | ND | | 2.0 | 0.49 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2-Dichloropropane | ND | | 2.0 | 1.2 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| cis-1,3-Dichloropropene | ND | | 2.0 | 0.51 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| trans-1,3-Dichloropropene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Ethylbenzene | ND | | 2.0 | 0.31 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 4-Ethyltoluene | ND | | 2.0 | 0.92 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Hexachlorobutadiene | ND | | 9.8 | 2.1 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 2-Hexanone | ND | | 2.0 | 0.43 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.0 | 0.66 | ppb v/v | | | 04/30/15 02:33 | 4.92 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097536-001/MWL-SV03-50 W/M

Lab Sample ID: 320-12599-2

Date Collected: 04/14/15 08:50

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| Methylene Chloride | 0.67 | J | 2.0 | 0.35 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Styrene | ND | | 2.0 | 0.29 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.0 | 0.34 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Tetrachloroethene | 120 | | 2.0 | 0.25 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Toluene | ND | | 2.0 | 0.25 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 45 | | 2.0 | 0.80 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2,4-Trichlorobenzene | ND | | 9.8 | 2.1 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,1,1-Trichloroethane | 4.4 | | 1.5 | 0.32 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,1,2-Trichloroethane | ND | | 2.0 | 0.33 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Trichloroethene | 80 | | 2.0 | 0.52 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Trichlorofluoromethane | 20 | | 2.0 | 0.96 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,2,4-Trimethylbenzene | ND | | 3.9 | 0.80 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| 1,3,5-Trimethylbenzene | ND | | 2.0 | 0.62 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Vinyl acetate | ND | | 3.9 | 0.71 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Vinyl chloride | ND | | 2.0 | 0.59 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| m,p-Xylene | ND | | 3.9 | 0.49 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| o-Xylene | ND | | 2.0 | 0.27 | ppb v/v | | | 04/30/15 02:33 | 4.92 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 113 | | 70 - 130 | | | | | 04/30/15 02:33 | 4.92 |
| 1,2-Dichloroethane-d4 (Surr) | 103 | | 70 - 130 | | | | | 04/30/15 02:33 | 4.92 |
| Toluene-d8 (Surr) | 91 | | 70 - 130 | | | | | 04/30/15 02:33 | 4.92 |

Client Sample ID: 097537-001/MWL-SV03-50 WO/M

Lab Sample ID: 320-12599-3

Date Collected: 04/14/15 08:55

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.0 | J | 24 | 0.87 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Benzene | 1.9 | J | 2.0 | 0.39 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Benzyl chloride | ND | | 3.9 | 0.80 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Bromodichloromethane | ND | | 1.5 | 0.32 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Bromoform | ND | | 2.0 | 0.34 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Bromomethane | ND | | 3.9 | 1.6 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 2-Butanone (MEK) | ND | | 3.9 | 0.97 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Carbon disulfide | ND | | 3.9 | 0.38 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Carbon tetrachloride | ND | | 3.9 | 0.31 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Chlorobenzene | ND | | 1.5 | 0.31 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Chloroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Chloroform | 1.3 | J | 1.5 | 0.46 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Chloromethane | ND | | 3.9 | 0.96 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Dibromochloromethane | ND | | 2.0 | 0.39 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2-Dibromoethane (EDB) | ND | | 3.9 | 0.37 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.0 | 0.76 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2-Dichlorobenzene | ND | | 2.0 | 0.63 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,3-Dichlorobenzene | ND | | 2.0 | 0.54 | ppb v/v | | | 04/30/15 03:16 | 4.88 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097537-001/MWL-SV03-50 WO/M

Lab Sample ID: 320-12599-3

Date Collected: 04/14/15 08:55

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| 1,4-Dichlorobenzene | ND | | 2.0 | 0.73 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Dichlorodifluoromethane | 22 | | 2.0 | 0.71 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,1-Dichloroethane | 2.1 | | 1.5 | 0.35 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2-Dichloroethane | ND | | 3.9 | 0.43 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,1-Dichloroethene | 8.1 | | 3.9 | 0.63 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| cis-1,2-Dichloroethene | 1.1 | J | 2.0 | 0.43 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| trans-1,2-Dichloroethene | ND | | 2.0 | 0.49 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2-Dichloropropane | ND | | 2.0 | 1.2 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| cis-1,3-Dichloropropene | ND | | 2.0 | 0.51 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| trans-1,3-Dichloropropene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Ethylbenzene | ND | | 2.0 | 0.31 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 4-Ethyltoluene | ND | | 2.0 | 0.91 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Hexachlorobutadiene | ND | | 9.8 | 2.1 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 2-Hexanone | ND | | 2.0 | 0.42 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.0 | 0.66 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Methylene Chloride | 0.63 | J | 2.0 | 0.35 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Styrene | ND | | 2.0 | 0.29 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.0 | 0.34 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Tetrachloroethene | 130 | | 2.0 | 0.25 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Toluene | ND | | 2.0 | 0.25 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 46 | | 2.0 | 0.80 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2,4-Trichlorobenzene | ND | | 9.8 | 2.1 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,1,1-Trichloroethane | 4.7 | | 1.5 | 0.32 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,1,2-Trichloroethane | ND | | 2.0 | 0.33 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Trichloroethene | 85 | | 2.0 | 0.51 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Trichlorofluoromethane | 20 | | 2.0 | 0.96 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,2,4-Trimethylbenzene | ND | | 3.9 | 0.79 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| 1,3,5-Trimethylbenzene | ND | | 2.0 | 0.61 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Vinyl acetate | ND | | 3.9 | 0.71 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Vinyl chloride | ND | | 2.0 | 0.59 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| m,p-Xylene | ND | | 3.9 | 0.49 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| o-Xylene | ND | | 2.0 | 0.26 | ppb v/v | | | 04/30/15 03:16 | 4.88 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 98 | | 70 - 130 | | | | | 04/30/15 03:16 | 4.88 |
| 1,2-Dichloroethane-d4 (Surr) | 102 | | 70 - 130 | | | | | 04/30/15 03:16 | 4.88 |
| Toluene-d8 (Surr) | 86 | | 70 - 130 | | | | | 04/30/15 03:16 | 4.88 |

Client Sample ID: 097538-001/MWL-SV03-50 WO/M

Lab Sample ID: 320-12599-4

Date Collected: 04/14/15 08:55

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 2.1 | J | 30 | 1.1 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Benzene | 2.1 | J | 2.4 | 0.47 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Benzyl chloride | ND | | 4.7 | 0.97 | ppb v/v | | | 04/30/15 03:58 | 5.93 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097538-001/MWL-SV03-50 WO/M

Lab Sample ID: 320-12599-4

Date Collected: 04/14/15 08:55

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Bromodichloromethane | ND | | 1.8 | 0.39 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Bromoform | ND | | 2.4 | 0.42 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Bromomethane | ND | | 4.7 | 2.0 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 2-Butanone (MEK) | ND | | 4.7 | 1.2 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Carbon disulfide | 0.52 | J | 4.7 | 0.46 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Carbon tetrachloride | ND | | 4.7 | 0.38 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Chlorobenzene | ND | | 1.8 | 0.38 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Chloroethane | ND | | 4.7 | 1.8 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Chloroform | 1.6 | J | 1.8 | 0.56 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Chloromethane | ND | | 4.7 | 1.2 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Dibromochloromethane | ND | | 2.4 | 0.47 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2-Dibromoethane (EDB) | ND | | 4.7 | 0.44 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.4 | 0.92 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2-Dichlorobenzene | ND | | 2.4 | 0.77 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,3-Dichlorobenzene | ND | | 2.4 | 0.65 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,4-Dichlorobenzene | ND | | 2.4 | 0.88 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Dichlorodifluoromethane | 26 | | 2.4 | 0.86 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,1-Dichloroethane | 2.3 | | 1.8 | 0.43 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2-Dichloroethane | ND | | 4.7 | 0.52 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,1-Dichloroethene | 8.7 | | 4.7 | 0.76 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| cis-1,2-Dichloroethene | 1.3 | J | 2.4 | 0.53 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| trans-1,2-Dichloroethene | ND | | 2.4 | 0.59 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2-Dichloropropane | ND | | 2.4 | 1.4 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| cis-1,3-Dichloropropene | ND | | 2.4 | 0.62 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| trans-1,3-Dichloropropene | ND | | 2.4 | 0.52 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Ethylbenzene | ND | | 2.4 | 0.37 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 4-Ethyltoluene | ND | | 2.4 | 1.1 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Hexachlorobutadiene | ND | | 12 | 2.6 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 2-Hexanone | ND | | 2.4 | 0.52 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.4 | 0.80 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Methylene Chloride | 0.74 | J | 2.4 | 0.43 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Styrene | ND | | 2.4 | 0.35 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.4 | 0.41 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Tetrachloroethene | 150 | | 2.4 | 0.30 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Toluene | ND | | 2.4 | 0.30 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 50 | | 2.4 | 0.97 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2,4-Trichlorobenzene | ND | | 12 | 2.6 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,1,1-Trichloroethane | 5.4 | | 1.8 | 0.39 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,1,2-Trichloroethane | ND | | 2.4 | 0.40 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Trichloroethene | 97 | | 2.4 | 0.62 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Trichlorofluoromethane | 23 | | 2.4 | 1.2 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,2,4-Trimethylbenzene | ND | | 4.7 | 0.96 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| 1,3,5-Trimethylbenzene | ND | | 2.4 | 0.74 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Vinyl acetate | ND | | 4.7 | 0.86 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| Vinyl chloride | ND | | 2.4 | 0.71 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| m,p-Xylene | ND | | 4.7 | 0.59 | ppb v/v | | | 04/30/15 03:58 | 5.93 |
| o-Xylene | ND | | 2.4 | 0.32 | ppb v/v | | | 04/30/15 03:58 | 5.93 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097538-001/MWL-SV03-50 WO/M

Lab Sample ID: 320-12599-4

Date Collected: 04/14/15 08:55

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 96 | | 70 - 130 | | 04/30/15 03:58 | 5.93 |
| 1,2-Dichloroethane-d4 (Surr) | 107 | | 70 - 130 | | 04/30/15 03:58 | 5.93 |
| Toluene-d8 (Surr) | 98 | | 70 - 130 | | 04/30/15 03:58 | 5.93 |

Client Sample ID: 097539-001/MWL-SV03-100

Lab Sample ID: 320-12599-5

Date Collected: 04/14/15 09:00

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.2 | J | 37 | 1.3 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Benzene | ND | | 3.0 | 0.59 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Benzyl chloride | ND | | 6.0 | 1.2 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Bromodichloromethane | ND | | 2.2 | 0.49 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Bromoform | ND | | 3.0 | 0.52 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Bromomethane | ND | | 6.0 | 2.5 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 2-Butanone (MEK) | ND | | 6.0 | 1.5 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Carbon disulfide | ND | | 6.0 | 0.58 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Carbon tetrachloride | ND | | 6.0 | 0.48 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Chlorobenzene | ND | | 2.2 | 0.48 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Chloroethane | ND | | 6.0 | 2.3 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Chloroform | 2.4 | | 2.2 | 0.71 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Chloromethane | ND | | 6.0 | 1.5 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Dibromochloromethane | ND | | 3.0 | 0.59 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2-Dibromoethane (EDB) | ND | | 6.0 | 0.56 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 3.0 | 1.2 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2-Dichlorobenzene | ND | | 3.0 | 0.97 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,3-Dichlorobenzene | ND | | 3.0 | 0.82 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,4-Dichlorobenzene | ND | | 3.0 | 1.1 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Dichlorodifluoromethane | 49 | | 3.0 | 1.1 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,1-Dichloroethane | 5.8 | | 2.2 | 0.54 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2-Dichloroethane | ND | | 6.0 | 0.66 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,1-Dichloroethene | 25 | | 6.0 | 0.96 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| cis-1,2-Dichloroethene | 3.7 | | 3.0 | 0.66 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| trans-1,2-Dichloroethene | ND | | 3.0 | 0.75 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2-Dichloropropane | ND | | 3.0 | 1.8 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| cis-1,3-Dichloropropene | ND | | 3.0 | 0.77 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| trans-1,3-Dichloropropene | ND | | 3.0 | 0.66 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Ethylbenzene | ND | | 3.0 | 0.47 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 4-Ethyltoluene | ND | | 3.0 | 1.4 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Hexachlorobutadiene | ND | | 15 | 3.2 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 2-Hexanone | ND | | 3.0 | 0.65 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.0 | 1.0 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Methylene Chloride | 2.1 | J | 3.0 | 0.54 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Styrene | ND | | 3.0 | 0.44 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.0 | 0.51 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Tetrachloroethene | 240 | | 3.0 | 0.38 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Toluene | 0.46 | J | 3.0 | 0.38 | ppb v/v | | | 04/30/15 08:55 | 7.45 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097539-001/MWL-SV03-100

Lab Sample ID: 320-12599-5

Date Collected: 04/14/15 09:00

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|----------|------|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 120 | | 3.0 | 1.2 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2,4-Trichlorobenzene | ND | | 15 | 3.2 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,1,1-Trichloroethane | 6.7 | | 2.2 | 0.48 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,1,2-Trichloroethane | ND | | 3.0 | 0.50 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Trichloroethene | 200 | | 3.0 | 0.78 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Trichlorofluoromethane | 36 | | 3.0 | 1.5 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,2,4-Trimethylbenzene | ND | | 6.0 | 1.2 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| 1,3,5-Trimethylbenzene | ND | | 3.0 | 0.93 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Vinyl acetate | ND | | 6.0 | 1.1 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Vinyl chloride | ND | | 3.0 | 0.89 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| m,p-Xylene | ND | | 6.0 | 0.75 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| o-Xylene | ND | | 3.0 | 0.40 | ppb v/v | | | 04/30/15 08:55 | 7.45 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 98 | | 70 - 130 | | | | | 04/30/15 08:55 | 7.45 |
| 1,2-Dichloroethane-d4 (Surr) | 104 | | 70 - 130 | | | | | 04/30/15 08:55 | 7.45 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | | | | 04/30/15 08:55 | 7.45 |

Client Sample ID: 097540-001/MWL-SV03-200 W/M

Lab Sample ID: 320-12599-6

Date Collected: 04/14/15 09:05

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.7 | J | 50 | 1.8 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Benzene | ND | | 4.0 | 0.79 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Benzyl chloride | ND | | 8.0 | 1.6 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Bromodichloromethane | ND | | 3.0 | 0.66 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Bromoform | ND | | 4.0 | 0.70 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Bromomethane | ND | | 8.0 | 3.3 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 2-Butanone (MEK) | ND | | 8.0 | 2.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Carbon disulfide | 2.3 | J | 8.0 | 0.78 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Carbon tetrachloride | ND | | 8.0 | 0.64 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Chlorobenzene | ND | | 3.0 | 0.64 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Chloroethane | ND | | 8.0 | 3.1 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Chloroform | 2.1 | J | 3.0 | 0.95 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Chloromethane | ND | | 8.0 | 2.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Dibromochloromethane | ND | | 4.0 | 0.79 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2-Dibromoethane (EDB) | ND | | 8.0 | 0.75 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.0 | 1.5 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2-Dichlorobenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,3-Dichlorobenzene | ND | | 4.0 | 1.1 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,4-Dichlorobenzene | ND | | 4.0 | 1.5 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Dichlorodifluoromethane | 70 | | 4.0 | 1.4 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,1-Dichloroethane | 8.3 | | 3.0 | 0.72 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2-Dichloroethane | ND | | 8.0 | 0.88 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,1-Dichloroethene | 41 | | 8.0 | 1.3 | ppb v/v | | | 04/30/15 09:37 | 9.95 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097540-001/MWL-SV03-200 W/M

Lab Sample ID: 320-12599-6

Date Collected: 04/14/15 09:05

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| cis-1,2-Dichloroethene | 4.8 | | 4.0 | 0.89 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| trans-1,2-Dichloroethene | ND | | 4.0 | 1.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2-Dichloropropane | ND | | 4.0 | 2.4 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| cis-1,3-Dichloropropene | ND | | 4.0 | 1.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| trans-1,3-Dichloropropene | ND | | 4.0 | 0.88 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Ethylbenzene | ND | | 4.0 | 0.63 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 4-Ethyltoluene | ND | | 4.0 | 1.9 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Hexachlorobutadiene | ND | | 20 | 4.3 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 2-Hexanone | ND | | 4.0 | 0.87 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.0 | 1.3 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Methylene Chloride | 4.1 | | 4.0 | 0.72 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Styrene | ND | | 4.0 | 0.59 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.0 | 0.69 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Tetrachloroethene | 290 | | 4.0 | 0.51 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Toluene | 0.91 | J | 4.0 | 0.51 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 180 | | 4.0 | 1.6 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2,4-Trichlorobenzene | ND | | 20 | 4.3 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,1,1-Trichloroethane | 2.9 | J | 3.0 | 0.65 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,1,2-Trichloroethane | ND | | 4.0 | 0.67 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Trichloroethene | 270 | | 4.0 | 1.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Trichlorofluoromethane | 34 | | 4.0 | 2.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,2,4-Trimethylbenzene | ND | | 8.0 | 1.6 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| 1,3,5-Trimethylbenzene | ND | | 4.0 | 1.2 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Vinyl acetate | ND | | 8.0 | 1.4 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Vinyl chloride | ND | | 4.0 | 1.2 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| m,p-Xylene | ND | | 8.0 | 1.0 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| o-Xylene | ND | | 4.0 | 0.54 | ppb v/v | | | 04/30/15 09:37 | 9.95 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 97 | | 70 - 130 | | | | | 04/30/15 09:37 | 9.95 |
| 1,2-Dichloroethane-d4 (Surr) | 105 | | 70 - 130 | | | | | 04/30/15 09:37 | 9.95 |
| Toluene-d8 (Surr) | 96 | | 70 - 130 | | | | | 04/30/15 09:37 | 9.95 |

Client Sample ID: 097541-001/MWL-SV03-200 W/M

Lab Sample ID: 320-12599-7

Date Collected: 04/14/15 09:05

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.0 | J | 51 | 1.8 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Benzene | ND | | 4.0 | 0.80 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Benzyl chloride | ND | | 8.1 | 1.6 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Bromodichloromethane | ND | | 3.0 | 0.67 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Bromoform | ND | | 4.0 | 0.71 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Bromomethane | ND | | 8.1 | 3.4 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 2-Butanone (MEK) | ND | | 8.1 | 2.0 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Carbon disulfide | ND | | 8.1 | 0.79 | ppb v/v | | | 04/30/15 10:19 | 10.1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097541-001/MWL-SV03-200 W/M

Lab Sample ID: 320-12599-7

Date Collected: 04/14/15 09:05

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| Carbon tetrachloride | ND | | 8.1 | 0.65 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Chlorobenzene | ND | | 3.0 | 0.65 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Chloroethane | ND | | 8.1 | 3.1 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Chloroform | 2.1 | J | 3.0 | 0.96 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Chloromethane | ND | | 8.1 | 2.0 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Dibromochloromethane | ND | | 4.0 | 0.80 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2-Dibromoethane (EDB) | ND | | 8.1 | 0.76 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.0 | 1.6 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2-Dichlorobenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,3-Dichlorobenzene | ND | | 4.0 | 1.1 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,4-Dichlorobenzene | ND | | 4.0 | 1.5 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Dichlorodifluoromethane | 74 | | 4.0 | 1.5 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,1-Dichloroethane | 8.6 | | 3.0 | 0.73 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2-Dichloroethane | ND | | 8.1 | 0.89 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,1-Dichloroethene | 43 | | 8.1 | 1.3 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| cis-1,2-Dichloroethene | 5.4 | | 4.0 | 0.90 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| trans-1,2-Dichloroethene | ND | | 4.0 | 1.0 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2-Dichloropropane | ND | | 4.0 | 2.4 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| cis-1,3-Dichloropropene | ND | | 4.0 | 1.1 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| trans-1,3-Dichloropropene | ND | | 4.0 | 0.89 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Ethylbenzene | ND | | 4.0 | 0.64 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 4-Ethyltoluene | ND | | 4.0 | 1.9 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Hexachlorobutadiene | ND | | 20 | 4.4 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 2-Hexanone | ND | | 4.0 | 0.88 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.0 | 1.4 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Methylene Chloride | 4.3 | | 4.0 | 0.73 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Styrene | ND | | 4.0 | 0.60 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,1,1,2-Tetrachloroethane | ND | | 4.0 | 0.70 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Tetrachloroethene | 300 | | 4.0 | 0.52 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Toluene | 0.92 | J | 4.0 | 0.52 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 190 | | 4.0 | 1.6 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2,4-Trichlorobenzene | ND | | 20 | 4.4 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,1,1-Trichloroethane | 3.1 | | 3.0 | 0.66 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,1,2-Trichloroethane | ND | | 4.0 | 0.68 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Trichloroethene | 290 | | 4.0 | 1.1 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Trichlorofluoromethane | 35 | | 4.0 | 2.0 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,2,4-Trimethylbenzene | ND | | 8.1 | 1.6 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| 1,3,5-Trimethylbenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Vinyl acetate | ND | | 8.1 | 1.5 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Vinyl chloride | ND | | 4.0 | 1.2 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| m,p-Xylene | ND | | 8.1 | 1.0 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| o-Xylene | ND | | 4.0 | 0.55 | ppb v/v | | | 04/30/15 10:19 | 10.1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 98 | | 70 - 130 | | | | | 04/30/15 10:19 | 10.1 |
| 1,2-Dichloroethane-d4 (Surr) | 108 | | 70 - 130 | | | | | 04/30/15 10:19 | 10.1 |
| Toluene-d8 (Surr) | 96 | | 70 - 130 | | | | | 04/30/15 10:19 | 10.1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097542-001/MWL-SV03-200 WO/M

Lab Sample ID: 320-12599-8

Date Collected: 04/14/15 09:10

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 2.9 | J | 49 | 1.7 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Benzene | ND | | 3.9 | 0.77 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Benzyl chloride | ND | | 7.8 | 1.6 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Bromodichloromethane | ND | | 2.9 | 0.64 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Bromoform | ND | | 3.9 | 0.68 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Bromomethane | ND | | 7.8 | 3.2 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 2-Butanone (MEK) | ND | | 7.8 | 1.9 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Carbon disulfide | ND | | 7.8 | 0.76 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Carbon tetrachloride | ND | | 7.8 | 0.62 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Chlorobenzene | ND | | 2.9 | 0.62 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Chloroethane | ND | | 7.8 | 3.0 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Chloroform | 2.0 | J | 2.9 | 0.92 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Chloromethane | ND | | 7.8 | 1.9 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Dibromochloromethane | ND | | 3.9 | 0.77 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2-Dibromoethane (EDB) | ND | | 7.8 | 0.73 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2-Dichlorobenzene | ND | | 3.9 | 1.3 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,3-Dichlorobenzene | ND | | 3.9 | 1.1 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,4-Dichlorobenzene | ND | | 3.9 | 1.4 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Dichlorodifluoromethane | 77 | | 3.9 | 1.4 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,1-Dichloroethane | 8.7 | | 2.9 | 0.70 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2-Dichloroethane | ND | | 7.8 | 0.85 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,1-Dichloroethene | 44 | | 7.8 | 1.3 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| cis-1,2-Dichloroethene | 4.7 | | 3.9 | 0.86 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| trans-1,2-Dichloroethene | ND | | 3.9 | 0.97 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2-Dichloropropane | ND | | 3.9 | 2.3 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| cis-1,3-Dichloropropene | ND | | 3.9 | 1.0 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| trans-1,3-Dichloropropene | ND | | 3.9 | 0.85 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Ethylbenzene | ND | | 3.9 | 0.61 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 4-Ethyltoluene | ND | | 3.9 | 1.8 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Hexachlorobutadiene | ND | | 19 | 4.2 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 2-Hexanone | ND | | 3.9 | 0.84 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.9 | 1.3 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Methylene Chloride | 4.2 | | 3.9 | 0.70 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Styrene | ND | | 3.9 | 0.57 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.9 | 0.67 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Tetrachloroethene | 310 | | 3.9 | 0.49 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Toluene | 0.90 | J | 3.9 | 0.49 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 200 | | 3.9 | 1.6 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2,4-Trichlorobenzene | ND | | 19 | 4.2 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,1,1-Trichloroethane | 3.0 | | 2.9 | 0.63 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,1,2-Trichloroethane | ND | | 3.9 | 0.65 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Trichloroethene | 290 | | 3.9 | 1.0 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Trichlorofluoromethane | 37 | | 3.9 | 1.9 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,2,4-Trimethylbenzene | ND | | 7.8 | 1.6 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| 1,3,5-Trimethylbenzene | ND | | 3.9 | 1.2 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Vinyl acetate | ND | | 7.8 | 1.4 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Vinyl chloride | ND | | 3.9 | 1.2 | ppb v/v | | | 04/30/15 11:01 | 9.7 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097542-001/MWL-SV03-200 WO/M

Lab Sample ID: 320-12599-8

Date Collected: 04/14/15 09:10

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| m,p-Xylene | ND | | 7.8 | 0.97 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| o-Xylene | ND | | 3.9 | 0.52 | ppb v/v | | | 04/30/15 11:01 | 9.7 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 98 | | 70 - 130 | | | | | 04/30/15 11:01 | 9.7 |
| 1,2-Dichloroethane-d4 (Surr) | 102 | | 70 - 130 | | | | | 04/30/15 11:01 | 9.7 |
| Toluene-d8 (Surr) | 91 | | 70 - 130 | | | | | 04/30/15 11:01 | 9.7 |

Client Sample ID: 097543-001/MWL-SV03-200 WO/M

Lab Sample ID: 320-12599-9

Date Collected: 04/14/15 09:10

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.8 | J * | 43 | 1.5 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Benzene | ND | | 3.4 | 0.68 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Benzyl chloride | ND | | 6.9 | 1.4 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Bromodichloromethane | ND | | 2.6 | 0.57 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Bromoform | ND | | 3.4 | 0.60 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Bromomethane | ND | | 6.9 | 2.9 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 2-Butanone (MEK) | ND | * | 6.9 | 1.7 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Carbon disulfide | ND | * | 6.9 | 0.67 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Carbon tetrachloride | 0.56 | J | 6.9 | 0.55 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Chlorobenzene | ND | | 2.6 | 0.55 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Chloroethane | ND | | 6.9 | 2.7 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Chloroform | 2.1 | J | 2.6 | 0.82 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Chloromethane | ND | * | 6.9 | 1.7 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Dibromochloromethane | ND | | 3.4 | 0.68 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2-Dibromoethane (EDB) | ND | | 6.9 | 0.65 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 3.4 | 1.3 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2-Dichlorobenzene | ND | | 3.4 | 1.1 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,3-Dichlorobenzene | ND | | 3.4 | 0.95 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,4-Dichlorobenzene | ND | | 3.4 | 1.3 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Dichlorodifluoromethane | 70 | | 3.4 | 1.2 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,1-Dichloroethane | 9.1 | | 2.6 | 0.62 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2-Dichloroethane | ND | | 6.9 | 0.76 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,1-Dichloroethene | 45 | * | 6.9 | 1.1 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| cis-1,2-Dichloroethene | 5.2 | | 3.4 | 0.77 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| trans-1,2-Dichloroethene | ND | | 3.4 | 0.86 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2-Dichloropropane | ND | | 3.4 | 2.1 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| cis-1,3-Dichloropropene | ND | | 3.4 | 0.90 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| trans-1,3-Dichloropropene | ND | | 3.4 | 0.76 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Ethylbenzene | ND | | 3.4 | 0.54 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 4-Ethyltoluene | ND | | 3.4 | 1.6 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Hexachlorobutadiene | ND | | 17 | 3.7 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 2-Hexanone | ND | | 3.4 | 0.75 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.4 | 1.2 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Methylene Chloride | 4.4 | * | 3.4 | 0.62 | ppb v/v | | | 05/01/15 20:22 | 8.62 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097543-001/MWL-SV03-200 WO/M

Lab Sample ID: 320-12599-9

Date Collected: 04/14/15 09:10

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| Styrene | ND | | 3.4 | 0.51 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.4 | 0.59 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Tetrachloroethene | 310 | | 3.4 | 0.44 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Toluene | 0.99 | J | 3.4 | 0.44 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 210 | | 3.4 | 1.4 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2,4-Trichlorobenzene | ND | | 17 | 3.7 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,1,1-Trichloroethane | 3.0 | | 2.6 | 0.56 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,1,2-Trichloroethane | ND | | 3.4 | 0.58 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Trichloroethene | 290 | | 3.4 | 0.91 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Trichlorofluoromethane | 36 | | 3.4 | 1.7 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,2,4-Trimethylbenzene | ND | | 6.9 | 1.4 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| 1,3,5-Trimethylbenzene | ND | | 3.4 | 1.1 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Vinyl acetate | ND | * | 6.9 | 1.2 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Vinyl chloride | ND | | 3.4 | 1.0 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| m,p-Xylene | ND | | 6.9 | 0.86 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| o-Xylene | ND | | 3.4 | 0.47 | ppb v/v | | | 05/01/15 20:22 | 8.62 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 99 | | 70 - 130 | | | | | 05/01/15 20:22 | 8.62 |
| 1,2-Dichloroethane-d4 (Surr) | 107 | | 70 - 130 | | | | | 05/01/15 20:22 | 8.62 |
| Toluene-d8 (Surr) | 96 | | 70 - 130 | | | | | 05/01/15 20:22 | 8.62 |

Client Sample ID: 097544-001/MWL-SV03-300

Lab Sample ID: 320-12599-10

Date Collected: 04/14/15 09:28

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|------------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 7.0 | J * | 46 | 1.6 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Benzene | ND | | 3.7 | 0.73 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Benzyl chloride | ND | | 7.4 | 1.5 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Bromodichloromethane | ND | | 2.8 | 0.61 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Bromoform | ND | | 3.7 | 0.64 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Bromomethane | ND | | 7.4 | 3.1 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 2-Butanone (MEK) | ND | * | 7.4 | 1.8 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Carbon disulfide | 5.4 | J * | 7.4 | 0.72 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Carbon tetrachloride | ND | | 7.4 | 0.59 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Chlorobenzene | ND | | 2.8 | 0.59 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Chloroethane | ND | | 7.4 | 2.8 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Chloroform | ND | | 2.8 | 0.87 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Chloromethane | ND | * | 7.4 | 1.8 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Dibromochloromethane | ND | | 3.7 | 0.73 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2-Dibromoethane (EDB) | ND | | 7.4 | 0.69 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 3.7 | 1.4 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2-Dichlorobenzene | ND | | 3.7 | 1.2 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,3-Dichlorobenzene | ND | | 3.7 | 1.0 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,4-Dichlorobenzene | ND | | 3.7 | 1.4 | ppb v/v | | | 05/01/15 21:04 | 9.19 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097544-001/MWL-SV03-300

Lab Sample ID: 320-12599-10

Date Collected: 04/14/15 09:28

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| Dichlorodifluoromethane | 29 | | 3.7 | 1.3 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,1-Dichloroethane | 1.8 | J | 2.8 | 0.66 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2-Dichloroethane | ND | | 7.4 | 0.81 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,1-Dichloroethene | 14 | * | 7.4 | 1.2 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| cis-1,2-Dichloroethene | 1.5 | J | 3.7 | 0.82 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| trans-1,2-Dichloroethene | ND | | 3.7 | 0.92 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2-Dichloropropane | ND | | 3.7 | 2.2 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| cis-1,3-Dichloropropene | ND | | 3.7 | 0.96 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| trans-1,3-Dichloropropene | ND | | 3.7 | 0.81 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Ethylbenzene | ND | | 3.7 | 0.58 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 4-Ethyltoluene | ND | | 3.7 | 1.7 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Hexachlorobutadiene | ND | | 18 | 4.0 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 2-Hexanone | ND | | 3.7 | 0.80 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.7 | 1.2 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Methylene Chloride | 0.86 | J * | 3.7 | 0.66 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Styrene | ND | | 3.7 | 0.54 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.7 | 0.63 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Tetrachloroethene | 290 | | 3.7 | 0.47 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Toluene | 2.3 | J | 3.7 | 0.47 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 65 | | 3.7 | 1.5 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2,4-Trichlorobenzene | ND | | 18 | 4.0 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,1,1-Trichloroethane | 1.1 | J | 2.8 | 0.60 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,1,2-Trichloroethane | ND | | 3.7 | 0.62 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Trichloroethene | 170 | | 3.7 | 0.96 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Trichlorofluoromethane | 9.4 | | 3.7 | 1.8 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,2,4-Trimethylbenzene | ND | | 7.4 | 1.5 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| 1,3,5-Trimethylbenzene | ND | | 3.7 | 1.1 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Vinyl acetate | ND | * | 7.4 | 1.3 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Vinyl chloride | ND | | 3.7 | 1.1 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| m,p-Xylene | ND | | 7.4 | 0.92 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| o-Xylene | ND | | 3.7 | 0.50 | ppb v/v | | | 05/01/15 21:04 | 9.19 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 100 | | 70 - 130 | | | | | 05/01/15 21:04 | 9.19 |
| 1,2-Dichloroethane-d4 (Surr) | 106 | | 70 - 130 | | | | | 05/01/15 21:04 | 9.19 |
| Toluene-d8 (Surr) | 101 | | 70 - 130 | | | | | 05/01/15 21:04 | 9.19 |

Client Sample ID: 097545-001/MWL-SV03-400

Lab Sample ID: 320-12599-11

Date Collected: 04/14/15 09:56

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.0 | J * | 49 | 1.7 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Benzene | ND | | 3.9 | 0.77 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Benzyl chloride | ND | | 7.8 | 1.6 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Bromodichloromethane | ND | | 2.9 | 0.64 | ppb v/v | | | 05/01/15 21:46 | 9.71 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097545-001/MWL-SV03-400

Lab Sample ID: 320-12599-11

Date Collected: 04/14/15 09:56

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|------------|-----|------|---------|---|----------|----------------|---------|
| Bromoform | ND | | 3.9 | 0.68 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Bromomethane | ND | | 7.8 | 3.3 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 2-Butanone (MEK) | ND * | | 7.8 | 1.9 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Carbon disulfide | ND * | | 7.8 | 0.76 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Carbon tetrachloride | ND | | 7.8 | 0.62 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Chlorobenzene | ND | | 2.9 | 0.62 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Chloroethane | ND | | 7.8 | 3.0 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Chloroform | 1.2 | J | 2.9 | 0.92 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Chloromethane | ND * | | 7.8 | 1.9 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Dibromochloromethane | ND | | 3.9 | 0.77 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2-Dibromoethane (EDB) | ND | | 7.8 | 0.73 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND * | | 3.9 | 1.5 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2-Dichlorobenzene | ND | | 3.9 | 1.3 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,3-Dichlorobenzene | ND | | 3.9 | 1.1 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,4-Dichlorobenzene | ND | | 3.9 | 1.4 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Dichlorodifluoromethane | 32 | | 3.9 | 1.4 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,1-Dichloroethane | 2.6 | J | 2.9 | 0.70 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2-Dichloroethane | ND | | 7.8 | 0.85 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,1-Dichloroethene | 25 | * | 7.8 | 1.3 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| cis-1,2-Dichloroethene | 2.0 | J | 3.9 | 0.86 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| trans-1,2-Dichloroethene | ND | | 3.9 | 0.97 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2-Dichloropropane | ND | | 3.9 | 2.3 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| cis-1,3-Dichloropropene | ND | | 3.9 | 1.0 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| trans-1,3-Dichloropropene | ND | | 3.9 | 0.85 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Ethylbenzene | ND | | 3.9 | 0.61 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 4-Ethyltoluene | ND | | 3.9 | 1.8 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Hexachlorobutadiene | ND | | 19 | 4.2 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 2-Hexanone | ND | | 3.9 | 0.84 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.9 | 1.3 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Methylene Chloride | 1.2 | J * | 3.9 | 0.70 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Styrene | ND | | 3.9 | 0.57 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.9 | 0.67 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Tetrachloroethene | 420 | | 3.9 | 0.50 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Toluene | 2.9 | J | 3.9 | 0.50 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 91 | | 3.9 | 1.6 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2,4-Trichlorobenzene | ND | | 19 | 4.2 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,1,1-Trichloroethane | 1.6 | J | 2.9 | 0.63 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,1,2-Trichloroethane | ND | | 3.9 | 0.65 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Trichloroethene | 260 | | 3.9 | 1.0 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Trichlorofluoromethane | 16 | | 3.9 | 1.9 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,2,4-Trimethylbenzene | ND | | 7.8 | 1.6 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| 1,3,5-Trimethylbenzene | ND | | 3.9 | 1.2 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Vinyl acetate | ND * | | 7.8 | 1.4 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| Vinyl chloride | ND | | 3.9 | 1.2 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| m,p-Xylene | ND | | 7.8 | 0.97 | ppb v/v | | | 05/01/15 21:46 | 9.71 |
| o-Xylene | ND | | 3.9 | 0.52 | ppb v/v | | | 05/01/15 21:46 | 9.71 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097545-001/MWL-SV03-400

Lab Sample ID: 320-12599-11

Date Collected: 04/14/15 09:56

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 101 | | 70 - 130 | | 05/01/15 21:46 | 9.71 |
| 1,2-Dichloroethane-d4 (Surr) | 108 | | 70 - 130 | | 05/01/15 21:46 | 9.71 |
| Toluene-d8 (Surr) | 95 | | 70 - 130 | | 05/01/15 21:46 | 9.71 |

Client Sample ID: 097546-001/MWL-SV-FB3

Lab Sample ID: 320-12599-12

Date Collected: 04/14/15 08:35

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | * | 5.0 | 0.18 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 2-Butanone (MEK) | ND | * | 0.80 | 0.20 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Carbon disulfide | ND | * | 0.80 | 0.078 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Chloromethane | ND | * | 0.80 | 0.20 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | * | 0.40 | 0.16 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,1-Dichloroethene | ND | * | 0.80 | 0.13 | ppb v/v | | | 05/01/15 22:33 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 05/01/15 22:33 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 05/01/15 22:33 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 05/01/15 22:33 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Methylene Chloride | ND | * | 0.40 | 0.072 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Tetrachloroethene | 0.056 | J | 0.40 | 0.051 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Toluene | 0.25 | J | 0.40 | 0.051 | ppb v/v | | | 05/01/15 22:33 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM 616087

TestAmerica Job ID: 320-12599-1

Client Sample ID: 097546-001/MWL-SV-FB3

Lab Sample ID: 320-12599-12

Date Collected: 04/14/15 08:35

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|-------|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 05/01/15 22:33 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Vinyl acetate | ND | * | 0.80 | 0.15 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 05/01/15 22:33 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 05/01/15 22:33 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 05/01/15 22:33 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 92 | | 70 - 130 | | | | | 05/01/15 22:33 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 120 | | 70 - 130 | | | | | 05/01/15 22:33 | 1 |
| Toluene-d8 (Surr) | 80 | | 70 - 130 | | | | | 05/01/15 22:33 | 1 |

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097547-001/MWL-SV04-50

Lab Sample ID: 320-12597-1

Date Collected: 04/14/15 10:30

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | 9.0 | | 5.0 | 0.18 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Benzene | 0.93 | | 0.40 | 0.079 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 2-Butanone (MEK) | 1.7 | | 0.80 | 0.20 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Carbon disulfide | 0.15 | J | 0.80 | 0.078 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Carbon tetrachloride | 0.20 | J | 0.80 | 0.064 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Chloroform | 1.9 | | 0.30 | 0.095 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Chloromethane | 0.77 | J | 0.80 | 0.20 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Dichlorodifluoromethane | 20 | | 0.40 | 0.15 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,1-Dichloroethane | 1.5 | | 0.30 | 0.072 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,1-Dichloroethene | 7.2 | | 0.80 | 0.13 | ppb v/v | | | 04/23/15 00:21 | 1 |
| cis-1,2-Dichloroethene | 0.64 | | 0.40 | 0.089 | ppb v/v | | | 04/23/15 00:21 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 04/23/15 00:21 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 04/23/15 00:21 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 2-Hexanone | 0.12 | J | 0.40 | 0.087 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Methylene Chloride | 0.13 | J | 0.40 | 0.072 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Toluene | 0.19 | J | 0.40 | 0.051 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,1,1-Trichloroethane | 7.0 | | 0.30 | 0.065 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Trichlorofluoromethane | 23 | | 0.40 | 0.20 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 04/23/15 00:21 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 04/23/15 00:21 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 04/23/15 00:21 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 04/23/15 00:21 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 04/23/15 00:21 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097547-001/MWL-SV04-50

Lab Sample ID: 320-12597-1

Date Collected: 04/14/15 10:30

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 96 | | 70 - 130 | | 04/23/15 00:21 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 94 | | 70 - 130 | | 04/23/15 00:21 | 1 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | 04/23/15 00:21 | 1 |

Method: TO-15 - Volatile Organic Compounds in Ambient Air - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Tetrachloroethene | 76 | | 0.74 | 0.095 | ppb v/v | | | 04/23/15 08:30 | 1.86 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 65 | | 0.74 | 0.30 | ppb v/v | | | 04/23/15 08:30 | 1.86 |
| Trichloroethene | 60 | | 0.74 | 0.20 | ppb v/v | | | 04/23/15 08:30 | 1.86 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 97 | | 70 - 130 | | 04/23/15 08:30 | 1.86 |
| 1,2-Dichloroethane-d4 (Surr) | 95 | | 70 - 130 | | 04/23/15 08:30 | 1.86 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | 04/23/15 08:30 | 1.86 |

Client Sample ID: 097548-001/MWL-SV04-100

Lab Sample ID: 320-12597-2

Date Collected: 04/14/15 10:32

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.1 | J | 26 | 0.93 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Benzene | 0.58 | J | 2.1 | 0.41 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Benzyl chloride | ND | | 4.2 | 0.85 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Bromodichloromethane | ND | | 1.6 | 0.34 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Bromoform | ND | | 2.1 | 0.36 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Bromomethane | ND | | 4.2 | 1.7 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 2-Butanone (MEK) | ND | | 4.2 | 1.0 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Carbon disulfide | 0.72 | J | 4.2 | 0.41 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Carbon tetrachloride | 0.35 | J | 4.2 | 0.33 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Chlorobenzene | ND | | 1.6 | 0.33 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Chloroethane | ND | | 4.2 | 1.6 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Chloroform | 1.9 | | 1.6 | 0.49 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Chloromethane | ND | | 4.2 | 1.0 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Dibromochloromethane | ND | | 2.1 | 0.41 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2-Dibromoethane (EDB) | ND | | 4.2 | 0.39 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.1 | 0.81 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2-Dichlorobenzene | ND | | 2.1 | 0.68 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,3-Dichlorobenzene | ND | | 2.1 | 0.57 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,4-Dichlorobenzene | ND | | 2.1 | 0.78 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Dichlorodifluoromethane | 34 | | 2.1 | 0.76 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,1-Dichloroethane | 3.1 | | 1.6 | 0.38 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2-Dichloroethane | ND | | 4.2 | 0.46 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,1-Dichloroethene | 18 | | 4.2 | 0.67 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| cis-1,2-Dichloroethene | 1.7 | J | 2.1 | 0.46 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| trans-1,2-Dichloroethene | ND | | 2.1 | 0.52 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2-Dichloropropane | ND | | 2.1 | 1.3 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| cis-1,3-Dichloropropene | ND | | 2.1 | 0.54 | ppb v/v | | | 04/23/15 01:04 | 5.21 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097548-001/MWL-SV04-100

Lab Sample ID: 320-12597-2

Date Collected: 04/14/15 10:32

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| trans-1,3-Dichloropropene | ND | | 2.1 | 0.46 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Ethylbenzene | ND | | 2.1 | 0.33 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 4-Ethyltoluene | ND | | 2.1 | 0.97 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Hexachlorobutadiene | ND | | 10 | 2.3 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 2-Hexanone | ND | | 2.1 | 0.45 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.1 | 0.70 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Methylene Chloride | 0.61 | J | 2.1 | 0.38 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Styrene | ND | | 2.1 | 0.31 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.1 | 0.36 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Tetrachloroethene | 120 | | 2.1 | 0.27 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Toluene | ND | | 2.1 | 0.27 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 | | 2.1 | 0.85 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2,4-Trichlorobenzene | ND | | 10 | 2.3 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,1,1-Trichloroethane | 5.4 | | 1.6 | 0.34 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,1,2-Trichloroethane | ND | | 2.1 | 0.35 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Trichloroethene | 120 | | 2.1 | 0.55 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Trichlorofluoromethane | 33 | | 2.1 | 1.0 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,2,4-Trimethylbenzene | ND | | 4.2 | 0.84 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| 1,3,5-Trimethylbenzene | ND | | 2.1 | 0.65 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Vinyl acetate | ND | | 4.2 | 0.76 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Vinyl chloride | ND | | 2.1 | 0.63 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| m,p-Xylene | ND | | 4.2 | 0.52 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| o-Xylene | ND | | 2.1 | 0.28 | ppb v/v | | | 04/23/15 01:04 | 5.21 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | | | | 04/23/15 01:04 | 5.21 |
| 1,2-Dichloroethane-d4 (Surr) | 92 | | 70 - 130 | | | | | 04/23/15 01:04 | 5.21 |
| Toluene-d8 (Surr) | 98 | | 70 - 130 | | | | | 04/23/15 01:04 | 5.21 |

Client Sample ID: 097549-001/MWL-SV04-200

Lab Sample ID: 320-12597-3

Date Collected: 04/14/15 10:35

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-------------------------|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.9 | J | 43 | 1.5 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Benzene | ND | | 3.5 | 0.69 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Benzyl chloride | ND | | 6.9 | 1.4 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Bromodichloromethane | ND | | 2.6 | 0.57 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Bromoform | ND | | 3.5 | 0.61 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Bromomethane | ND | | 6.9 | 2.9 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 2-Butanone (MEK) | ND | | 6.9 | 1.7 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Carbon disulfide | 3.6 | J | 6.9 | 0.68 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Carbon tetrachloride | ND | | 6.9 | 0.56 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Chlorobenzene | ND | | 2.6 | 0.56 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Chloroethane | ND | | 6.9 | 2.7 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Chloroform | 1.2 | J | 2.6 | 0.82 | ppb v/v | | | 04/23/15 01:46 | 8.68 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097549-001/MWL-SV04-200

Lab Sample ID: 320-12597-3

Date Collected: 04/14/15 10:35

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| Chloromethane | ND | | 6.9 | 1.7 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Dibromochloromethane | ND | | 3.5 | 0.69 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2-Dibromoethane (EDB) | ND | | 6.9 | 0.65 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 3.5 | 1.3 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2-Dichlorobenzene | ND | | 3.5 | 1.1 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,3-Dichlorobenzene | ND | | 3.5 | 0.95 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,4-Dichlorobenzene | ND | | 3.5 | 1.3 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Dichlorodifluoromethane | 49 | | 3.5 | 1.3 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,1-Dichloroethane | 4.8 | | 2.6 | 0.62 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2-Dichloroethane | ND | | 6.9 | 0.76 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,1-Dichloroethene | 33 | | 6.9 | 1.1 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| cis-1,2-Dichloroethene | 3.0 | J | 3.5 | 0.77 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| trans-1,2-Dichloroethene | ND | | 3.5 | 0.87 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2-Dichloropropane | ND | | 3.5 | 2.1 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| cis-1,3-Dichloropropene | ND | | 3.5 | 0.90 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| trans-1,3-Dichloropropene | ND | | 3.5 | 0.76 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Ethylbenzene | ND | | 3.5 | 0.55 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 4-Ethyltoluene | ND | | 3.5 | 1.6 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Hexachlorobutadiene | ND | | 17 | 3.7 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 2-Hexanone | ND | | 3.5 | 0.76 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.5 | 1.2 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Methylene Chloride | 1.5 | J | 3.5 | 0.62 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Styrene | ND | | 3.5 | 0.51 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.5 | 0.60 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Tetrachloroethene | 170 | | 3.5 | 0.44 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Toluene | 0.70 | J | 3.5 | 0.44 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 150 | | 3.5 | 1.4 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2,4-Trichlorobenzene | ND | | 17 | 3.8 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,1,1-Trichloroethane | 2.4 | J | 2.6 | 0.56 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,1,2-Trichloroethane | ND | | 3.5 | 0.58 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Trichloroethene | 190 | | 3.5 | 0.91 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Trichlorofluoromethane | 31 | | 3.5 | 1.7 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,2,4-Trimethylbenzene | ND | | 6.9 | 1.4 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| 1,3,5-Trimethylbenzene | ND | | 3.5 | 1.1 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Vinyl acetate | ND | | 6.9 | 1.3 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Vinyl chloride | ND | | 3.5 | 1.0 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| m,p-Xylene | ND | | 6.9 | 0.87 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| o-Xylene | ND | | 3.5 | 0.47 | ppb v/v | | | 04/23/15 01:46 | 8.68 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 93 | | 70 - 130 | | | | | 04/23/15 01:46 | 8.68 |
| 1,2-Dichloroethane-d4 (Surr) | 94 | | 70 - 130 | | | | | 04/23/15 01:46 | 8.68 |
| Toluene-d8 (Surr) | 95 | | 70 - 130 | | | | | 04/23/15 01:46 | 8.68 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097550-001/MWL-SV04-300

Lab Sample ID: 320-12597-4

Date Collected: 04/14/15 10:38

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.5 | J | 19 | 0.68 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Benzene | 0.39 | J | 1.5 | 0.30 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Benzyl chloride | ND | | 3.1 | 0.62 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Bromodichloromethane | ND | | 1.1 | 0.25 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Bromoform | ND | | 1.5 | 0.27 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Bromomethane | ND | | 3.1 | 1.3 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 2-Butanone (MEK) | ND | | 3.1 | 0.76 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Carbon disulfide | 0.91 | J | 3.1 | 0.30 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Carbon tetrachloride | ND | | 3.1 | 0.25 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Chlorobenzene | ND | | 1.1 | 0.25 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Chloroethane | ND | | 3.1 | 1.2 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Chloroform | ND | | 1.1 | 0.36 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Chloromethane | ND | | 3.1 | 0.75 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Dibromochloromethane | ND | | 1.5 | 0.30 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2-Dibromoethane (EDB) | ND | | 3.1 | 0.29 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.5 | 0.59 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2-Dichlorobenzene | ND | | 1.5 | 0.50 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,3-Dichlorobenzene | ND | | 1.5 | 0.42 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,4-Dichlorobenzene | ND | | 1.5 | 0.57 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Dichlorodifluoromethane | 19 | | 1.5 | 0.56 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,1-Dichloroethane | 0.73 | J | 1.1 | 0.28 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2-Dichloroethane | ND | | 3.1 | 0.34 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,1-Dichloroethene | 8.4 | | 3.1 | 0.49 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| cis-1,2-Dichloroethene | 0.48 | J | 1.5 | 0.34 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| trans-1,2-Dichloroethene | ND | | 1.5 | 0.38 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2-Dichloropropane | ND | | 1.5 | 0.92 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| cis-1,3-Dichloropropene | ND | | 1.5 | 0.40 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| trans-1,3-Dichloropropene | ND | | 1.5 | 0.34 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Ethylbenzene | ND | | 1.5 | 0.24 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 4-Ethyltoluene | ND | | 1.5 | 0.72 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Hexachlorobutadiene | ND | | 7.7 | 1.7 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 2-Hexanone | ND | | 1.5 | 0.33 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.5 | 0.52 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Methylene Chloride | 0.31 | J | 1.5 | 0.28 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Styrene | ND | | 1.5 | 0.23 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.5 | 0.26 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Tetrachloroethene | 110 | | 1.5 | 0.20 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Toluene | 0.93 | J | 1.5 | 0.20 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 55 | | 1.5 | 0.62 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2,4-Trichlorobenzene | ND | | 7.7 | 1.7 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,1,1-Trichloroethane | 0.63 | J | 1.1 | 0.25 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,1,2-Trichloroethane | ND | | 1.5 | 0.26 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Trichloroethene | 64 | | 1.5 | 0.40 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Trichlorofluoromethane | 9.1 | | 1.5 | 0.75 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,2,4-Trimethylbenzene | ND | | 3.1 | 0.62 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| 1,3,5-Trimethylbenzene | ND | | 1.5 | 0.48 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Vinyl acetate | ND | | 3.1 | 0.56 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Vinyl chloride | ND | | 1.5 | 0.46 | ppb v/v | | | 04/23/15 02:29 | 3.83 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097550-001/MWL-SV04-300

Lab Sample ID: 320-12597-4

Date Collected: 04/14/15 10:38

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| m,p-Xylene | ND | | 3.1 | 0.38 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| o-Xylene | ND | | 1.5 | 0.21 | ppb v/v | | | 04/23/15 02:29 | 3.83 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | | | | 04/23/15 02:29 | 3.83 |
| 1,2-Dichloroethane-d4 (Surr) | 95 | | 70 - 130 | | | | | 04/23/15 02:29 | 3.83 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | | | | 04/23/15 02:29 | 3.83 |

Client Sample ID: 097551-001/MWL-SV04-400

Lab Sample ID: 320-12597-5

Date Collected: 04/14/15 10:41

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 8.7 | J | 25 | 0.90 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Benzene | 1.1 | J | 2.0 | 0.40 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Benzyl chloride | ND | | 4.0 | 0.82 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Bromodichloromethane | ND | | 1.5 | 0.33 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Bromoform | ND | | 2.0 | 0.35 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Bromomethane | ND | | 4.0 | 1.7 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 2-Butanone (MEK) | 1.9 | J | 4.0 | 1.0 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Carbon disulfide | 5.4 | | 4.0 | 0.39 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Carbon tetrachloride | ND | | 4.0 | 0.32 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Chlorobenzene | ND | | 1.5 | 0.32 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Chloroethane | ND | | 4.0 | 1.6 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Chloroform | ND | | 1.5 | 0.48 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Chloromethane | ND | | 4.0 | 1.0 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Dibromochloromethane | ND | | 2.0 | 0.40 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2-Dibromoethane (EDB) | ND | | 4.0 | 0.38 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.0 | 0.78 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2-Dichlorobenzene | ND | | 2.0 | 0.66 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,3-Dichlorobenzene | ND | | 2.0 | 0.56 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,4-Dichlorobenzene | ND | | 2.0 | 0.75 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Dichlorodifluoromethane | 14 | | 2.0 | 0.73 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,1-Dichloroethane | 0.48 | J | 1.5 | 0.36 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2-Dichloroethane | ND | | 4.0 | 0.45 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,1-Dichloroethene | 5.4 | | 4.0 | 0.65 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| cis-1,2-Dichloroethene | ND | | 2.0 | 0.45 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| trans-1,2-Dichloroethene | ND | | 2.0 | 0.51 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2-Dichloropropane | ND | | 2.0 | 1.2 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| cis-1,3-Dichloropropene | ND | | 2.0 | 0.53 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| trans-1,3-Dichloropropene | ND | | 2.0 | 0.45 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Ethylbenzene | ND | | 2.0 | 0.32 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 4-Ethyltoluene | ND | | 2.0 | 0.95 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Hexachlorobutadiene | ND | | 10 | 2.2 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 2-Hexanone | ND | | 2.0 | 0.44 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.0 | 0.68 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Methylene Chloride | ND | | 2.0 | 0.36 | ppb v/v | | | 04/23/15 03:11 | 5.06 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097551-001/MWL-SV04-400

Lab Sample ID: 320-12597-5

Date Collected: 04/14/15 10:41

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| Styrene | ND | | 2.0 | 0.30 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.0 | 0.35 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Tetrachloroethene | 120 | | 2.0 | 0.26 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Toluene | 0.66 | J | 2.0 | 0.26 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 43 | | 2.0 | 0.82 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2,4-Trichlorobenzene | ND | | 10 | 2.2 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,1,1-Trichloroethane | 0.44 | J | 1.5 | 0.33 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,1,2-Trichloroethane | ND | | 2.0 | 0.34 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Trichloroethene | 60 | | 2.0 | 0.53 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Trichlorofluoromethane | 6.6 | | 2.0 | 0.99 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,2,4-Trimethylbenzene | ND | | 4.0 | 0.82 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| 1,3,5-Trimethylbenzene | ND | | 2.0 | 0.63 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Vinyl acetate | ND | | 4.0 | 0.73 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Vinyl chloride | ND | | 2.0 | 0.61 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| m,p-Xylene | ND | | 4.0 | 0.51 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| o-Xylene | ND | | 2.0 | 0.27 | ppb v/v | | | 04/23/15 03:11 | 5.06 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | | | | 04/23/15 03:11 | 5.06 |
| 1,2-Dichloroethane-d4 (Surr) | 95 | | 70 - 130 | | | | | 04/23/15 03:11 | 5.06 |
| Toluene-d8 (Surr) | 96 | | 70 - 130 | | | | | 04/23/15 03:11 | 5.06 |

Client Sample ID: 097552-001/MWL-SV-FB4

Lab Sample ID: 320-12597-6

Date Collected: 04/14/15 10:16

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | 0.37 | J | 5.0 | 0.18 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 04/23/15 03:59 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12597-1

Client Sample ID: 097552-001/MWL-SV-FB4

Lab Sample ID: 320-12597-6

Date Collected: 04/14/15 10:16

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-------------|-----------|----------|-------|---------|---|----------|----------------|---------|
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 04/23/15 03:59 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 04/23/15 03:59 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 04/23/15 03:59 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 04/23/15 03:59 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Methylene Chloride | ND | | 0.40 | 0.072 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Toluene | 0.36 | J | 0.40 | 0.051 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 04/23/15 03:59 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 04/23/15 03:59 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 04/23/15 03:59 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 04/23/15 03:59 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 85 | | 70 - 130 | | | | | 04/23/15 03:59 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 92 | | 70 - 130 | | | | | 04/23/15 03:59 | 1 |
| Toluene-d8 (Surr) | 91 | | 70 - 130 | | | | | 04/23/15 03:59 | 1 |

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097553-001/MWL-SV05-50

Lab Sample ID: 320-12598-1

Date Collected: 04/14/15 11:12

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Acetone | 5.1 | J | 15 | 0.53 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Benzene | 0.38 | J | 1.2 | 0.23 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Benzyl chloride | ND | | 2.4 | 0.48 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Bromodichloromethane | ND | | 0.89 | 0.20 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Bromoform | ND | | 1.2 | 0.21 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Bromomethane | ND | | 2.4 | 0.99 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 2-Butanone (MEK) | 0.73 | J | 2.4 | 0.59 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Carbon disulfide | ND | | 2.4 | 0.23 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Carbon tetrachloride | 0.34 | J | 2.4 | 0.19 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Chlorobenzene | ND | | 0.89 | 0.19 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Chloroethane | ND | | 2.4 | 0.91 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Chloroform | 1.4 | | 0.89 | 0.28 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Chloromethane | ND | | 2.4 | 0.58 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Dibromochloromethane | ND | | 1.2 | 0.23 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2-Dibromoethane (EDB) | ND | | 2.4 | 0.22 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.2 | 0.46 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2-Dichlorobenzene | ND | | 1.2 | 0.38 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,3-Dichlorobenzene | ND | | 1.2 | 0.33 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,4-Dichlorobenzene | ND | | 1.2 | 0.44 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Dichlorodifluoromethane | 41 | | 1.2 | 0.43 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,1-Dichloroethane | 1.8 | | 0.89 | 0.21 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2-Dichloroethane | ND | | 2.4 | 0.26 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,1-Dichloroethene | 11 | | 2.4 | 0.38 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| cis-1,2-Dichloroethene | 0.68 | J | 1.2 | 0.26 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| trans-1,2-Dichloroethene | ND | | 1.2 | 0.30 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2-Dichloropropane | ND | | 1.2 | 0.71 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| cis-1,3-Dichloropropene | ND | | 1.2 | 0.31 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| trans-1,3-Dichloropropene | ND | | 1.2 | 0.26 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Ethylbenzene | ND | | 1.2 | 0.19 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 4-Ethyltoluene | ND | | 1.2 | 0.55 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Hexachlorobutadiene | ND | | 5.9 | 1.3 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 2-Hexanone | ND | | 1.2 | 0.26 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.2 | 0.40 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Methylene Chloride | 0.47 | J | 1.2 | 0.21 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Styrene | ND | | 1.2 | 0.17 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.2 | 0.20 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Tetrachloroethene | 55 | | 1.2 | 0.15 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Toluene | 0.55 | J | 1.2 | 0.15 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 46 | | 1.2 | 0.48 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2,4-Trichlorobenzene | ND | | 5.9 | 1.3 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,1,1-Trichloroethane | 13 | | 0.89 | 0.19 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,1,2-Trichloroethane | ND | | 1.2 | 0.20 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Trichloroethene | 64 | | 1.2 | 0.31 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Trichlorofluoromethane | 99 | | 1.2 | 0.58 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,2,4-Trimethylbenzene | ND | | 2.4 | 0.48 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| 1,3,5-Trimethylbenzene | ND | | 1.2 | 0.37 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Vinyl acetate | ND | | 2.4 | 0.43 | ppb v/v | | | 04/24/15 22:09 | 2.96 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097553-001/MWL-SV05-50

Lab Sample ID: 320-12598-1

Date Collected: 04/14/15 11:12

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| Vinyl chloride | ND | | 1.2 | 0.36 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| m,p-Xylene | ND | | 2.4 | 0.30 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| o-Xylene | ND | | 1.2 | 0.16 | ppb v/v | | | 04/24/15 22:09 | 2.96 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 97 | | 70 - 130 | | | | | 04/24/15 22:09 | 2.96 |
| 1,2-Dichloroethane-d4 (Surr) | 96 | | 70 - 130 | | | | | 04/24/15 22:09 | 2.96 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | | | | 04/24/15 22:09 | 2.96 |

Client Sample ID: 097554-001/MWL-SV05-100

Lab Sample ID: 320-12598-2

Date Collected: 04/14/15 11:15

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.5 | J | 31 | 1.1 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Benzene | ND | | 2.5 | 0.49 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Benzyl chloride | ND | | 5.0 | 1.0 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Bromodichloromethane | ND | | 1.9 | 0.41 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Bromoform | ND | | 2.5 | 0.44 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Bromomethane | ND | | 5.0 | 2.1 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 2-Butanone (MEK) | ND | | 5.0 | 1.2 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Carbon disulfide | ND | | 5.0 | 0.49 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Carbon tetrachloride | 0.59 | J | 5.0 | 0.40 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Chlorobenzene | ND | | 1.9 | 0.40 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Chloroethane | ND | | 5.0 | 1.9 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Chloroform | 2.1 | | 1.9 | 0.59 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Chloromethane | ND | | 5.0 | 1.2 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Dibromochloromethane | ND | | 2.5 | 0.49 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2-Dibromoethane (EDB) | ND | | 5.0 | 0.47 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.5 | 0.97 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2-Dichlorobenzene | ND | | 2.5 | 0.81 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,3-Dichlorobenzene | ND | | 2.5 | 0.69 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,4-Dichlorobenzene | ND | | 2.5 | 0.93 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Dichlorodifluoromethane | 67 | | 2.5 | 0.91 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,1-Dichloroethane | 3.7 | | 1.9 | 0.45 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2-Dichloroethane | ND | | 5.0 | 0.55 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,1-Dichloroethene | 24 | | 5.0 | 0.81 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| cis-1,2-Dichloroethene | 1.6 | J | 2.5 | 0.56 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| trans-1,2-Dichloroethene | ND | | 2.5 | 0.63 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2-Dichloropropane | ND | | 2.5 | 1.5 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| cis-1,3-Dichloropropene | ND | | 2.5 | 0.65 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| trans-1,3-Dichloropropene | ND | | 2.5 | 0.55 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Ethylbenzene | ND | | 2.5 | 0.39 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 4-Ethyltoluene | ND | | 2.5 | 1.2 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Hexachlorobutadiene | ND | | 13 | 2.7 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 2-Hexanone | ND | | 2.5 | 0.54 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.5 | 0.85 | ppb v/v | | | 04/24/15 22:50 | 6.26 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097554-001/MWL-SV05-100

Lab Sample ID: 320-12598-2

Date Collected: 04/14/15 11:15

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| Methylene Chloride | 1.2 | J | 2.5 | 0.45 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Styrene | ND | | 2.5 | 0.37 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.5 | 0.43 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Tetrachloroethene | 100 | | 2.5 | 0.32 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Toluene | ND | | 2.5 | 0.32 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 95 | | 2.5 | 1.0 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2,4-Trichlorobenzene | ND | | 13 | 2.7 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,1,1-Trichloroethane | 13 | | 1.9 | 0.41 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,1,2-Trichloroethane | ND | | 2.5 | 0.42 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Trichloroethene | 130 | | 2.5 | 0.66 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Trichlorofluoromethane | 130 | | 2.5 | 1.2 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,2,4-Trimethylbenzene | ND | | 5.0 | 1.0 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| 1,3,5-Trimethylbenzene | ND | | 2.5 | 0.78 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Vinyl acetate | ND | | 5.0 | 0.91 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Vinyl chloride | ND | | 2.5 | 0.75 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| m,p-Xylene | ND | | 5.0 | 0.63 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| o-Xylene | ND | | 2.5 | 0.34 | ppb v/v | | | 04/24/15 22:50 | 6.26 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 96 | | 70 - 130 | | | | | 04/24/15 22:50 | 6.26 |
| 1,2-Dichloroethane-d4 (Surr) | 94 | | 70 - 130 | | | | | 04/24/15 22:50 | 6.26 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | | | | 04/24/15 22:50 | 6.26 |

Client Sample ID: 097555-001/MWL-SV05-200

Lab Sample ID: 320-12598-3

Date Collected: 04/14/15 11:20

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 8.0 | J | 49 | 1.7 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Benzene | ND | | 3.9 | 0.77 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Benzyl chloride | ND | | 7.8 | 1.6 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Bromodichloromethane | ND | | 2.9 | 0.64 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Bromoform | ND | | 3.9 | 0.68 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Bromomethane | ND | | 7.8 | 3.3 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 2-Butanone (MEK) | ND | | 7.8 | 1.9 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Carbon disulfide | ND | | 7.8 | 0.76 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Carbon tetrachloride | 1.1 | J | 7.8 | 0.63 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Chlorobenzene | ND | | 2.9 | 0.63 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Chloroethane | ND | | 7.8 | 3.0 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Chloroform | 1.9 | J | 2.9 | 0.93 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Chloromethane | ND | | 7.8 | 1.9 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Dibromochloromethane | ND | | 3.9 | 0.77 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2-Dibromoethane (EDB) | ND | | 7.8 | 0.73 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2-Dichlorobenzene | ND | | 3.9 | 1.3 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,3-Dichlorobenzene | ND | | 3.9 | 1.1 | ppb v/v | | | 04/24/15 23:31 | 9.77 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097555-001/MWL-SV05-200

Lab Sample ID: 320-12598-3

Date Collected: 04/14/15 11:20

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| 1,4-Dichlorobenzene | ND | | 3.9 | 1.5 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Dichlorodifluoromethane | 68 | | 3.9 | 1.4 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,1-Dichloroethane | 5.3 | | 2.9 | 0.70 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2-Dichloroethane | ND | | 7.8 | 0.86 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,1-Dichloroethene | 45 | | 7.8 | 1.3 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| cis-1,2-Dichloroethene | 2.5 | J | 3.9 | 0.87 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| trans-1,2-Dichloroethene | ND | | 3.9 | 0.98 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2-Dichloropropane | ND | | 3.9 | 2.3 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| cis-1,3-Dichloropropene | ND | | 3.9 | 1.0 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| trans-1,3-Dichloropropene | ND | | 3.9 | 0.86 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Ethylbenzene | ND | | 3.9 | 0.62 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 4-Ethyltoluene | ND | | 3.9 | 1.8 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Hexachlorobutadiene | ND | | 20 | 4.2 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 2-Hexanone | ND | | 3.9 | 0.85 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.9 | 1.3 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Methylene Chloride | 3.3 | J | 3.9 | 0.70 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Styrene | ND | | 3.9 | 0.58 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.9 | 0.67 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Tetrachloroethene | 150 | | 3.9 | 0.50 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Toluene | 0.72 | J | 3.9 | 0.50 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 160 | | 3.9 | 1.6 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2,4-Trichlorobenzene | ND | | 20 | 4.2 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,1,1-Trichloroethane | 3.7 | | 2.9 | 0.64 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,1,2-Trichloroethane | ND | | 3.9 | 0.65 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Trichloroethene | 210 | | 3.9 | 1.0 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Trichlorofluoromethane | 78 | | 3.9 | 1.9 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,2,4-Trimethylbenzene | ND | | 7.8 | 1.6 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| 1,3,5-Trimethylbenzene | ND | | 3.9 | 1.2 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Vinyl acetate | ND | | 7.8 | 1.4 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Vinyl chloride | ND | | 3.9 | 1.2 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| m,p-Xylene | ND | | 7.8 | 0.98 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| o-Xylene | ND | | 3.9 | 0.53 | ppb v/v | | | 04/24/15 23:31 | 9.77 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | | | | 04/24/15 23:31 | 9.77 |
| 1,2-Dichloroethane-d4 (Surr) | 92 | | 70 - 130 | | | | | 04/24/15 23:31 | 9.77 |
| Toluene-d8 (Surr) | 96 | | 70 - 130 | | | | | 04/24/15 23:31 | 9.77 |

Client Sample ID: 097556-001/MWL-SV05-300

Lab Sample ID: 320-12598-4

Date Collected: 04/14/15 11:29

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|-----------------|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 11 | J | 16 | 0.55 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Benzene | 0.26 | J | 1.2 | 0.25 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Benzyl chloride | ND | | 2.5 | 0.51 | ppb v/v | | | 04/25/15 00:14 | 3.11 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097556-001/MWL-SV05-300

Lab Sample ID: 320-12598-4

Date Collected: 04/14/15 11:29

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Bromodichloromethane | ND | | 0.93 | 0.21 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Bromoform | ND | | 1.2 | 0.22 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Bromomethane | ND | | 2.5 | 1.0 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 2-Butanone (MEK) | 1.4 | J | 2.5 | 0.62 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Carbon disulfide | ND | | 2.5 | 0.24 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Carbon tetrachloride | 0.78 | J | 2.5 | 0.20 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Chlorobenzene | ND | | 0.93 | 0.20 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Chloroethane | ND | | 2.5 | 0.96 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Chloroform | 0.50 | J | 0.93 | 0.30 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Chloromethane | 3.5 | | 2.5 | 0.61 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Dibromochloromethane | ND | | 1.2 | 0.25 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2-Dibromoethane (EDB) | ND | | 2.5 | 0.23 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.2 | 0.48 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2-Dichlorobenzene | ND | | 1.2 | 0.40 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,3-Dichlorobenzene | ND | | 1.2 | 0.34 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,4-Dichlorobenzene | ND | | 1.2 | 0.46 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Dichlorodifluoromethane | 24 | | 1.2 | 0.45 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,1-Dichloroethane | 1.1 | | 0.93 | 0.22 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2-Dichloroethane | ND | | 2.5 | 0.27 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,1-Dichloroethene | 19 | | 2.5 | 0.40 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| cis-1,2-Dichloroethene | 0.54 | J | 1.2 | 0.28 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| trans-1,2-Dichloroethene | ND | | 1.2 | 0.31 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2-Dichloropropane | ND | | 1.2 | 0.75 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| cis-1,3-Dichloropropene | ND | | 1.2 | 0.32 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| trans-1,3-Dichloropropene | ND | | 1.2 | 0.27 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Ethylbenzene | ND | | 1.2 | 0.20 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 4-Ethyltoluene | ND | | 1.2 | 0.58 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Hexachlorobutadiene | ND | | 6.2 | 1.3 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 2-Hexanone | ND | | 1.2 | 0.27 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.2 | 0.42 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Methylene Chloride | 0.67 | J | 1.2 | 0.22 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Styrene | ND | | 1.2 | 0.18 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.2 | 0.21 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Tetrachloroethene | 97 | | 1.2 | 0.16 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Toluene | 1.1 | J | 1.2 | 0.16 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 75 | | 1.2 | 0.51 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2,4-Trichlorobenzene | ND | | 6.2 | 1.3 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,1,1-Trichloroethane | 0.91 | J | 0.93 | 0.20 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,1,2-Trichloroethane | ND | | 1.2 | 0.21 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Trichloroethene | 82 | | 1.2 | 0.33 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Trichlorofluoromethane | 17 | | 1.2 | 0.61 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,2,4-Trimethylbenzene | ND | | 2.5 | 0.50 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| 1,3,5-Trimethylbenzene | ND | | 1.2 | 0.39 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Vinyl acetate | ND | | 2.5 | 0.45 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| Vinyl chloride | ND | | 1.2 | 0.37 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| m,p-Xylene | ND | | 2.5 | 0.31 | ppb v/v | | | 04/25/15 00:14 | 3.11 |
| o-Xylene | ND | | 1.2 | 0.17 | ppb v/v | | | 04/25/15 00:14 | 3.11 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097556-001/MWL-SV05-300

Lab Sample ID: 320-12598-4

Date Collected: 04/14/15 11:29

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 95 | | 70 - 130 | | 04/25/15 00:14 | 3.11 |
| 1,2-Dichloroethane-d4 (Surr) | 96 | | 70 - 130 | | 04/25/15 00:14 | 3.11 |
| Toluene-d8 (Surr) | 96 | | 70 - 130 | | 04/25/15 00:14 | 3.11 |

Client Sample ID: 097557-001/MWL-SV05-400

Lab Sample ID: 320-12598-5

Date Collected: 04/14/15 11:33

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|------|---------|---|----------|----------------|---------|
| Acetone | 5.9 | J | 14 | 0.50 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Benzene | 0.40 | J | 1.1 | 0.22 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Benzyl chloride | ND | | 2.2 | 0.45 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Bromodichloromethane | ND | | 0.84 | 0.18 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Bromoform | ND | | 1.1 | 0.20 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Bromomethane | ND | | 2.2 | 0.93 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 2-Butanone (MEK) | 0.59 | J | 2.2 | 0.56 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Carbon disulfide | 0.26 | J | 2.2 | 0.22 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Carbon tetrachloride | 0.35 | J | 2.2 | 0.18 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Chlorobenzene | ND | | 0.84 | 0.18 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Chloroethane | ND | | 2.2 | 0.86 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Chloroform | 0.38 | J | 0.84 | 0.27 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Chloromethane | 0.97 | J | 2.2 | 0.55 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Dibromochloromethane | ND | | 1.1 | 0.22 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2-Dibromoethane (EDB) | ND | | 2.2 | 0.21 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.1 | 0.43 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2-Dichlorobenzene | ND | | 1.1 | 0.36 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,3-Dichlorobenzene | ND | | 1.1 | 0.31 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,4-Dichlorobenzene | ND | | 1.1 | 0.42 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Dichlorodifluoromethane | 13 | | 1.1 | 0.40 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,1-Dichloroethane | 0.98 | | 0.84 | 0.20 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2-Dichloroethane | ND | | 2.2 | 0.25 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,1-Dichloroethene | 7.1 | | 2.2 | 0.36 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| cis-1,2-Dichloroethene | 0.36 | J | 1.1 | 0.25 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| trans-1,2-Dichloroethene | ND | | 1.1 | 0.28 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2-Dichloropropane | ND | | 1.1 | 0.67 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| cis-1,3-Dichloropropene | ND | | 1.1 | 0.29 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| trans-1,3-Dichloropropene | ND | | 1.1 | 0.25 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Ethylbenzene | ND | | 1.1 | 0.18 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 4-Ethyltoluene | ND | | 1.1 | 0.52 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Hexachlorobutadiene | ND | | 5.6 | 1.2 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 2-Hexanone | ND | | 1.1 | 0.24 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.1 | 0.38 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Methylene Chloride | 0.49 | J | 1.1 | 0.20 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Styrene | ND | | 1.1 | 0.16 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.1 | 0.19 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Tetrachloroethene | 80 | | 1.1 | 0.14 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Toluene | 29 | | 1.1 | 0.14 | ppb v/v | | | 04/25/15 00:57 | 2.79 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097557-001/MWL-SV05-400

Lab Sample ID: 320-12598-5

Date Collected: 04/14/15 11:33

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|------|------|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 33 | | 1.1 | 0.45 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2,4-Trichlorobenzene | ND | | 5.6 | 1.2 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,1,1-Trichloroethane | 0.97 | | 0.84 | 0.18 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,1,2-Trichloroethane | ND | | 1.1 | 0.19 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Trichloroethene | 66 | | 1.1 | 0.29 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Trichlorofluoromethane | 11 | | 1.1 | 0.55 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,2,4-Trimethylbenzene | ND | | 2.2 | 0.45 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| 1,3,5-Trimethylbenzene | ND | | 1.1 | 0.35 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Vinyl acetate | ND | | 2.2 | 0.40 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| Vinyl chloride | ND | | 1.1 | 0.33 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| m,p-Xylene | ND | | 2.2 | 0.28 | ppb v/v | | | 04/25/15 00:57 | 2.79 |
| o-Xylene | ND | | 1.1 | 0.15 | ppb v/v | | | 04/25/15 00:57 | 2.79 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 95 | | 70 - 130 | | 04/25/15 00:57 | 2.79 |
| 1,2-Dichloroethane-d4 (Surr) | 94 | | 70 - 130 | | 04/25/15 00:57 | 2.79 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | 04/25/15 00:57 | 2.79 |

Client Sample ID: 097558-001/MWL-SV-FB5

Lab Sample ID: 320-12598-6

Date Collected: 04/14/15 11:07

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | | 5.0 | 0.18 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 04/25/15 01:44 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL-SVM

TestAmerica Job ID: 320-12598-1

Client Sample ID: 097558-001/MWL-SV-FB5

Lab Sample ID: 320-12598-6

Date Collected: 04/14/15 11:07

Matrix: Air

Date Received: 04/17/15 09:45

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------------|-----------|----------|-------|---------|---|----------|----------------|---------|
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 04/25/15 01:44 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 04/25/15 01:44 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 04/25/15 01:44 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Methylene Chloride | ND | | 0.40 | 0.072 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Toluene | 0.094 | J | 0.40 | 0.051 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 04/25/15 01:44 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 04/25/15 01:44 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 04/25/15 01:44 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 04/25/15 01:44 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 85 | | 70 - 130 | | | | | 04/25/15 01:44 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 88 | | 70 - 130 | | | | | 04/25/15 01:44 | 1 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | | | | 04/25/15 01:44 | 1 |

OCTOBER 2015 SOIL-VAPOR SAMPLING RESULTS
CERTIFICATES OF ANALYSIS

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098315-001/MWL-SV-FB1

Lab Sample ID: 320-15492-1

Date Collected: 10/08/15 08:19

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | | 5.0 | 0.18 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 11/03/15 15:39 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 11/03/15 15:39 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 11/03/15 15:39 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/03/15 15:39 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Methylene Chloride | 0.078 | J | 0.40 | 0.072 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Toluene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 11/03/15 15:39 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 11/03/15 15:39 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098315-001/MWL-SV-FB1

Lab Sample ID: 320-15492-1

Date Collected: 10/08/15 08:19

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|-------|---------|---|----------|----------------|---------|
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 11/03/15 15:39 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 11/03/15 15:39 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | | | | 11/03/15 15:39 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 98 | | 70 - 130 | | | | | 11/03/15 15:39 | 1 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | | | | 11/03/15 15:39 | 1 |

Client Sample ID: 098316-001/MWL-SV01-42.5 W/M

Lab Sample ID: 320-15492-2

Date Collected: 10/08/15 08:38

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|-----|---------|---|----------|----------------|---------|
| Acetone | 10 | J | 130 | 4.6 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Benzene | ND | | 10 | 2.1 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Benzyl chloride | ND | | 21 | 4.2 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Bromodichloromethane | ND | | 7.8 | 1.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Bromoform | ND | | 10 | 1.8 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Bromomethane | ND | | 21 | 8.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 2-Butanone (MEK) | ND | | 21 | 5.2 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Carbon disulfide | ND | | 21 | 2.0 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Carbon tetrachloride | ND | | 21 | 1.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Chlorobenzene | ND | | 7.8 | 1.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Chloroethane | ND | | 21 | 8.0 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Chloroform | 13 | | 7.8 | 2.5 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Chloromethane | ND | | 21 | 5.1 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Dibromochloromethane | ND | | 10 | 2.1 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2-Dibromoethane (EDB) | ND | | 21 | 2.0 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 10 | 4.0 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2-Dichlorobenzene | ND | | 10 | 3.4 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,3-Dichlorobenzene | ND | | 10 | 2.9 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,4-Dichlorobenzene | ND | | 10 | 3.9 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Dichlorodifluoromethane | 98 | | 10 | 3.8 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,1-Dichloroethane | ND | | 7.8 | 1.9 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2-Dichloroethane | ND | | 21 | 2.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,1-Dichloroethene | 7.1 | J | 21 | 3.4 | ppb v/v | | | 11/03/15 16:30 | 26 |
| cis-1,2-Dichloroethene | ND | | 10 | 2.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| trans-1,2-Dichloroethene | ND | | 10 | 2.6 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2-Dichloropropane | ND | | 10 | 6.2 | ppb v/v | | | 11/03/15 16:30 | 26 |
| cis-1,3-Dichloropropene | ND | | 10 | 2.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| trans-1,3-Dichloropropene | ND | | 10 | 2.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Ethylbenzene | ND | | 10 | 1.6 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 4-Ethyltoluene | ND | | 10 | 4.9 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Hexachlorobutadiene | ND | | 52 | 11 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 2-Hexanone | ND | | 10 | 2.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 10 | 3.5 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Methylene Chloride | ND | | 10 | 1.9 | ppb v/v | | | 11/03/15 16:30 | 26 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098316-001/MWL-SV01-42.5 W/M

Lab Sample ID: 320-15492-2

Date Collected: 10/08/15 08:38

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|-----|---------|---|----------|----------------|---------|
| Styrene | ND | | 10 | 1.5 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,1,2,2-Tetrachloroethane | ND | | 10 | 1.8 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Tetrachloroethene | 400 | | 10 | 1.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Toluene | ND | | 10 | 1.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 84 | | 10 | 4.2 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2,4-Trichlorobenzene | ND | | 52 | 11 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,1,1-Trichloroethane | 42 | | 7.8 | 1.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,1,2-Trichloroethane | ND | | 10 | 1.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Trichloroethene | 89 | | 10 | 2.7 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Trichlorofluoromethane | 180 | | 10 | 5.1 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,2,4-Trimethylbenzene | ND | | 21 | 4.2 | ppb v/v | | | 11/03/15 16:30 | 26 |
| 1,3,5-Trimethylbenzene | ND | | 10 | 3.3 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Vinyl acetate | ND | | 21 | 3.8 | ppb v/v | | | 11/03/15 16:30 | 26 |
| Vinyl chloride | ND | | 10 | 3.1 | ppb v/v | | | 11/03/15 16:30 | 26 |
| m,p-Xylene | ND | | 21 | 2.6 | ppb v/v | | | 11/03/15 16:30 | 26 |
| o-Xylene | ND | | 10 | 1.4 | ppb v/v | | | 11/03/15 16:30 | 26 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 85 | | 70 - 130 | | 11/03/15 16:30 | 26 |
| 1,2-Dichloroethane-d4 (Surr) | 101 | | 70 - 130 | | 11/03/15 16:30 | 26 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | 11/03/15 16:30 | 26 |

Client Sample ID: 098317-001/MWL-SV01-42.5 W/M

Lab Sample ID: 320-15492-3

Date Collected: 10/08/15 08:38

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-----------|-----------|-----|-----|---------|---|----------|----------------|---------|
| Acetone | 43 | J | 130 | 4.6 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Benzene | ND | | 10 | 2.1 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Benzyl chloride | ND | | 21 | 4.2 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Bromodichloromethane | ND | | 7.8 | 1.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Bromoform | ND | | 10 | 1.8 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Bromomethane | ND | | 21 | 8.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 2-Butanone (MEK) | ND | | 21 | 5.2 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Carbon disulfide | ND | | 21 | 2.0 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Carbon tetrachloride | ND | | 21 | 1.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Chlorobenzene | ND | | 7.8 | 1.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Chloroethane | ND | | 21 | 8.0 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Chloroform | 13 | | 7.8 | 2.5 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Chloromethane | ND | | 21 | 5.1 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Dibromochloromethane | ND | | 10 | 2.1 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2-Dibromoethane (EDB) | ND | | 21 | 2.0 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 10 | 4.0 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2-Dichlorobenzene | ND | | 10 | 3.4 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,3-Dichlorobenzene | ND | | 10 | 2.9 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,4-Dichlorobenzene | ND | | 10 | 3.9 | ppb v/v | | | 11/03/15 17:21 | 26 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098317-001/MWL-SV01-42.5 W/M

Lab Sample ID: 320-15492-3

Date Collected: 10/08/15 08:38

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|-----|---------|---|----------|----------------|---------|
| Dichlorodifluoromethane | 97 | | 10 | 3.8 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,1-Dichloroethane | 2.7 | J | 7.8 | 1.9 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2-Dichloroethane | ND | | 21 | 2.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,1-Dichloroethene | 7.2 | J | 21 | 3.4 | ppb v/v | | | 11/03/15 17:21 | 26 |
| cis-1,2-Dichloroethene | ND | | 10 | 2.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| trans-1,2-Dichloroethene | ND | | 10 | 2.6 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2-Dichloropropane | ND | | 10 | 6.2 | ppb v/v | | | 11/03/15 17:21 | 26 |
| cis-1,3-Dichloropropene | ND | | 10 | 2.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| trans-1,3-Dichloropropene | ND | | 10 | 2.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Ethylbenzene | ND | | 10 | 1.6 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 4-Ethyltoluene | ND | | 10 | 4.9 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Hexachlorobutadiene | ND | | 52 | 11 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 2-Hexanone | ND | | 10 | 2.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 10 | 3.5 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Methylene Chloride | ND | | 10 | 1.9 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Styrene | ND | | 10 | 1.5 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,1,2,2-Tetrachloroethane | ND | | 10 | 1.8 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Tetrachloroethene | 410 | | 10 | 1.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Toluene | ND | | 10 | 1.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 82 | | 10 | 4.2 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2,4-Trichlorobenzene | ND | | 52 | 11 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,1,1-Trichloroethane | 41 | | 7.8 | 1.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,1,2-Trichloroethane | ND | | 10 | 1.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Trichloroethene | 88 | | 10 | 2.7 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Trichlorofluoromethane | 180 | | 10 | 5.1 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,2,4-Trimethylbenzene | ND | | 21 | 4.2 | ppb v/v | | | 11/03/15 17:21 | 26 |
| 1,3,5-Trimethylbenzene | ND | | 10 | 3.3 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Vinyl acetate | ND | | 21 | 3.8 | ppb v/v | | | 11/03/15 17:21 | 26 |
| Vinyl chloride | ND | | 10 | 3.1 | ppb v/v | | | 11/03/15 17:21 | 26 |
| m,p-Xylene | ND | | 21 | 2.6 | ppb v/v | | | 11/03/15 17:21 | 26 |
| o-Xylene | ND | | 10 | 1.4 | ppb v/v | | | 11/03/15 17:21 | 26 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 90 | | 70 - 130 | | 11/03/15 17:21 | 26 |
| 1,2-Dichloroethane-d4 (Surr) | 101 | | 70 - 130 | | 11/03/15 17:21 | 26 |
| Toluene-d8 (Surr) | 97 | | 70 - 130 | | 11/03/15 17:21 | 26 |

Client Sample ID: 098318-001/MWL-SV01-42.5 I/S

Lab Sample ID: 320-15492-4

Date Collected: 10/08/15 08:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|--------|-----------|-----|-----|---------|---|----------|----------------|---------|
| Acetone | 5.9 | J | 84 | 3.0 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Benzene | ND | | 6.7 | 1.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Benzyl chloride | ND | | 13 | 2.7 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Bromodichloromethane | ND | | 5.0 | 1.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098318-001/MWL-SV01-42.5 I/S

Lab Sample ID: 320-15492-4

Date Collected: 10/08/15 08:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Bromoform | ND | | 6.7 | 1.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Bromomethane | ND | | 13 | 5.6 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 2-Butanone (MEK) | ND | | 13 | 3.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Carbon disulfide | ND | | 13 | 1.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Carbon tetrachloride | ND | | 13 | 1.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Chlorobenzene | ND | | 5.0 | 1.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Chloroethane | ND | | 13 | 5.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Chloroform | 13 | | 5.0 | 1.6 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Chloromethane | ND | | 13 | 3.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Dibromochloromethane | ND | | 6.7 | 1.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2-Dibromoethane (EDB) | ND | | 13 | 1.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 6.7 | 2.6 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2-Dichlorobenzene | ND | | 6.7 | 2.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,3-Dichlorobenzene | ND | | 6.7 | 1.8 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,4-Dichlorobenzene | ND | | 6.7 | 2.5 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Dichlorodifluoromethane | 98 | | 6.7 | 2.4 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,1-Dichloroethane | 2.7 J | | 5.0 | 1.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2-Dichloroethane | ND | | 13 | 1.5 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,1-Dichloroethene | 6.7 J | | 13 | 2.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| cis-1,2-Dichloroethene | ND | | 6.7 | 1.5 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| trans-1,2-Dichloroethene | ND | | 6.7 | 1.7 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2-Dichloropropane | ND | | 6.7 | 4.0 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| cis-1,3-Dichloropropene | ND | | 6.7 | 1.7 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| trans-1,3-Dichloropropene | ND | | 6.7 | 1.5 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Ethylbenzene | ND | | 6.7 | 1.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 4-Ethyltoluene | ND | | 6.7 | 3.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Hexachlorobutadiene | ND | | 33 | 7.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 2-Hexanone | ND | | 6.7 | 1.5 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 6.7 | 2.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Methylene Chloride | ND | | 6.7 | 1.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Styrene | ND | | 6.7 | 0.99 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,1,2,2-Tetrachloroethane | ND | | 6.7 | 1.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Tetrachloroethene | 420 | | 6.7 | 0.85 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Toluene | ND | | 6.7 | 0.85 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 83 | | 6.7 | 2.7 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2,4-Trichlorobenzene | ND | | 33 | 7.2 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,1,1-Trichloroethane | 41 | | 5.0 | 1.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,1,2-Trichloroethane | ND | | 6.7 | 1.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Trichloroethene | 98 | | 6.7 | 1.8 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Trichlorofluoromethane | 180 | | 6.7 | 3.3 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,2,4-Trimethylbenzene | ND | | 13 | 2.7 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| 1,3,5-Trimethylbenzene | ND | | 6.7 | 2.1 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Vinyl acetate | ND | | 13 | 2.4 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| Vinyl chloride | ND | | 6.7 | 2.0 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| m,p-Xylene | ND | | 13 | 1.7 | ppb v/v | | | 11/04/15 08:41 | 16.7 |
| o-Xylene | ND | | 6.7 | 0.90 | ppb v/v | | | 11/04/15 08:41 | 16.7 |

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098318-001/MWL-SV01-42.5 I/S

Date Collected: 10/08/15 08:40

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Lab Sample ID: 320-15492-4

Matrix: Air

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 87 | | 70 - 130 | | 11/04/15 08:41 | 16.7 |
| 1,2-Dichloroethane-d4 (Surr) | 117 | | 70 - 130 | | 11/04/15 08:41 | 16.7 |
| Toluene-d8 (Surr) | 103 | | 70 - 130 | | 11/04/15 08:41 | 16.7 |

Client Sample ID: 098319-001/MWL-SV01-42.5 I/S

Date Collected: 10/08/15 08:41

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Lab Sample ID: 320-15492-5

Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | ND | | 95 | 3.4 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Benzene | ND | | 7.6 | 1.5 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Benzyl chloride | ND | | 15 | 3.1 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Bromodichloromethane | ND | | 5.7 | 1.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Bromoform | ND | | 7.6 | 1.3 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Bromomethane | ND | | 15 | 6.3 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 2-Butanone (MEK) | ND | | 15 | 3.8 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Carbon disulfide | ND | | 15 | 1.5 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Carbon tetrachloride | ND | | 15 | 1.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Chlorobenzene | ND | | 5.7 | 1.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Chloroethane | ND | | 15 | 5.8 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Chloroform | 14 | | 5.7 | 1.8 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Chloromethane | ND | | 15 | 3.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Dibromochloromethane | ND | | 7.6 | 1.5 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2-Dibromoethane (EDB) | ND | | 15 | 1.4 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 7.6 | 2.9 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2-Dichlorobenzene | ND | | 7.6 | 2.5 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,3-Dichlorobenzene | ND | | 7.6 | 2.1 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,4-Dichlorobenzene | ND | | 7.6 | 2.8 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Dichlorodifluoromethane | 110 | | 7.6 | 2.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,1-Dichloroethane | 2.9 J | | 5.7 | 1.4 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2-Dichloroethane | ND | | 15 | 1.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,1-Dichloroethene | 7.3 J | | 15 | 2.4 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| cis-1,2-Dichloroethene | ND | | 7.6 | 1.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| trans-1,2-Dichloroethene | ND | | 7.6 | 1.9 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2-Dichloropropane | ND | | 7.6 | 4.5 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| cis-1,3-Dichloropropene | ND | | 7.6 | 2.0 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| trans-1,3-Dichloropropene | ND | | 7.6 | 1.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Ethylbenzene | ND | | 7.6 | 1.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 4-Ethyltoluene | ND | | 7.6 | 3.5 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Hexachlorobutadiene | ND | | 38 | 8.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 2-Hexanone | ND | | 7.6 | 1.6 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 7.6 | 2.6 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Methylene Chloride | ND | | 7.6 | 1.4 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Styrene | ND | | 7.6 | 1.1 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,1,2,2-Tetrachloroethane | ND | | 7.6 | 1.3 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Tetrachloroethene | 470 | | 7.6 | 0.96 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Toluene | ND | | 7.6 | 0.96 | ppb v/v | | | 11/04/15 09:31 | 18.9 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098319-001/MWL-SV01-42.5 I/S

Lab Sample ID: 320-15492-5

Date Collected: 10/08/15 08:41

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|-----|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 89 | | 7.6 | 3.1 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2,4-Trichlorobenzene | ND | | 38 | 8.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,1,1-Trichloroethane | 43 | | 5.7 | 1.2 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,1,2-Trichloroethane | ND | | 7.6 | 1.3 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Trichloroethene | 110 | | 7.6 | 2.0 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Trichlorofluoromethane | 190 | | 7.6 | 3.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,2,4-Trimethylbenzene | ND | | 15 | 3.1 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| 1,3,5-Trimethylbenzene | ND | | 7.6 | 2.4 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Vinyl acetate | ND | | 15 | 2.7 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| Vinyl chloride | ND | | 7.6 | 2.3 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| m,p-Xylene | ND | | 15 | 1.9 | ppb v/v | | | 11/04/15 09:31 | 18.9 |
| o-Xylene | ND | | 7.6 | 1.0 | ppb v/v | | | 11/04/15 09:31 | 18.9 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 82 | | 70 - 130 | | 11/04/15 09:31 | 18.9 |
| 1,2-Dichloroethane-d4 (Surr) | 118 | | 70 - 130 | | 11/04/15 09:31 | 18.9 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | 11/04/15 09:31 | 18.9 |

Client Sample ID: 098320-001/MWL-SV-FB2

Lab Sample ID: 320-15492-6

Date Collected: 10/08/15 08:20

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | | 5.0 | 0.18 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 11/04/15 17:40 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098320-001/MWL-SV-FB2

Lab Sample ID: 320-15492-6

Date Collected: 10/08/15 08:20

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|-----------|-----------|----------|-------|---------|---|----------|----------------|---------|
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 11/04/15 17:40 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 11/04/15 17:40 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/04/15 17:40 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Methylene Chloride | ND | | 0.40 | 0.072 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Toluene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 11/04/15 17:40 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 11/04/15 17:40 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 11/04/15 17:40 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 11/04/15 17:40 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 87 | | 70 - 130 | | | | | 11/04/15 17:40 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 105 | | 70 - 130 | | | | | 11/04/15 17:40 | 1 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | | | | 11/04/15 17:40 | 1 |

Client Sample ID: 098321-001/MWL-SV02-41.5 W/M

Lab Sample ID: 320-15492-7

Date Collected: 10/08/15 08:56

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 15 | J | 51 | 1.8 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Benzene | ND | | 4.0 | 0.80 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Benzyl chloride | ND | | 8.1 | 1.6 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Bromodichloromethane | ND | | 3.0 | 0.67 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Bromoform | ND | | 4.0 | 0.71 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Bromomethane | ND | | 8.1 | 3.4 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 2-Butanone (MEK) | 3.5 | J | 8.1 | 2.0 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Carbon disulfide | ND | | 8.1 | 0.79 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Carbon tetrachloride | ND | | 8.1 | 0.65 | ppb v/v | | | 11/04/15 18:30 | 10.1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098321-001/MWL-SV02-41.5 W/M

Lab Sample ID: 320-15492-7

Date Collected: 10/08/15 08:56

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|----------|------|---------|---|----------|----------------|---------|
| Chlorobenzene | ND | | 3.0 | 0.65 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Chloroethane | ND | | 8.1 | 3.1 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Chloroform | 2.7 | J | 3.0 | 0.96 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Chloromethane | ND | | 8.1 | 2.0 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Dibromochloromethane | ND | | 4.0 | 0.80 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2-Dibromoethane (EDB) | ND | | 8.1 | 0.76 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.0 | 1.6 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2-Dichlorobenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,3-Dichlorobenzene | ND | | 4.0 | 1.1 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,4-Dichlorobenzene | ND | | 4.0 | 1.5 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Dichlorodifluoromethane | 93 | | 4.0 | 1.5 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,1-Dichloroethane | 2.4 | J | 3.0 | 0.73 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2-Dichloroethane | ND | | 8.1 | 0.89 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,1-Dichloroethene | 9.6 | | 8.1 | 1.3 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| cis-1,2-Dichloroethene | ND | | 4.0 | 0.90 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| trans-1,2-Dichloroethene | ND | | 4.0 | 1.0 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2-Dichloropropane | ND | | 4.0 | 2.4 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| cis-1,3-Dichloropropene | ND | | 4.0 | 1.1 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| trans-1,3-Dichloropropene | ND | | 4.0 | 0.89 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Ethylbenzene | ND | | 4.0 | 0.64 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 4-Ethyltoluene | ND | | 4.0 | 1.9 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Hexachlorobutadiene | ND | | 20 | 4.4 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 2-Hexanone | ND | | 4.0 | 0.88 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.0 | 1.4 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Methylene Chloride | ND | | 4.0 | 0.73 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Styrene | ND | | 4.0 | 0.60 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.0 | 0.70 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Tetrachloroethene | 65 | | 4.0 | 0.52 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Toluene | ND | | 4.0 | 0.52 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 50 | | 4.0 | 1.6 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2,4-Trichlorobenzene | ND | | 20 | 4.4 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,1,1-Trichloroethane | 70 | | 3.0 | 0.66 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,1,2-Trichloroethane | ND | | 4.0 | 0.68 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Trichloroethene | 61 | | 4.0 | 1.1 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Trichlorofluoromethane | 300 | | 4.0 | 2.0 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,2,4-Trimethylbenzene | ND | | 8.1 | 1.6 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| 1,3,5-Trimethylbenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Vinyl acetate | 7.5 | J | 8.1 | 1.5 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Vinyl chloride | ND | | 4.0 | 1.2 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| m,p-Xylene | ND | | 8.1 | 1.0 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| o-Xylene | ND | | 4.0 | 0.55 | ppb v/v | | | 11/04/15 18:30 | 10.1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 95 | | 70 - 130 | | | | | 11/04/15 18:30 | 10.1 |
| 1,2-Dichloroethane-d4 (Surr) | 104 | | 70 - 130 | | | | | 11/04/15 18:30 | 10.1 |
| Toluene-d8 (Surr) | 98 | | 70 - 130 | | | | | 11/04/15 18:30 | 10.1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098322-001/MWL-SV02-41.5 W/M

Lab Sample ID: 320-15492-8

Date Collected: 10/08/15 08:56

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 7.4 | J | 51 | 1.8 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Benzene | ND | | 4.0 | 0.80 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Benzyl chloride | ND | | 8.1 | 1.6 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Bromodichloromethane | ND | | 3.0 | 0.67 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Bromoform | ND | | 4.0 | 0.71 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Bromomethane | ND | | 8.1 | 3.4 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 2-Butanone (MEK) | 3.0 | J | 8.1 | 2.0 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Carbon disulfide | ND | | 8.1 | 0.79 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Carbon tetrachloride | ND | | 8.1 | 0.65 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Chlorobenzene | ND | | 3.0 | 0.65 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Chloroethane | ND | | 8.1 | 3.1 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Chloroform | 2.8 | J | 3.0 | 0.96 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Chloromethane | ND | | 8.1 | 2.0 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Dibromochloromethane | ND | | 4.0 | 0.80 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2-Dibromoethane (EDB) | ND | | 8.1 | 0.76 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.0 | 1.6 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2-Dichlorobenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,3-Dichlorobenzene | ND | | 4.0 | 1.1 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,4-Dichlorobenzene | ND | | 4.0 | 1.5 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Dichlorodifluoromethane | 95 | | 4.0 | 1.5 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,1-Dichloroethane | 2.4 | J | 3.0 | 0.73 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2-Dichloroethane | ND | | 8.1 | 0.89 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,1-Dichloroethene | 10 | | 8.1 | 1.3 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| cis-1,2-Dichloroethene | ND | | 4.0 | 0.90 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| trans-1,2-Dichloroethene | ND | | 4.0 | 1.0 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2-Dichloropropane | ND | | 4.0 | 2.4 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| cis-1,3-Dichloropropene | ND | | 4.0 | 1.1 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| trans-1,3-Dichloropropene | ND | | 4.0 | 0.89 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Ethylbenzene | ND | | 4.0 | 0.64 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 4-Ethyltoluene | ND | | 4.0 | 1.9 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Hexachlorobutadiene | ND | | 20 | 4.4 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 2-Hexanone | ND | | 4.0 | 0.88 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.0 | 1.4 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Methylene Chloride | ND | | 4.0 | 0.73 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Styrene | ND | | 4.0 | 0.60 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.0 | 0.70 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Tetrachloroethene | 66 | | 4.0 | 0.52 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Toluene | ND | | 4.0 | 0.52 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 52 | | 4.0 | 1.6 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2,4-Trichlorobenzene | ND | | 20 | 4.4 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,1,1-Trichloroethane | 72 | | 3.0 | 0.66 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,1,2-Trichloroethane | ND | | 4.0 | 0.68 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Trichloroethene | 63 | | 4.0 | 1.1 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Trichlorofluoromethane | 310 | | 4.0 | 2.0 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,2,4-Trimethylbenzene | ND | | 8.1 | 1.6 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| 1,3,5-Trimethylbenzene | ND | | 4.0 | 1.3 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Vinyl acetate | 7.9 | J | 8.1 | 1.5 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Vinyl chloride | ND | | 4.0 | 1.2 | ppb v/v | | | 11/04/15 19:20 | 10.1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098322-001/MWL-SV02-41.5 W/M

Lab Sample ID: 320-15492-8

Date Collected: 10/08/15 08:56

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| m,p-Xylene | ND | | 8.1 | 1.0 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| o-Xylene | ND | | 4.0 | 0.55 | ppb v/v | | | 11/04/15 19:20 | 10.1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 92 | | 70 - 130 | | | | | 11/04/15 19:20 | 10.1 |
| 1,2-Dichloroethane-d4 (Surr) | 106 | | 70 - 130 | | | | | 11/04/15 19:20 | 10.1 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | | | | 11/04/15 19:20 | 10.1 |

Client Sample ID: 098323-001/MWL-SV02-41.5 I/S

Lab Sample ID: 320-15492-9

Date Collected: 10/08/15 08:57

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 6.1 | J | 53 | 1.9 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Benzene | ND | | 4.2 | 0.83 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Benzyl chloride | ND | | 8.4 | 1.7 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Bromodichloromethane | ND | | 3.2 | 0.69 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Bromoform | ND | | 4.2 | 0.74 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Bromomethane | ND | | 8.4 | 3.5 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 2-Butanone (MEK) | ND | | 8.4 | 2.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Carbon disulfide | ND | | 8.4 | 0.82 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Carbon tetrachloride | ND | | 8.4 | 0.67 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Chlorobenzene | ND | | 3.2 | 0.67 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Chloroethane | ND | | 8.4 | 3.2 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Chloroform | 2.8 | J | 3.2 | 1.0 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Chloromethane | ND | | 8.4 | 2.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Dibromochloromethane | ND | | 4.2 | 0.83 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2-Dibromoethane (EDB) | ND | | 8.4 | 0.79 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.2 | 1.6 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2-Dichlorobenzene | ND | | 4.2 | 1.4 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,3-Dichlorobenzene | ND | | 4.2 | 1.2 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,4-Dichlorobenzene | ND | | 4.2 | 1.6 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Dichlorodifluoromethane | 91 | | 4.2 | 1.5 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,1-Dichloroethane | 2.3 | J | 3.2 | 0.76 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2-Dichloroethane | ND | | 8.4 | 0.92 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,1-Dichloroethene | 9.6 | | 8.4 | 1.4 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| cis-1,2-Dichloroethene | ND | | 4.2 | 0.93 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| trans-1,2-Dichloroethene | ND | | 4.2 | 1.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2-Dichloropropane | ND | | 4.2 | 2.5 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| cis-1,3-Dichloropropene | ND | | 4.2 | 1.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| trans-1,3-Dichloropropene | ND | | 4.2 | 0.92 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Ethylbenzene | ND | | 4.2 | 0.66 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 4-Ethyltoluene | ND | | 4.2 | 2.0 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Hexachlorobutadiene | ND | | 21 | 4.5 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 2-Hexanone | ND | | 4.2 | 0.91 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.2 | 1.4 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Methylene Chloride | ND | | 4.2 | 0.76 | ppb v/v | | | 11/04/15 20:10 | 10.5 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098323-001/MWL-SV02-41.5 I/S

Lab Sample ID: 320-15492-9

Date Collected: 10/08/15 08:57

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Styrene | ND | | 4.2 | 0.62 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.2 | 0.72 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Tetrachloroethene | 65 | | 4.2 | 0.54 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Toluene | ND | | 4.2 | 0.54 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 51 | | 4.2 | 1.7 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2,4-Trichlorobenzene | ND | | 21 | 4.5 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,1,1-Trichloroethane | 71 | | 3.2 | 0.68 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,1,2-Trichloroethane | ND | | 4.2 | 0.70 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Trichloroethene | 62 | | 4.2 | 1.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Trichlorofluoromethane | 300 | | 4.2 | 2.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,2,4-Trimethylbenzene | ND | | 8.4 | 1.7 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| 1,3,5-Trimethylbenzene | ND | | 4.2 | 1.3 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Vinyl acetate | 7.6 J | | 8.4 | 1.5 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| Vinyl chloride | ND | | 4.2 | 1.3 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| m,p-Xylene | ND | | 8.4 | 1.1 | ppb v/v | | | 11/04/15 20:10 | 10.5 |
| o-Xylene | ND | | 4.2 | 0.57 | ppb v/v | | | 11/04/15 20:10 | 10.5 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 86 | | 70 - 130 | | 11/04/15 20:10 | 10.5 |
| 1,2-Dichloroethane-d4 (Surr) | 108 | | 70 - 130 | | 11/04/15 20:10 | 10.5 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | 11/04/15 20:10 | 10.5 |

Client Sample ID: 098324-001/MWL-SV02-41.5 I/S

Lab Sample ID: 320-15492-10

Date Collected: 10/08/15 08:59

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | ND | | 52 | 1.9 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Benzene | ND | | 4.2 | 0.82 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Benzyl chloride | ND | | 8.3 | 1.7 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Bromodichloromethane | ND | | 3.1 | 0.69 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Bromoform | ND | | 4.2 | 0.73 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Bromomethane | ND | | 8.3 | 3.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 2-Butanone (MEK) | ND | | 8.3 | 2.1 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Carbon disulfide | ND | | 8.3 | 0.81 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Carbon tetrachloride | ND | | 8.3 | 0.67 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Chlorobenzene | ND | | 3.1 | 0.67 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Chloroethane | ND | | 8.3 | 3.2 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Chloroform | 2.8 J | | 3.1 | 0.99 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Chloromethane | ND | | 8.3 | 2.0 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Dibromochloromethane | ND | | 4.2 | 0.82 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2-Dibromoethane (EDB) | ND | | 8.3 | 0.78 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.2 | 1.6 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2-Dichlorobenzene | ND | | 4.2 | 1.4 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,3-Dichlorobenzene | ND | | 4.2 | 1.1 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,4-Dichlorobenzene | ND | | 4.2 | 1.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098324-001/MWL-SV02-41.5 I/S

Lab Sample ID: 320-15492-10

Date Collected: 10/08/15 08:59

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Dichlorodifluoromethane | 91 | | 4.2 | 1.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,1-Dichloroethane | 2.3 | J | 3.1 | 0.75 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2-Dichloroethane | ND | | 8.3 | 0.92 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,1-Dichloroethene | 9.6 | | 8.3 | 1.3 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| cis-1,2-Dichloroethene | ND | | 4.2 | 0.93 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| trans-1,2-Dichloroethene | ND | | 4.2 | 1.0 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2-Dichloropropane | ND | | 4.2 | 2.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| cis-1,3-Dichloropropene | ND | | 4.2 | 1.1 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| trans-1,3-Dichloropropene | ND | | 4.2 | 0.92 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Ethylbenzene | ND | | 4.2 | 0.66 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 4-Ethyltoluene | ND | | 4.2 | 1.9 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Hexachlorobutadiene | ND | | 21 | 4.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 2-Hexanone | ND | | 4.2 | 0.90 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.2 | 1.4 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Methylene Chloride | ND | | 4.2 | 0.75 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Styrene | ND | | 4.2 | 0.61 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.2 | 0.72 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Tetrachloroethene | 68 | | 4.2 | 0.53 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Toluene | ND | | 4.2 | 0.53 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 50 | | 4.2 | 1.7 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2,4-Trichlorobenzene | ND | | 21 | 4.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,1,1-Trichloroethane | 70 | | 3.1 | 0.68 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,1,2-Trichloroethane | ND | | 4.2 | 0.70 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Trichloroethene | 65 | | 4.2 | 1.1 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Trichlorofluoromethane | 300 | | 4.2 | 2.0 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,2,4-Trimethylbenzene | ND | | 8.3 | 1.7 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| 1,3,5-Trimethylbenzene | ND | | 4.2 | 1.3 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Vinyl acetate | 7.4 | J | 8.3 | 1.5 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| Vinyl chloride | ND | | 4.2 | 1.2 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| m,p-Xylene | ND | | 8.3 | 1.0 | ppb v/v | | | 11/04/15 21:00 | 10.4 |
| o-Xylene | ND | | 4.2 | 0.56 | ppb v/v | | | 11/04/15 21:00 | 10.4 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 88 | | 70 - 130 | | 11/04/15 21:00 | 10.4 |
| 1,2-Dichloroethane-d4 (Surr) | 109 | | 70 - 130 | | 11/04/15 21:00 | 10.4 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | 11/04/15 21:00 | 10.4 |

Client Sample ID: 098325-001/MWL-SV-FB3

Lab Sample ID: 320-15492-11

Date Collected: 10/08/15 09:20

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | | 5.0 | 0.18 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 11/04/15 21:58 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098325-001/MWL-SV-FB3

Lab Sample ID: 320-15492-11

Date Collected: 10/08/15 09:20

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 11/04/15 21:58 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 11/04/15 21:58 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 11/04/15 21:58 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/04/15 21:58 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Methylene Chloride | ND | | 0.40 | 0.072 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Toluene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 11/04/15 21:58 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 11/04/15 21:58 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 11/04/15 21:58 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 11/04/15 21:58 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 11/04/15 21:58 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 83 | | 70 - 130 | | 11/04/15 21:58 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098325-001/MWL-SV-FB3

Lab Sample ID: 320-15492-11

Date Collected: 10/08/15 09:20

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 109 | | 70 - 130 | | 11/04/15 21:58 | 1 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | 11/04/15 21:58 | 1 |

Client Sample ID: 098326-001/MWL-SV03-50 (port 1)

Lab Sample ID: 320-15492-12

Date Collected: 10/08/15 09:36

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 2.7 | J | 17 | 0.61 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Benzene | 1.1 | J | 1.4 | 0.27 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Benzyl chloride | ND | | 2.7 | 0.56 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Bromodichloromethane | ND | | 1.0 | 0.23 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Bromoform | ND | | 1.4 | 0.24 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Bromomethane | ND | | 2.7 | 1.1 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 2-Butanone (MEK) | ND | | 2.7 | 0.68 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Carbon disulfide | ND | | 2.7 | 0.27 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Carbon tetrachloride | ND | | 2.7 | 0.22 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Chlorobenzene | ND | | 1.0 | 0.22 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Chloroethane | ND | | 2.7 | 1.1 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Chloroform | 1.4 | | 1.0 | 0.33 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Chloromethane | ND | | 2.7 | 0.68 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Dibromochloromethane | ND | | 1.4 | 0.27 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2-Dibromoethane (EDB) | ND | | 2.7 | 0.26 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.4 | 0.53 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2-Dichlorobenzene | ND | | 1.4 | 0.45 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,3-Dichlorobenzene | ND | | 1.4 | 0.38 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,4-Dichlorobenzene | ND | | 1.4 | 0.51 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Dichlorodifluoromethane | 21 | | 1.4 | 0.50 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,1-Dichloroethane | 2.1 | | 1.0 | 0.25 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2-Dichloroethane | ND | | 2.7 | 0.30 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,1-Dichloroethene | 7.6 | | 2.7 | 0.44 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| cis-1,2-Dichloroethene | 1.1 | J | 1.4 | 0.31 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| trans-1,2-Dichloroethene | ND | | 1.4 | 0.34 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2-Dichloropropane | ND | | 1.4 | 0.82 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| cis-1,3-Dichloropropene | ND | | 1.4 | 0.36 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| trans-1,3-Dichloropropene | ND | | 1.4 | 0.30 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Ethylbenzene | ND | | 1.4 | 0.22 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 4-Ethyltoluene | ND | | 1.4 | 0.64 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Hexachlorobutadiene | ND | | 6.9 | 1.5 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 2-Hexanone | ND | | 1.4 | 0.30 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.4 | 0.46 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Methylene Chloride | 0.73 | J | 1.4 | 0.25 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Styrene | ND | | 1.4 | 0.20 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.4 | 0.24 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Tetrachloroethene | 110 | | 1.4 | 0.17 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Toluene | 1.4 | | 1.4 | 0.17 | ppb v/v | | | 11/04/15 22:49 | 3.43 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098326-001/MWL-SV03-50 (port 1)

Lab Sample ID: 320-15492-12

Date Collected: 10/08/15 09:36

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 52 | | 1.4 | 0.56 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2,4-Trichlorobenzene | ND | | 6.9 | 1.5 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,1,1-Trichloroethane | 4.3 | | 1.0 | 0.22 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,1,2-Trichloroethane | ND | | 1.4 | 0.23 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Trichloroethene | 80 | | 1.4 | 0.36 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Trichlorofluoromethane | 22 | | 1.4 | 0.67 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,2,4-Trimethylbenzene | ND | | 2.7 | 0.56 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| 1,3,5-Trimethylbenzene | ND | | 1.4 | 0.43 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Vinyl acetate | ND | | 2.7 | 0.50 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| Vinyl chloride | ND | | 1.4 | 0.41 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| m,p-Xylene | ND | | 2.7 | 0.34 | ppb v/v | | | 11/04/15 22:49 | 3.43 |
| o-Xylene | ND | | 1.4 | 0.19 | ppb v/v | | | 11/04/15 22:49 | 3.43 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 88 | | 70 - 130 | | 11/04/15 22:49 | 3.43 |
| 1,2-Dichloroethane-d4 (Surr) | 107 | | 70 - 130 | | 11/04/15 22:49 | 3.43 |
| Toluene-d8 (Surr) | 98 | | 70 - 130 | | 11/04/15 22:49 | 3.43 |

Client Sample ID: 098327-001/MWL-SV03-100 (port 2)

Lab Sample ID: 320-15492-13

Date Collected: 10/08/15 09:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.4 | J | 30 | 1.1 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Benzene | ND | | 2.4 | 0.48 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Benzyl chloride | ND | | 4.8 | 0.99 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Bromodichloromethane | ND | | 1.8 | 0.40 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Bromoform | ND | | 2.4 | 0.42 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Bromomethane | ND | | 4.8 | 2.0 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 2-Butanone (MEK) | ND | | 4.8 | 1.2 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Carbon disulfide | ND | | 4.8 | 0.47 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Carbon tetrachloride | ND | | 4.8 | 0.39 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Chlorobenzene | ND | | 1.8 | 0.39 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Chloroethane | ND | | 4.8 | 1.9 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Chloroform | 2.7 | | 1.8 | 0.58 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Chloromethane | ND | | 4.8 | 1.2 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Dibromochloromethane | ND | | 2.4 | 0.48 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2-Dibromoethane (EDB) | ND | | 4.8 | 0.45 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.4 | 0.94 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2-Dichlorobenzene | ND | | 2.4 | 0.79 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,3-Dichlorobenzene | ND | | 2.4 | 0.67 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,4-Dichlorobenzene | ND | | 2.4 | 0.90 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Dichlorodifluoromethane | 70 | | 2.4 | 0.88 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,1-Dichloroethane | 6.9 | | 1.8 | 0.44 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2-Dichloroethane | ND | | 4.8 | 0.53 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,1-Dichloroethene | 30 | | 4.8 | 0.78 | ppb v/v | | | 11/04/15 23:40 | 6.06 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098327-001/MWL-SV03-100 (port 2)

Lab Sample ID: 320-15492-13

Date Collected: 10/08/15 09:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|----------|------|---------|---|----------|----------------|---------|
| cis-1,2-Dichloroethene | ND | | 2.4 | 0.54 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| trans-1,2-Dichloroethene | ND | | 2.4 | 0.61 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2-Dichloropropane | ND | | 2.4 | 1.5 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| cis-1,3-Dichloropropene | ND | | 2.4 | 0.63 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| trans-1,3-Dichloropropene | ND | | 2.4 | 0.53 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Ethylbenzene | ND | | 2.4 | 0.38 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 4-Ethyltoluene | ND | | 2.4 | 1.1 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Hexachlorobutadiene | ND | | 12 | 2.6 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 2-Hexanone | ND | | 2.4 | 0.53 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.4 | 0.82 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Methylene Chloride | 2.3 | J | 2.4 | 0.44 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Styrene | ND | | 2.4 | 0.36 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.4 | 0.42 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Tetrachloroethene | 220 | | 2.4 | 0.31 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Toluene | ND | | 2.4 | 0.31 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 150 | | 2.4 | 0.99 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2,4-Trichlorobenzene | ND | | 12 | 2.6 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,1,1-Trichloroethane | 8.9 | | 1.8 | 0.39 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,1,2-Trichloroethane | ND | | 2.4 | 0.41 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Trichloroethene | 200 | | 2.4 | 0.64 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Trichlorofluoromethane | 50 | | 2.4 | 1.2 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,2,4-Trimethylbenzene | ND | | 4.8 | 0.98 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| 1,3,5-Trimethylbenzene | ND | | 2.4 | 0.76 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Vinyl acetate | ND | | 4.8 | 0.88 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Vinyl chloride | ND | | 2.4 | 0.73 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| m,p-Xylene | ND | | 4.8 | 0.61 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| o-Xylene | ND | | 2.4 | 0.33 | ppb v/v | | | 11/04/15 23:40 | 6.06 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | | | | 11/04/15 23:40 | 6.06 |
| 1,2-Dichloroethane-d4 (Surr) | 116 | | 70 - 130 | | | | | 11/04/15 23:40 | 6.06 |
| Toluene-d8 (Surr) | 93 | | 70 - 130 | | | | | 11/04/15 23:40 | 6.06 |

Client Sample ID: 098328-001/MWL-SV03-200 (port 3)

Lab Sample ID: 320-15492-14

Date Collected: 10/08/15 09:44

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 2.9 | J | 38 | 1.3 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Benzene | ND | | 3.0 | 0.60 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Benzyl chloride | ND | | 6.1 | 1.2 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Bromodichloromethane | ND | | 2.3 | 0.50 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Bromoform | ND | | 3.0 | 0.53 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Bromomethane | ND | | 6.1 | 2.5 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 2-Butanone (MEK) | ND | | 6.1 | 1.5 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Carbon disulfide | ND | | 6.1 | 0.59 | ppb v/v | | | 11/05/15 00:31 | 7.58 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098328-001/MWL-SV03-200 (port 3)

Lab Sample ID: 320-15492-14

Date Collected: 10/08/15 09:44

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|---------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Carbon tetrachloride | ND | | 6.1 | 0.49 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Chlorobenzene | ND | | 2.3 | 0.49 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Chloroethane | ND | | 6.1 | 2.3 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Chloroform | 2.3 | | 2.3 | 0.72 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Chloromethane | ND | | 6.1 | 1.5 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Dibromochloromethane | ND | | 3.0 | 0.60 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2-Dibromoethane (EDB) | ND | | 6.1 | 0.57 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 3.0 | 1.2 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2-Dichlorobenzene | ND | | 3.0 | 0.99 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,3-Dichlorobenzene | ND | | 3.0 | 0.83 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,4-Dichlorobenzene | ND | | 3.0 | 1.1 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Dichlorodifluoromethane | 61 | | 3.0 | 1.1 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,1-Dichloroethane | 8.4 | | 2.3 | 0.55 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2-Dichloroethane | ND | | 6.1 | 0.67 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,1-Dichloroethene | 33 | | 6.1 | 0.98 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| cis-1,2-Dichloroethene | 4.9 | | 3.0 | 0.67 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| trans-1,2-Dichloroethene | ND | | 3.0 | 0.76 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2-Dichloropropane | ND | | 3.0 | 1.8 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| cis-1,3-Dichloropropene | ND | | 3.0 | 0.79 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| trans-1,3-Dichloropropene | ND | | 3.0 | 0.67 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Ethylbenzene | ND | | 3.0 | 0.48 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 4-Ethyltoluene | ND | | 3.0 | 1.4 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Hexachlorobutadiene | ND | | 15 | 3.3 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 2-Hexanone | ND | | 3.0 | 0.66 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.0 | 1.0 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Methylene Chloride | 4.1 | | 3.0 | 0.55 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Styrene | ND | | 3.0 | 0.45 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.0 | 0.52 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Tetrachloroethene | 290 | | 3.0 | 0.39 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Toluene | 0.50 J | | 3.0 | 0.39 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 180 | | 3.0 | 1.2 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2,4-Trichlorobenzene | ND | | 15 | 3.3 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,1,1-Trichloroethane | 3.2 | | 2.3 | 0.49 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,1,2-Trichloroethane | ND | | 3.0 | 0.51 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Trichloroethene | 310 | | 3.0 | 0.80 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Trichlorofluoromethane | 32 | | 3.0 | 1.5 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,2,4-Trimethylbenzene | ND | | 6.1 | 1.2 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| 1,3,5-Trimethylbenzene | ND | | 3.0 | 0.95 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Vinyl acetate | ND | | 6.1 | 1.1 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| Vinyl chloride | ND | | 3.0 | 0.91 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| m,p-Xylene | ND | | 6.1 | 0.76 | ppb v/v | | | 11/05/15 00:31 | 7.58 |
| o-Xylene | ND | | 3.0 | 0.41 | ppb v/v | | | 11/05/15 00:31 | 7.58 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 85 | | 70 - 130 | | 11/05/15 00:31 | 7.58 |
| 1,2-Dichloroethane-d4 (Surr) | 120 | | 70 - 130 | | 11/05/15 00:31 | 7.58 |
| Toluene-d8 (Surr) | 104 | | 70 - 130 | | 11/05/15 00:31 | 7.58 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098329-001/MWL-SV03-300 (port 4)

Lab Sample ID: 320-15492-15

Date Collected: 10/08/15 09:52

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 5.4 | J | 49 | 1.7 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Benzene | ND | | 3.9 | 0.77 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Benzyl chloride | ND | | 7.8 | 1.6 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Bromodichloromethane | ND | | 2.9 | 0.64 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Bromoform | ND | | 3.9 | 0.68 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Bromomethane | ND | | 7.8 | 3.3 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 2-Butanone (MEK) | ND | | 7.8 | 1.9 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Carbon disulfide | ND | | 7.8 | 0.76 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Carbon tetrachloride | ND | | 7.8 | 0.62 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Chlorobenzene | ND | | 2.9 | 0.62 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Chloroethane | ND | | 7.8 | 3.0 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Chloroform | 1.2 | J | 2.9 | 0.93 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Chloromethane | ND | | 7.8 | 1.9 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Dibromochloromethane | ND | | 3.9 | 0.77 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2-Dibromoethane (EDB) | ND | | 7.8 | 0.73 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2-Dichlorobenzene | ND | | 3.9 | 1.3 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,3-Dichlorobenzene | ND | | 3.9 | 1.1 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,4-Dichlorobenzene | ND | | 3.9 | 1.5 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Dichlorodifluoromethane | 38 | | 3.9 | 1.4 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,1-Dichloroethane | 3.7 | | 2.9 | 0.70 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2-Dichloroethane | ND | | 7.8 | 0.86 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,1-Dichloroethene | 21 | | 7.8 | 1.3 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| cis-1,2-Dichloroethene | 2.5 | J | 3.9 | 0.87 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| trans-1,2-Dichloroethene | ND | | 3.9 | 0.98 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2-Dichloropropane | ND | | 3.9 | 2.3 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| cis-1,3-Dichloropropene | ND | | 3.9 | 1.0 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| trans-1,3-Dichloropropene | ND | | 3.9 | 0.86 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Ethylbenzene | ND | | 3.9 | 0.61 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 4-Ethyltoluene | ND | | 3.9 | 1.8 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Hexachlorobutadiene | ND | | 20 | 4.2 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 2-Hexanone | ND | | 3.9 | 0.85 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.9 | 1.3 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Methylene Chloride | 1.9 | J | 3.9 | 0.70 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Styrene | ND | | 3.9 | 0.58 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,1,2,2-Tetrachloroethane | ND | | 3.9 | 0.67 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Tetrachloroethene | 370 | | 3.9 | 0.50 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Toluene | 0.80 | J | 3.9 | 0.50 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 110 | | 3.9 | 1.6 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2,4-Trichlorobenzene | ND | | 20 | 4.2 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,1,1-Trichloroethane | 1.7 | J | 2.9 | 0.63 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,1,2-Trichloroethane | ND | | 3.9 | 0.65 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Trichloroethene | 260 | | 3.9 | 1.0 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Trichlorofluoromethane | 15 | | 3.9 | 1.9 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,2,4-Trimethylbenzene | ND | | 7.8 | 1.6 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| 1,3,5-Trimethylbenzene | ND | | 3.9 | 1.2 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Vinyl acetate | ND | | 7.8 | 1.4 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Vinyl chloride | ND | | 3.9 | 1.2 | ppb v/v | | | 11/05/15 01:21 | 9.75 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098329-001/MWL-SV03-300 (port 4)

Lab Sample ID: 320-15492-15

Date Collected: 10/08/15 09:52

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| m,p-Xylene | ND | | 7.8 | 0.98 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| o-Xylene | ND | | 3.9 | 0.53 | ppb v/v | | | 11/05/15 01:21 | 9.75 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 88 | | 70 - 130 | | | | | 11/05/15 01:21 | 9.75 |
| 1,2-Dichloroethane-d4 (Surr) | 118 | | 70 - 130 | | | | | 11/05/15 01:21 | 9.75 |
| Toluene-d8 (Surr) | 87 | | 70 - 130 | | | | | 11/05/15 01:21 | 9.75 |

Client Sample ID: 098330-001/MWL-SV03-400 (port 5)

Lab Sample ID: 320-15492-16

Date Collected: 10/08/15 10:10

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.8 | J | 53 | 1.9 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Benzene | ND | | 4.2 | 0.83 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Benzyl chloride | ND | | 8.4 | 1.7 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Bromodichloromethane | ND | | 3.2 | 0.69 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Bromoform | ND | | 4.2 | 0.74 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Bromomethane | ND | | 8.4 | 3.5 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 2-Butanone (MEK) | ND | | 8.4 | 2.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Carbon disulfide | ND | | 8.4 | 0.82 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Carbon tetrachloride | ND | | 8.4 | 0.67 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Chlorobenzene | ND | | 3.2 | 0.67 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Chloroethane | ND | | 8.4 | 3.2 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Chloroform | 1.4 | J | 3.2 | 1.0 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Chloromethane | ND | | 8.4 | 2.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Dibromochloromethane | ND | | 4.2 | 0.83 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2-Dibromoethane (EDB) | ND | | 8.4 | 0.79 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 4.2 | 1.6 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2-Dichlorobenzene | ND | | 4.2 | 1.4 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,3-Dichlorobenzene | ND | | 4.2 | 1.2 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,4-Dichlorobenzene | ND | | 4.2 | 1.6 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Dichlorodifluoromethane | 21 | | 4.2 | 1.5 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,1-Dichloroethane | 3.7 | | 3.2 | 0.76 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2-Dichloroethane | ND | | 8.4 | 0.92 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,1-Dichloroethene | 22 | | 8.4 | 1.4 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| cis-1,2-Dichloroethene | 2.7 | J | 4.2 | 0.93 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| trans-1,2-Dichloroethene | ND | | 4.2 | 1.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2-Dichloropropane | ND | | 4.2 | 2.5 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| cis-1,3-Dichloropropene | ND | | 4.2 | 1.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| trans-1,3-Dichloropropene | ND | | 4.2 | 0.92 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Ethylbenzene | ND | | 4.2 | 0.66 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 4-Ethyltoluene | ND | | 4.2 | 2.0 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Hexachlorobutadiene | ND | | 21 | 4.5 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 2-Hexanone | ND | | 4.2 | 0.91 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 4.2 | 1.4 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Methylene Chloride | ND | | 4.2 | 0.76 | ppb v/v | | | 11/05/15 02:11 | 10.5 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098330-001/MWL-SV03-400 (port 5)

Lab Sample ID: 320-15492-16

Date Collected: 10/08/15 10:10

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Styrene | ND | | 4.2 | 0.62 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,1,2,2-Tetrachloroethane | ND | | 4.2 | 0.72 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Tetrachloroethene | 450 | | 4.2 | 0.54 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Toluene | 1.7 J | | 4.2 | 0.54 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 85 | | 4.2 | 1.7 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2,4-Trichlorobenzene | ND | | 21 | 4.5 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,1,1-Trichloroethane | 1.9 J | | 3.2 | 0.68 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,1,2-Trichloroethane | ND | | 4.2 | 0.70 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Trichloroethene | 350 | | 4.2 | 1.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Trichlorofluoromethane | 16 | | 4.2 | 2.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,2,4-Trimethylbenzene | ND | | 8.4 | 1.7 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| 1,3,5-Trimethylbenzene | ND | | 4.2 | 1.3 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Vinyl acetate | ND | | 8.4 | 1.5 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| Vinyl chloride | ND | | 4.2 | 1.3 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| m,p-Xylene | ND | | 8.4 | 1.1 | ppb v/v | | | 11/05/15 02:11 | 10.5 |
| o-Xylene | ND | | 4.2 | 0.57 | ppb v/v | | | 11/05/15 02:11 | 10.5 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 90 | | 70 - 130 | | 11/05/15 02:11 | 10.5 |
| 1,2-Dichloroethane-d4 (Surr) | 117 | | 70 - 130 | | 11/05/15 02:11 | 10.5 |
| Toluene-d8 (Surr) | 98 | | 70 - 130 | | 11/05/15 02:11 | 10.5 |

Client Sample ID: 098331-001/MWL-SV-FB4

Lab Sample ID: 320-15492-17

Date Collected: 10/08/15 10:35

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | | 5.0 | 0.18 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 11/05/15 03:09 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098331-001/MWL-SV-FB4

Lab Sample ID: 320-15492-17

Date Collected: 10/08/15 10:35

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------------|-----------|------|-------|---------|---|----------|----------------|---------|
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 11/05/15 03:09 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 11/05/15 03:09 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 11/05/15 03:09 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/05/15 03:09 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Methylene Chloride | ND | | 0.40 | 0.072 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Tetrachloroethene | 0.054 | J | 0.40 | 0.051 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Toluene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 11/05/15 03:09 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 11/05/15 03:09 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 11/05/15 03:09 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 11/05/15 03:09 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 11/05/15 03:09 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 96 | | 70 - 130 | | 11/05/15 03:09 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 119 | | 70 - 130 | | 11/05/15 03:09 | 1 |
| Toluene-d8 (Surr) | 93 | | 70 - 130 | | 11/05/15 03:09 | 1 |

Client Sample ID: 098332-001/MWL-SV04-50 (port 1)

Lab Sample ID: 320-15492-18

Date Collected: 10/08/15 10:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|-------------|-----------|------|------|---------|---|----------|----------------|---------|
| Acetone | 4.6 | J | 15 | 0.52 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Benzene | 0.65 | J | 1.2 | 0.23 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Benzyl chloride | ND | | 2.3 | 0.47 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Bromodichloromethane | ND | | 0.87 | 0.19 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Bromoform | ND | | 1.2 | 0.20 | ppb v/v | | | 11/05/15 04:01 | 2.9 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098332-001/MWL-SV04-50 (port 1)

Lab Sample ID: 320-15492-18

Date Collected: 10/08/15 10:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|---------------|-----------|------|------|---------|---|----------|----------------|---------|
| Bromomethane | ND | | 2.3 | 0.97 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 2-Butanone (MEK) | ND | | 2.3 | 0.58 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Carbon disulfide | ND | | 2.3 | 0.23 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Carbon tetrachloride | ND | | 2.3 | 0.19 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Chlorobenzene | ND | | 0.87 | 0.19 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Chloroethane | ND | | 2.3 | 0.89 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Chloroform | 1.9 | | 0.87 | 0.28 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Chloromethane | ND | | 2.3 | 0.57 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Dibromochloromethane | ND | | 1.2 | 0.23 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2-Dibromoethane (EDB) | ND | | 2.3 | 0.22 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.2 | 0.45 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2-Dichlorobenzene | ND | | 1.2 | 0.38 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,3-Dichlorobenzene | ND | | 1.2 | 0.32 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,4-Dichlorobenzene | ND | | 1.2 | 0.43 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Dichlorodifluoromethane | 20 | | 1.2 | 0.42 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,1-Dichloroethane | 1.3 | | 0.87 | 0.21 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2-Dichloroethane | ND | | 2.3 | 0.26 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,1-Dichloroethene | 6.4 | | 2.3 | 0.37 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| cis-1,2-Dichloroethene | 0.47 J | | 1.2 | 0.26 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| trans-1,2-Dichloroethene | ND | | 1.2 | 0.29 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2-Dichloropropane | ND | | 1.2 | 0.70 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| cis-1,3-Dichloropropene | ND | | 1.2 | 0.30 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| trans-1,3-Dichloropropene | ND | | 1.2 | 0.26 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Ethylbenzene | ND | | 1.2 | 0.18 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 4-Ethyltoluene | ND | | 1.2 | 0.54 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Hexachlorobutadiene | ND | | 5.8 | 1.3 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 2-Hexanone | ND | | 1.2 | 0.25 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.2 | 0.39 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Methylene Chloride | ND | | 1.2 | 0.21 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Styrene | ND | | 1.2 | 0.17 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.2 | 0.20 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Tetrachloroethene | 74 | | 1.2 | 0.15 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Toluene | ND | | 1.2 | 0.15 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 72 | | 1.2 | 0.47 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2,4-Trichlorobenzene | ND | | 5.8 | 1.3 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,1,1-Trichloroethane | 7.0 | | 0.87 | 0.19 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,1,2-Trichloroethane | ND | | 1.2 | 0.19 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Trichloroethene | 66 | | 1.2 | 0.30 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Trichlorofluoromethane | 28 | | 1.2 | 0.57 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,2,4-Trimethylbenzene | ND | | 2.3 | 0.47 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| 1,3,5-Trimethylbenzene | ND | | 1.2 | 0.36 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Vinyl acetate | ND | | 2.3 | 0.42 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| Vinyl chloride | ND | | 1.2 | 0.35 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| m,p-Xylene | ND | | 2.3 | 0.29 | ppb v/v | | | 11/05/15 04:01 | 2.9 |
| o-Xylene | ND | | 1.2 | 0.16 | ppb v/v | | | 11/05/15 04:01 | 2.9 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 89 | | 70 - 130 | | 11/05/15 04:01 | 2.9 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098332-001/MWL-SV04-50 (port 1)

Lab Sample ID: 320-15492-18

Date Collected: 10/08/15 10:40

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 120 | | 70 - 130 | | 11/05/15 04:01 | 2.9 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | 11/05/15 04:01 | 2.9 |

Client Sample ID: 098333-001/MWL-SV04-100 (port 2)

Lab Sample ID: 320-15492-19

Date Collected: 10/08/15 10:44

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.6 | J | 18 | 0.64 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Benzene | 0.42 | J | 1.4 | 0.29 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Benzyl chloride | ND | | 2.9 | 0.59 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Bromodichloromethane | ND | | 1.1 | 0.24 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Bromoform | ND | | 1.4 | 0.25 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Bromomethane | ND | | 2.9 | 1.2 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 2-Butanone (MEK) | ND | | 2.9 | 0.72 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Carbon disulfide | ND | | 2.9 | 0.28 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Carbon tetrachloride | 0.31 | J | 2.9 | 0.23 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Chlorobenzene | ND | | 1.1 | 0.23 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Chloroethane | ND | | 2.9 | 1.1 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Chloroform | 1.9 | | 1.1 | 0.34 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Chloromethane | ND | | 2.9 | 0.71 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Dibromochloromethane | ND | | 1.4 | 0.29 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2-Dibromoethane (EDB) | ND | | 2.9 | 0.27 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.4 | 0.56 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2-Dichlorobenzene | ND | | 1.4 | 0.47 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,3-Dichlorobenzene | ND | | 1.4 | 0.40 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,4-Dichlorobenzene | ND | | 1.4 | 0.54 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Dichlorodifluoromethane | 35 | | 1.4 | 0.52 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,1-Dichloroethane | 3.1 | | 1.1 | 0.26 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2-Dichloroethane | ND | | 2.9 | 0.32 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,1-Dichloroethene | 17 | | 2.9 | 0.47 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| cis-1,2-Dichloroethene | 1.5 | | 1.4 | 0.32 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| trans-1,2-Dichloroethene | ND | | 1.4 | 0.36 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2-Dichloropropane | ND | | 1.4 | 0.87 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| cis-1,3-Dichloropropene | ND | | 1.4 | 0.38 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| trans-1,3-Dichloropropene | ND | | 1.4 | 0.32 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Ethylbenzene | ND | | 1.4 | 0.23 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 4-Ethyltoluene | ND | | 1.4 | 0.68 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Hexachlorobutadiene | ND | | 7.2 | 1.6 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 2-Hexanone | ND | | 1.4 | 0.31 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.4 | 0.49 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Methylene Chloride | 0.72 | J | 1.4 | 0.26 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Styrene | ND | | 1.4 | 0.21 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.4 | 0.25 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Tetrachloroethene | 120 | | 1.4 | 0.18 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Toluene | 0.21 | J | 1.4 | 0.18 | ppb v/v | | | 11/05/15 04:53 | 3.62 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098333-001/MWL-SV04-100 (port 2)

Lab Sample ID: 320-15492-19

Date Collected: 10/08/15 10:44

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 110 | | 1.4 | 0.59 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2,4-Trichlorobenzene | ND | | 7.2 | 1.6 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,1,1-Trichloroethane | 5.4 | | 1.1 | 0.24 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,1,2-Trichloroethane | ND | | 1.4 | 0.24 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Trichloroethene | 130 | | 1.4 | 0.38 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Trichlorofluoromethane | 37 | | 1.4 | 0.71 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,2,4-Trimethylbenzene | ND | | 2.9 | 0.59 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| 1,3,5-Trimethylbenzene | ND | | 1.4 | 0.45 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Vinyl acetate | ND | | 2.9 | 0.52 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| Vinyl chloride | ND | | 1.4 | 0.43 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| m,p-Xylene | ND | | 2.9 | 0.36 | ppb v/v | | | 11/05/15 04:53 | 3.62 |
| o-Xylene | ND | | 1.4 | 0.20 | ppb v/v | | | 11/05/15 04:53 | 3.62 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 83 | | 70 - 130 | | 11/05/15 04:53 | 3.62 |
| 1,2-Dichloroethane-d4 (Surr) | 117 | | 70 - 130 | | 11/05/15 04:53 | 3.62 |
| Toluene-d8 (Surr) | 101 | | 70 - 130 | | 11/05/15 04:53 | 3.62 |

Client Sample ID: 098334-001/MWL-SV04-200 (port 3)

Lab Sample ID: 320-15492-20

Date Collected: 10/08/15 10:48

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 4.4 | J | 24 | 0.86 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Benzene | ND | | 1.9 | 0.38 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Benzyl chloride | ND | | 3.9 | 0.79 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Bromodichloromethane | ND | | 1.5 | 0.32 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Bromoform | ND | | 1.9 | 0.34 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Bromomethane | ND | | 3.9 | 1.6 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 2-Butanone (MEK) | ND | | 3.9 | 0.97 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Carbon disulfide | ND | | 3.9 | 0.38 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Carbon tetrachloride | 0.48 | J | 3.9 | 0.31 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Chlorobenzene | ND | | 1.5 | 0.31 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Chloroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Chloroform | 1.4 | J | 1.5 | 0.46 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Chloromethane | ND | | 3.9 | 0.96 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Dibromochloromethane | ND | | 1.9 | 0.38 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2-Dibromoethane (EDB) | ND | | 3.9 | 0.36 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.9 | 0.75 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2-Dichlorobenzene | ND | | 1.9 | 0.63 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,3-Dichlorobenzene | ND | | 1.9 | 0.53 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,4-Dichlorobenzene | ND | | 1.9 | 0.72 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Dichlorodifluoromethane | 49 | | 1.9 | 0.70 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,1-Dichloroethane | 4.9 | | 1.5 | 0.35 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2-Dichloroethane | ND | | 3.9 | 0.43 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,1-Dichloroethene | 31 | | 3.9 | 0.63 | ppb v/v | | | 11/05/15 05:44 | 4.85 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098334-001/MWL-SV04-200 (port 3)

Lab Sample ID: 320-15492-20

Date Collected: 10/08/15 10:48

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|---------------|-----------|----------|------|---------|---|----------|----------------|---------|
| cis-1,2-Dichloroethene | 2.7 | | 1.9 | 0.43 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| trans-1,2-Dichloroethene | ND | | 1.9 | 0.49 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2-Dichloropropane | ND | | 1.9 | 1.2 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| cis-1,3-Dichloropropene | ND | | 1.9 | 0.50 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| trans-1,3-Dichloropropene | ND | | 1.9 | 0.43 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Ethylbenzene | ND | | 1.9 | 0.31 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 4-Ethyltoluene | ND | | 1.9 | 0.91 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Hexachlorobutadiene | ND | | 9.7 | 2.1 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 2-Hexanone | ND | | 1.9 | 0.42 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.9 | 0.65 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Methylene Chloride | 1.9 | | 1.9 | 0.35 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Styrene | ND | | 1.9 | 0.29 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.9 | 0.33 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Tetrachloroethene | 150 | | 1.9 | 0.25 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Toluene | 0.62 J | | 1.9 | 0.25 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 150 | | 1.9 | 0.79 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2,4-Trichlorobenzene | ND | | 9.7 | 2.1 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,1,1-Trichloroethane | 2.2 | | 1.5 | 0.32 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,1,2-Trichloroethane | ND | | 1.9 | 0.32 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Trichloroethene | 200 | | 1.9 | 0.51 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Trichlorofluoromethane | 33 | | 1.9 | 0.95 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,2,4-Trimethylbenzene | ND | | 3.9 | 0.79 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| 1,3,5-Trimethylbenzene | ND | | 1.9 | 0.61 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Vinyl acetate | ND | | 3.9 | 0.70 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Vinyl chloride | ND | | 1.9 | 0.58 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| m,p-Xylene | ND | | 3.9 | 0.49 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| o-Xylene | ND | | 1.9 | 0.26 | ppb v/v | | | 11/05/15 05:44 | 4.85 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 86 | | 70 - 130 | | | | | 11/05/15 05:44 | 4.85 |
| 1,2-Dichloroethane-d4 (Surr) | 118 | | 70 - 130 | | | | | 11/05/15 05:44 | 4.85 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | | | | 11/05/15 05:44 | 4.85 |

Client Sample ID: 098335-001/MWL-SV04-300 (port 4)

Lab Sample ID: 320-15492-21

Date Collected: 10/08/15 10:52

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|---------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 6.1 J | | 18 | 0.64 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Benzene | 0.32 J | | 1.4 | 0.28 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Benzyl chloride | ND | | 2.9 | 0.59 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Bromodichloromethane | ND | | 1.1 | 0.24 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Bromoform | ND | | 1.4 | 0.25 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Bromomethane | ND | | 2.9 | 1.2 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 2-Butanone (MEK) | ND | | 2.9 | 0.72 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Carbon disulfide | ND | | 2.9 | 0.28 | ppb v/v | | | 11/05/15 07:12 | 3.6 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098335-001/MWL-SV04-300 (port 4)

Lab Sample ID: 320-15492-21

Date Collected: 10/08/15 10:52

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Carbon tetrachloride | 0.25 | J | 2.9 | 0.23 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Chlorobenzene | ND | | 1.1 | 0.23 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Chloroethane | ND | | 2.9 | 1.1 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Chloroform | 0.55 | J | 1.1 | 0.34 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Chloromethane | ND | | 2.9 | 0.71 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Dibromochloromethane | ND | | 1.4 | 0.28 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2-Dibromoethane (EDB) | ND | | 2.9 | 0.27 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.4 | 0.56 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2-Dichlorobenzene | ND | | 1.4 | 0.47 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,3-Dichlorobenzene | ND | | 1.4 | 0.40 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,4-Dichlorobenzene | ND | | 1.4 | 0.54 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Dichlorodifluoromethane | 22 | | 1.4 | 0.52 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,1-Dichloroethane | 1.2 | | 1.1 | 0.26 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2-Dichloroethane | ND | | 2.9 | 0.32 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,1-Dichloroethene | 12 | | 2.9 | 0.46 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| cis-1,2-Dichloroethene | 0.73 | J | 1.4 | 0.32 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| trans-1,2-Dichloroethene | ND | | 1.4 | 0.36 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2-Dichloropropane | ND | | 1.4 | 0.86 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| cis-1,3-Dichloropropene | ND | | 1.4 | 0.37 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| trans-1,3-Dichloropropene | ND | | 1.4 | 0.32 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Ethylbenzene | ND | | 1.4 | 0.23 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 4-Ethyltoluene | ND | | 1.4 | 0.67 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Hexachlorobutadiene | ND | | 7.2 | 1.6 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 2-Hexanone | ND | | 1.4 | 0.31 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.4 | 0.49 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Methylene Chloride | 0.44 | J | 1.4 | 0.26 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Styrene | ND | | 1.4 | 0.21 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.4 | 0.25 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Tetrachloroethene | 120 | | 1.4 | 0.18 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Toluene | 0.50 | J | 1.4 | 0.18 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 72 | | 1.4 | 0.59 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2,4-Trichlorobenzene | ND | | 7.2 | 1.6 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,1,1-Trichloroethane | 1.1 | | 1.1 | 0.23 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,1,2-Trichloroethane | ND | | 1.4 | 0.24 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Trichloroethene | 93 | | 1.4 | 0.38 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Trichlorofluoromethane | 15 | | 1.4 | 0.71 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,2,4-Trimethylbenzene | ND | | 2.9 | 0.58 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| 1,3,5-Trimethylbenzene | ND | | 1.4 | 0.45 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Vinyl acetate | ND | | 2.9 | 0.52 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| Vinyl chloride | ND | | 1.4 | 0.43 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| m,p-Xylene | ND | | 2.9 | 0.36 | ppb v/v | | | 11/05/15 07:12 | 3.6 |
| o-Xylene | ND | | 1.4 | 0.19 | ppb v/v | | | 11/05/15 07:12 | 3.6 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 87 | | 70 - 130 | | 11/05/15 07:12 | 3.6 |
| 1,2-Dichloroethane-d4 (Surr) | 114 | | 70 - 130 | | 11/05/15 07:12 | 3.6 |
| Toluene-d8 (Surr) | 101 | | 70 - 130 | | 11/05/15 07:12 | 3.6 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098336-001/MWL-SV04-400 (port 5)

Lab Sample ID: 320-15492-22

Date Collected: 10/08/15 11:00

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 5.0 | J | 22 | 0.77 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Benzene | 0.85 | J | 1.7 | 0.34 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Benzyl chloride | ND | | 3.5 | 0.71 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Bromodichloromethane | ND | | 1.3 | 0.29 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Bromoform | ND | | 1.7 | 0.30 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Bromomethane | ND | | 3.5 | 1.5 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 2-Butanone (MEK) | ND | | 3.5 | 0.86 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Carbon disulfide | ND | | 3.5 | 0.34 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Carbon tetrachloride | ND | | 3.5 | 0.28 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Chlorobenzene | ND | | 1.3 | 0.28 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Chloroethane | ND | | 3.5 | 1.3 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Chloroform | 0.55 | J | 1.3 | 0.41 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Chloromethane | 1.1 | J | 3.5 | 0.85 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Dibromochloromethane | ND | | 1.7 | 0.34 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2-Dibromoethane (EDB) | ND | | 3.5 | 0.32 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.7 | 0.67 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2-Dichlorobenzene | ND | | 1.7 | 0.56 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,3-Dichlorobenzene | ND | | 1.7 | 0.48 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,4-Dichlorobenzene | ND | | 1.7 | 0.65 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Dichlorodifluoromethane | 18 | | 1.7 | 0.63 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,1-Dichloroethane | 1.2 | J | 1.3 | 0.31 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2-Dichloroethane | ND | | 3.5 | 0.38 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,1-Dichloroethene | 9.4 | | 3.5 | 0.56 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| cis-1,2-Dichloroethene | 0.70 | J | 1.7 | 0.39 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| trans-1,2-Dichloroethene | ND | | 1.7 | 0.43 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2-Dichloropropane | ND | | 1.7 | 1.0 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| cis-1,3-Dichloropropene | ND | | 1.7 | 0.45 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| trans-1,3-Dichloropropene | ND | | 1.7 | 0.38 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Ethylbenzene | ND | | 1.7 | 0.27 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 4-Ethyltoluene | ND | | 1.7 | 0.81 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Hexachlorobutadiene | ND | | 8.7 | 1.9 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 2-Hexanone | ND | | 1.7 | 0.38 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.7 | 0.58 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Methylene Chloride | 0.42 | J | 1.7 | 0.31 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Styrene | ND | | 1.7 | 0.26 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.7 | 0.30 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Tetrachloroethene | 140 | | 1.7 | 0.22 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Toluene | 0.42 | J | 1.7 | 0.22 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 65 | | 1.7 | 0.71 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2,4-Trichlorobenzene | ND | | 8.7 | 1.9 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,1,1-Trichloroethane | 1.1 | J | 1.3 | 0.28 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,1,2-Trichloroethane | ND | | 1.7 | 0.29 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Trichloroethene | 97 | | 1.7 | 0.45 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Trichlorofluoromethane | 13 | | 1.7 | 0.85 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,2,4-Trimethylbenzene | ND | | 3.5 | 0.70 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| 1,3,5-Trimethylbenzene | ND | | 1.7 | 0.54 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Vinyl acetate | ND | | 3.5 | 0.63 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Vinyl chloride | ND | | 1.7 | 0.52 | ppb v/v | | | 11/05/15 08:04 | 4.33 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098336-001/MWL-SV04-400 (port 5)

Lab Sample ID: 320-15492-22

Date Collected: 10/08/15 11:00

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|------|---------|---|----------|----------------|---------|
| m,p-Xylene | ND | | 3.5 | 0.43 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| o-Xylene | ND | | 1.7 | 0.23 | ppb v/v | | | 11/05/15 08:04 | 4.33 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 89 | | 70 - 130 | | | | | 11/05/15 08:04 | 4.33 |
| 1,2-Dichloroethane-d4 (Surr) | 114 | | 70 - 130 | | | | | 11/05/15 08:04 | 4.33 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | | | | 11/05/15 08:04 | 4.33 |

Client Sample ID: 098337-001/MWL-SV-FB5

Lab Sample ID: 320-15492-23

Date Collected: 10/08/15 11:24

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Acetone | ND | | 5.0 | 0.18 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Benzene | ND | | 0.40 | 0.079 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Benzyl chloride | ND | | 0.80 | 0.16 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Bromodichloromethane | ND | | 0.30 | 0.066 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Bromoform | ND | | 0.40 | 0.070 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Bromomethane | ND | | 0.80 | 0.34 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 2-Butanone (MEK) | ND | | 0.80 | 0.20 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Carbon disulfide | ND | | 0.80 | 0.078 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Carbon tetrachloride | ND | | 0.80 | 0.064 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Chlorobenzene | ND | | 0.30 | 0.064 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Chloroethane | ND | | 0.80 | 0.31 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Chloroform | ND | | 0.30 | 0.095 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Chloromethane | ND | | 0.80 | 0.20 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Dibromochloromethane | ND | | 0.40 | 0.079 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 0.80 | 0.075 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2-Dichlorobenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,3-Dichlorobenzene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,4-Dichlorobenzene | ND | | 0.40 | 0.15 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Dichlorodifluoromethane | ND | | 0.40 | 0.15 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,1-Dichloroethane | ND | | 0.30 | 0.072 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2-Dichloroethane | ND | | 0.80 | 0.088 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,1-Dichloroethene | ND | | 0.80 | 0.13 | ppb v/v | | | 11/05/15 09:01 | 1 |
| cis-1,2-Dichloroethene | ND | | 0.40 | 0.089 | ppb v/v | | | 11/05/15 09:01 | 1 |
| trans-1,2-Dichloroethene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2-Dichloropropane | ND | | 0.40 | 0.24 | ppb v/v | | | 11/05/15 09:01 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.40 | 0.10 | ppb v/v | | | 11/05/15 09:01 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.40 | 0.088 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Ethylbenzene | ND | | 0.40 | 0.063 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 4-Ethyltoluene | ND | | 0.40 | 0.19 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Hexachlorobutadiene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 2-Hexanone | ND | | 0.40 | 0.087 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 0.40 | 0.14 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Methylene Chloride | ND | | 0.40 | 0.072 | ppb v/v | | | 11/05/15 09:01 | 1 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098337-001/MWL-SV-FB5

Lab Sample ID: 320-15492-23

Date Collected: 10/08/15 11:24

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------------------------------------|--------|-----------|------|-------|---------|---|----------|----------------|---------|
| Styrene | ND | | 0.40 | 0.059 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 0.40 | 0.069 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Tetrachloroethene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Toluene | ND | | 0.40 | 0.051 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 0.40 | 0.16 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 2.0 | 0.43 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,1,1-Trichloroethane | ND | | 0.30 | 0.065 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,1,2-Trichloroethane | ND | | 0.40 | 0.067 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Trichloroethene | ND | | 0.40 | 0.11 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Trichlorofluoromethane | ND | | 0.40 | 0.20 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 0.80 | 0.16 | ppb v/v | | | 11/05/15 09:01 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 0.40 | 0.13 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Vinyl acetate | ND | | 0.80 | 0.15 | ppb v/v | | | 11/05/15 09:01 | 1 |
| Vinyl chloride | ND | | 0.40 | 0.12 | ppb v/v | | | 11/05/15 09:01 | 1 |
| m,p-Xylene | ND | | 0.80 | 0.10 | ppb v/v | | | 11/05/15 09:01 | 1 |
| o-Xylene | ND | | 0.40 | 0.054 | ppb v/v | | | 11/05/15 09:01 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 84 | | 70 - 130 | | 11/05/15 09:01 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 118 | | 70 - 130 | | 11/05/15 09:01 | 1 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | 11/05/15 09:01 | 1 |

Client Sample ID: 098338-001/MWL-SV05-50 (port 1)

Lab Sample ID: 320-15492-24

Date Collected: 10/08/15 11:28

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 1.6 | J | 21 | 0.75 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Benzene | ND | | 1.7 | 0.33 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Benzyl chloride | ND | | 3.4 | 0.68 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Bromodichloromethane | ND | | 1.3 | 0.28 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Bromoform | ND | | 1.7 | 0.29 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Bromomethane | ND | | 3.4 | 1.4 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 2-Butanone (MEK) | ND | | 3.4 | 0.84 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Carbon disulfide | ND | | 3.4 | 0.33 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Carbon tetrachloride | ND | | 3.4 | 0.27 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Chlorobenzene | ND | | 1.3 | 0.27 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Chloroethane | ND | | 3.4 | 1.3 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Chloroform | 1.2 | J | 1.3 | 0.40 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Chloromethane | ND | | 3.4 | 0.83 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Dibromochloromethane | ND | | 1.7 | 0.33 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2-Dibromoethane (EDB) | ND | | 3.4 | 0.32 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.7 | 0.65 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2-Dichlorobenzene | ND | | 1.7 | 0.55 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,3-Dichlorobenzene | ND | * | 1.7 | 0.46 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,4-Dichlorobenzene | ND | * | 1.7 | 0.63 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Dichlorodifluoromethane | 40 | | 1.7 | 0.61 | ppb v/v | | | 11/05/15 20:06 | 4.2 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098338-001/MWL-SV05-50 (port 1)

Lab Sample ID: 320-15492-24

Date Collected: 10/08/15 11:28

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| 1,1-Dichloroethane | 1.6 | | 1.3 | 0.30 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2-Dichloroethane | ND | | 3.4 | 0.37 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,1-Dichloroethene | 9.6 | | 3.4 | 0.54 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| cis-1,2-Dichloroethene | 0.51 | J | 1.7 | 0.37 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| trans-1,2-Dichloroethene | ND | | 1.7 | 0.42 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2-Dichloropropane | ND | | 1.7 | 1.0 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| cis-1,3-Dichloropropene | ND | | 1.7 | 0.44 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| trans-1,3-Dichloropropene | ND | | 1.7 | 0.37 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Ethylbenzene | ND | | 1.7 | 0.26 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 4-Ethyltoluene | ND | | 1.7 | 0.79 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Hexachlorobutadiene | ND | | 8.4 | 1.8 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 2-Hexanone | ND | | 1.7 | 0.37 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.7 | 0.57 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Methylene Chloride | 0.35 | J | 1.7 | 0.30 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Styrene | ND | | 1.7 | 0.25 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.7 | 0.29 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Tetrachloroethene | 40 | | 1.7 | 0.21 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Toluene | ND | | 1.7 | 0.21 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 43 | | 1.7 | 0.68 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2,4-Trichlorobenzene | ND | | 8.4 | 1.8 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,1,1-Trichloroethane | 11 | | 1.3 | 0.27 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,1,2-Trichloroethane | ND | | 1.7 | 0.28 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Trichloroethene | 52 | | 1.7 | 0.44 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Trichlorofluoromethane | 100 | | 1.7 | 0.82 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,2,4-Trimethylbenzene | ND | | 3.4 | 0.68 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| 1,3,5-Trimethylbenzene | ND | | 1.7 | 0.53 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Vinyl acetate | 3.2 | J | 3.4 | 0.61 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| Vinyl chloride | ND | | 1.7 | 0.50 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| m,p-Xylene | ND | | 3.4 | 0.42 | ppb v/v | | | 11/05/15 20:06 | 4.2 |
| o-Xylene | ND | | 1.7 | 0.23 | ppb v/v | | | 11/05/15 20:06 | 4.2 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 92 | | 70 - 130 | | 11/05/15 20:06 | 4.2 |
| 1,2-Dichloroethane-d4 (Surr) | 103 | | 70 - 130 | | 11/05/15 20:06 | 4.2 |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | 11/05/15 20:06 | 4.2 |

Client Sample ID: 098339-001/MWL-SV05-100 (port 2)

Lab Sample ID: 320-15492-25

Date Collected: 10/08/15 11:32

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 3.1 | J | 24 | 0.86 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Benzene | ND | | 1.9 | 0.38 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Benzyl chloride | ND | | 3.9 | 0.79 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Bromodichloromethane | ND | | 1.4 | 0.32 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Bromoform | ND | | 1.9 | 0.34 | ppb v/v | | | 11/05/15 20:58 | 4.83 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098339-001/MWL-SV05-100 (port 2)

Lab Sample ID: 320-15492-25

Date Collected: 10/08/15 11:32

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Bromomethane | ND | | 3.9 | 1.6 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 2-Butanone (MEK) | ND | | 3.9 | 0.96 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Carbon disulfide | ND | | 3.9 | 0.38 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Carbon tetrachloride | 0.38 | J | 3.9 | 0.31 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Chlorobenzene | ND | | 1.4 | 0.31 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Chloroethane | ND | | 3.9 | 1.5 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Chloroform | 2.0 | | 1.4 | 0.46 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Chloromethane | ND | | 3.9 | 0.95 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Dibromochloromethane | ND | | 1.9 | 0.38 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2-Dibromoethane (EDB) | ND | | 3.9 | 0.36 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.9 | 0.75 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2-Dichlorobenzene | ND | | 1.9 | 0.63 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,3-Dichlorobenzene | ND | * | 1.9 | 0.53 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,4-Dichlorobenzene | ND | * | 1.9 | 0.72 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Dichlorodifluoromethane | 66 | | 1.9 | 0.70 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,1-Dichloroethane | 3.3 | | 1.4 | 0.35 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2-Dichloroethane | ND | | 3.9 | 0.43 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,1-Dichloroethene | 22 | | 3.9 | 0.62 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| cis-1,2-Dichloroethene | 1.4 | J | 1.9 | 0.43 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| trans-1,2-Dichloroethene | ND | | 1.9 | 0.48 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2-Dichloropropane | ND | | 1.9 | 1.2 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| cis-1,3-Dichloropropene | ND | | 1.9 | 0.50 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| trans-1,3-Dichloropropene | ND | | 1.9 | 0.43 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Ethylbenzene | ND | | 1.9 | 0.30 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 4-Ethyltoluene | ND | | 1.9 | 0.90 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Hexachlorobutadiene | ND | | 9.7 | 2.1 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 2-Hexanone | ND | | 1.9 | 0.42 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.9 | 0.65 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Methylene Chloride | 1.0 | J | 1.9 | 0.35 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Styrene | ND | | 1.9 | 0.28 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.9 | 0.33 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Tetrachloroethene | 77 | | 1.9 | 0.25 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Toluene | ND | | 1.9 | 0.25 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 90 | | 1.9 | 0.79 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2,4-Trichlorobenzene | ND | | 9.7 | 2.1 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,1,1-Trichloroethane | 12 | | 1.4 | 0.31 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,1,2-Trichloroethane | ND | | 1.9 | 0.32 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Trichloroethene | 120 | | 1.9 | 0.51 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Trichlorofluoromethane | 130 | | 1.9 | 0.95 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,2,4-Trimethylbenzene | ND | | 3.9 | 0.78 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| 1,3,5-Trimethylbenzene | ND | | 1.9 | 0.60 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Vinyl acetate | 4.3 | | 3.9 | 0.70 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| Vinyl chloride | ND | | 1.9 | 0.58 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| m,p-Xylene | ND | | 3.9 | 0.48 | ppb v/v | | | 11/05/15 20:58 | 4.83 |
| o-Xylene | ND | | 1.9 | 0.26 | ppb v/v | | | 11/05/15 20:58 | 4.83 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|-----------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 89 | | 70 - 130 | | 11/05/15 20:58 | 4.83 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098339-001/MWL-SV05-100 (port 2)

Lab Sample ID: 320-15492-25

Date Collected: 10/08/15 11:32

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 1,2-Dichloroethane-d4 (Surr) | 105 | | 70 - 130 | | 11/05/15 20:58 | 4.83 |
| Toluene-d8 (Surr) | 102 | | 70 - 130 | | 11/05/15 20:58 | 4.83 |

Client Sample ID: 098340-001/MWL-SV05-200 (port 3)

Lab Sample ID: 320-15492-26

Date Collected: 10/08/15 11:35

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 2.8 | J | 36 | 1.3 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Benzene | ND | | 2.9 | 0.57 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Benzyl chloride | ND | | 5.8 | 1.2 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Bromodichloromethane | ND | | 2.2 | 0.47 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Bromoform | ND | | 2.9 | 0.50 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Bromomethane | ND | | 5.8 | 2.4 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 2-Butanone (MEK) | ND | | 5.8 | 1.4 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Carbon disulfide | ND | | 5.8 | 0.56 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Carbon tetrachloride | 1.0 | J | 5.8 | 0.46 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Chlorobenzene | ND | | 2.2 | 0.46 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Chloroethane | ND | | 5.8 | 2.2 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Chloroform | 2.0 | J | 2.2 | 0.68 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Chloromethane | ND | | 5.8 | 1.4 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Dibromochloromethane | ND | | 2.9 | 0.57 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2-Dibromoethane (EDB) | ND | | 5.8 | 0.54 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.9 | 1.1 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2-Dichlorobenzene | ND | | 2.9 | 0.93 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,3-Dichlorobenzene | ND | * | 2.9 | 0.79 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,4-Dichlorobenzene | ND | * | 2.9 | 1.1 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Dichlorodifluoromethane | 74 | | 2.9 | 1.0 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,1-Dichloroethane | 4.2 | | 2.2 | 0.52 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2-Dichloroethane | ND | | 5.8 | 0.63 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,1-Dichloroethene | 38 | | 5.8 | 0.93 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| cis-1,2-Dichloroethene | 2.5 | J | 2.9 | 0.64 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| trans-1,2-Dichloroethene | ND | | 2.9 | 0.72 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2-Dichloropropane | ND | | 2.9 | 1.7 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| cis-1,3-Dichloropropene | ND | | 2.9 | 0.75 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| trans-1,3-Dichloropropene | ND | | 2.9 | 0.63 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Ethylbenzene | ND | | 2.9 | 0.45 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 4-Ethyltoluene | ND | | 2.9 | 1.3 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Hexachlorobutadiene | ND | | 14 | 3.1 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 2-Hexanone | ND | | 2.9 | 0.63 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 2.9 | 0.97 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Methylene Chloride | 2.6 | J | 2.9 | 0.52 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Styrene | ND | | 2.9 | 0.42 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,1,2,2-Tetrachloroethane | ND | | 2.9 | 0.50 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Tetrachloroethene | 120 | | 2.9 | 0.37 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Toluene | ND | | 2.9 | 0.37 | ppb v/v | | | 11/05/15 21:48 | 7.19 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098340-001/MWL-SV05-200 (port 3)

Lab Sample ID: 320-15492-26

Date Collected: 10/08/15 11:35

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|--------------|-----------|-----|------|---------|---|----------|----------------|---------|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 130 | | 2.9 | 1.2 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2,4-Trichlorobenzene | ND | | 14 | 3.1 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,1,1-Trichloroethane | 4.0 | | 2.2 | 0.47 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,1,2-Trichloroethane | ND | | 2.9 | 0.48 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Trichloroethene | 200 | | 2.9 | 0.75 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Trichlorofluoromethane | 76 | | 2.9 | 1.4 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,2,4-Trimethylbenzene | ND | | 5.8 | 1.2 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| 1,3,5-Trimethylbenzene | ND | | 2.9 | 0.90 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Vinyl acetate | 1.2 J | | 5.8 | 1.0 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| Vinyl chloride | ND | | 2.9 | 0.86 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| m,p-Xylene | ND | | 5.8 | 0.72 | ppb v/v | | | 11/05/15 21:48 | 7.19 |
| o-Xylene | ND | | 2.9 | 0.39 | ppb v/v | | | 11/05/15 21:48 | 7.19 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 94 | | 70 - 130 | | 11/05/15 21:48 | 7.19 |
| 1,2-Dichloroethane-d4 (Surr) | 109 | | 70 - 130 | | 11/05/15 21:48 | 7.19 |
| Toluene-d8 (Surr) | 101 | | 70 - 130 | | 11/05/15 21:48 | 7.19 |

Client Sample ID: 098341-001/MWL-SV05-300 (port 4)

Lab Sample ID: 320-15492-27

Date Collected: 10/08/15 11:41

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|---------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 7.9 J | | 20 | 0.71 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Benzene | 0.37 J | | 1.6 | 0.32 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Benzyl chloride | ND | | 3.2 | 0.65 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Bromodichloromethane | ND | | 1.2 | 0.26 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Bromoform | ND | | 1.6 | 0.28 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Bromomethane | ND | | 3.2 | 1.3 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 2-Butanone (MEK) | ND | | 3.2 | 0.80 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Carbon disulfide | 0.32 J | | 3.2 | 0.31 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Carbon tetrachloride | 0.92 J | | 3.2 | 0.26 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Chlorobenzene | ND | | 1.2 | 0.26 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Chloroethane | ND | | 3.2 | 1.2 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Chloroform | 0.69 J | | 1.2 | 0.38 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Chloromethane | ND | | 3.2 | 0.79 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Dibromochloromethane | ND | | 1.6 | 0.32 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2-Dibromoethane (EDB) | ND | | 3.2 | 0.30 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.6 | 0.62 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2-Dichlorobenzene | ND | | 1.6 | 0.52 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,3-Dichlorobenzene | ND | * | 1.6 | 0.44 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,4-Dichlorobenzene | ND | * | 1.6 | 0.60 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Dichlorodifluoromethane | 40 | | 1.6 | 0.58 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,1-Dichloroethane | 1.8 | | 1.2 | 0.29 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2-Dichloroethane | ND | | 3.2 | 0.35 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,1-Dichloroethene | 26 | | 3.2 | 0.52 | ppb v/v | | | 11/05/15 22:40 | 4.01 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098341-001/MWL-SV05-300 (port 4)

Lab Sample ID: 320-15492-27

Date Collected: 10/08/15 11:41

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|----------|------|---------|---|----------|----------------|---------|
| cis-1,2-Dichloroethene | 0.75 | J | 1.6 | 0.36 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| trans-1,2-Dichloroethene | ND | | 1.6 | 0.40 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2-Dichloropropane | ND | | 1.6 | 0.96 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| cis-1,3-Dichloropropene | ND | | 1.6 | 0.42 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| trans-1,3-Dichloropropene | ND | | 1.6 | 0.35 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Ethylbenzene | ND | | 1.6 | 0.25 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 4-Ethyltoluene | ND | | 1.6 | 0.75 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Hexachlorobutadiene | ND | | 8.0 | 1.7 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 2-Hexanone | ND | | 1.6 | 0.35 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.6 | 0.54 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Methylene Chloride | 0.98 | J | 1.6 | 0.29 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Styrene | ND | | 1.6 | 0.24 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.6 | 0.28 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Tetrachloroethene | 110 | | 1.6 | 0.20 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Toluene | 0.43 | J | 1.6 | 0.20 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 97 | | 1.6 | 0.65 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2,4-Trichlorobenzene | ND | | 8.0 | 1.7 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,1,1-Trichloroethane | 2.2 | | 1.2 | 0.26 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,1,2-Trichloroethane | ND | | 1.6 | 0.27 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Trichloroethene | 120 | | 1.6 | 0.42 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Trichlorofluoromethane | 34 | | 1.6 | 0.79 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,2,4-Trimethylbenzene | ND | | 3.2 | 0.65 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| 1,3,5-Trimethylbenzene | ND | | 1.6 | 0.50 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Vinyl acetate | ND | | 3.2 | 0.58 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Vinyl chloride | ND | | 1.6 | 0.48 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| m,p-Xylene | ND | | 3.2 | 0.40 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| o-Xylene | ND | | 1.6 | 0.22 | ppb v/v | | | 11/05/15 22:40 | 4.01 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 4-Bromofluorobenzene (Surr) | 95 | | 70 - 130 | | | | | 11/05/15 22:40 | 4.01 |
| 1,2-Dichloroethane-d4 (Surr) | 112 | | 70 - 130 | | | | | 11/05/15 22:40 | 4.01 |
| Toluene-d8 (Surr) | 98 | | 70 - 130 | | | | | 11/05/15 22:40 | 4.01 |

Client Sample ID: 098342-001/MWL-SV05-400 (port 5)

Lab Sample ID: 320-15492-28

Date Collected: 10/08/15 11:48

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Acetone | 5.5 | J | 18 | 0.62 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Benzene | 0.43 | J | 1.4 | 0.28 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Benzyl chloride | ND | | 2.8 | 0.57 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Bromodichloromethane | ND | | 1.1 | 0.23 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Bromoform | ND | | 1.4 | 0.25 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Bromomethane | ND | | 2.8 | 1.2 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 2-Butanone (MEK) | ND | | 2.8 | 0.70 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Carbon disulfide | ND | | 2.8 | 0.27 | ppb v/v | | | 11/05/15 23:31 | 3.5 |

TestAmerica Sacramento

Client Sample Results

Client: Sandia National Laboratories
Project/Site: MWL GWM/SVM-616350,1,2,3,4

TestAmerica Job ID: 320-15492-1
SDG: 616350

Client Sample ID: 098342-001/MWL-SV05-400 (port 5)

Lab Sample ID: 320-15492-28

Date Collected: 10/08/15 11:48

Matrix: Air

Date Received: 10/15/15 10:30

Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--|-------------|-----------|-----|------|---------|---|----------|----------------|---------|
| Carbon tetrachloride | 0.56 | J | 2.8 | 0.22 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Chlorobenzene | ND | | 1.1 | 0.22 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Chloroethane | ND | | 2.8 | 1.1 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Chloroform | 0.77 | J | 1.1 | 0.33 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Chloromethane | 1.0 | J | 2.8 | 0.69 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Dibromochloromethane | ND | | 1.4 | 0.28 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2-Dibromoethane (EDB) | ND | | 2.8 | 0.26 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 1.4 | 0.54 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2-Dichlorobenzene | ND | | 1.4 | 0.46 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,3-Dichlorobenzene | ND | * | 1.4 | 0.39 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,4-Dichlorobenzene | ND | * | 1.4 | 0.52 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Dichlorodifluoromethane | 20 | | 1.4 | 0.51 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,1-Dichloroethane | 1.6 | | 1.1 | 0.25 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2-Dichloroethane | ND | | 2.8 | 0.31 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,1-Dichloroethene | 17 | | 2.8 | 0.45 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| cis-1,2-Dichloroethene | ND | | 1.4 | 0.31 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| trans-1,2-Dichloroethene | ND | | 1.4 | 0.35 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2-Dichloropropane | ND | | 1.4 | 0.84 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| cis-1,3-Dichloropropene | ND | | 1.4 | 0.36 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| trans-1,3-Dichloropropene | ND | | 1.4 | 0.31 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Ethylbenzene | ND | | 1.4 | 0.22 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 4-Ethyltoluene | ND | | 1.4 | 0.65 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Hexachlorobutadiene | ND | | 7.0 | 1.5 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 2-Hexanone | ND | | 1.4 | 0.30 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 1.4 | 0.47 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Methylene Chloride | 0.89 | J | 1.4 | 0.25 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Styrene | ND | | 1.4 | 0.21 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.4 | 0.24 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Tetrachloroethene | 120 | | 1.4 | 0.18 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Toluene | 5.1 | | 1.4 | 0.18 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 74 | | 1.4 | 0.57 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2,4-Trichlorobenzene | ND | | 7.0 | 1.5 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,1,1-Trichloroethane | 2.1 | | 1.1 | 0.23 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,1,2-Trichloroethane | ND | | 1.4 | 0.23 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Trichloroethene | 120 | | 1.4 | 0.37 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Trichlorofluoromethane | 34 | | 1.4 | 0.69 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,2,4-Trimethylbenzene | ND | | 2.8 | 0.57 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| 1,3,5-Trimethylbenzene | ND | | 1.4 | 0.44 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Vinyl acetate | ND | | 2.8 | 0.51 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| Vinyl chloride | ND | | 1.4 | 0.42 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| m,p-Xylene | ND | | 2.8 | 0.35 | ppb v/v | | | 11/05/15 23:31 | 3.5 |
| o-Xylene | ND | | 1.4 | 0.19 | ppb v/v | | | 11/05/15 23:31 | 3.5 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------------------|-----------|-----------|----------|----------|----------------|---------|
| 4-Bromofluorobenzene (Surr) | 90 | | 70 - 130 | | 11/05/15 23:31 | 3.5 |
| 1,2-Dichloroethane-d4 (Surr) | 120 | | 70 - 130 | | 11/05/15 23:31 | 3.5 |
| Toluene-d8 (Surr) | 99 | | 70 - 130 | | 11/05/15 23:31 | 3.5 |

TestAmerica Sacramento

ANNEX D

**Mixed Waste Landfill
Soil-Moisture Monitoring Forms**

April 2015-March 2016

Field Forms and Tables

Tailgate Safety Meeting Form

Dept: 4142 Facility: MWL Date: 4/23/15 Time: 1310

Activities: Soil moisture monitoring using CPN503DR Hydroprobe.

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when performing field work.)

Weather Conditions:

Temp: °F Wind Speed: MPH Humidity: % Wind Chill: °F

| | |
|---|--|
| <input checked="" type="checkbox"/> Wear safety boots | <input checked="" type="checkbox"/> Wear leather gloves |
| <input type="checkbox"/> Wear safety glasses | <input type="checkbox"/> Wear sun screen |
| <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager) |
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls | <input checked="" type="checkbox"/> Using safe lifting practices were discussed. |
| <input checked="" type="checkbox"/> Be aware of pinch points on winch | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat/cold stress) |
| Does anyone have any weight restrictions on lifting? Circle YES or NO. If answered YES explain. | |
| <input checked="" type="checkbox"/> Practice ALARA | <input checked="" type="checkbox"/> Notify RCT when using neutron probe |

ATTENDEES

Robert Zuck
Printed Name
Danielle Nieb
Printed Name

Printed Name

Printed Name

Printed Name

Printed Name

Robert Zuck
Signature
Danielle Nieb
Signature

Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

Tailgate Safety Meeting Form

Dept: 4142 Facility: MWL Date: 4/21/15 Time: 1232

Activities: Soil moisture monitoring using CPN503DR Hydroprobe.

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when performing field work.)

Weather Conditions:

Temp: _____ °F Wind Speed: _____ MPH Humidity: _____ % Wind Chill: _____ °F

| | |
|---|--|
| <input checked="" type="checkbox"/> Wear safety boots | <input checked="" type="checkbox"/> Wear leather gloves |
| <input type="checkbox"/> Wear safety glasses | <input type="checkbox"/> Wear sun screen |
| <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager) |
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls | <input type="checkbox"/> Using safe lifting practices were discussed. |
| <input checked="" type="checkbox"/> Be aware of pinch points on winch | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat/cold stress) |
| Does anyone have any weight restrictions on lifting? Circle YES or NO . If answered YES explain. | |
| <input checked="" type="checkbox"/> Practice ALARA | <input checked="" type="checkbox"/> Notify RCT when using neutron probe |

ATTENDEES

| | |
|---------------------------------------|---------------------------------|
| <u>Robert Eick</u> Printed Name | <u>[Signature]</u> Signature |
| <u>Danielle Nieto</u> Printed Name | <u>[Signature]</u> Signature |
| _____ Printed Name | _____ Signature |
| _____ Printed Name | _____ Signature |
| _____ Printed Name | _____ Signature |
| _____ Printed Name | _____ Signature |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

Mixed Waste Landfill Neutron Logging Data Field Form (page 1 of 2)

| Date: 4/21/15 & 4/23/15 | | | | Standard Count: 6856 / 6643 | |
|--|--------------------------------|----------------------------|---------------------------------|------------------------------------|------------------------------------|
| Start Time: 12:37 & 1316 | | | | Chi: 0.95 / 1.01 | |
| Personnel: Robert Zuck Danielle Vieto | | | | Previous Count: 6780 / 6856 | |
| | | | | Count Time: 30 seconds | |
| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Winch Counter Reading (ft) | VZ-3 Counts (E Side) 4/21/15 | VZ-2 Counts (SW Corner) 4/21/15 | VZ-1 Counts (NW Corner) 4/23/15 |
| 0.0 | 0 | 0 | 363 | 1058 | 818 |
| 0.9 | 1 | 9999 | 2145 | 2067 | 2402 |
| 1.7 | 2 | 9998 | 2611 | 2290 | 2092 |
| 2.6 | 3 | 9997 | 2600 | 2341 | 1882 |
| 3.5 | 4 | 9996 | 2209 | 2397 | 1961 |
| 4.3 | 5 | 9995 | 1871 | 2337 | 2027 |
| 5.2 | 6 | 9994 | 2084 | 1977 | 1751 |
| 6.1 | 7 | 9993 | 1635 | 1733 | 1702 |
| 6.9 | 8 | 9992 | 1743 | 1710 | 1534 |
| 7.8 | 9 | 9991 | 1832 | 1716 | 1550 |
| 8.7 | 10 | 9990 | 1785 | 1674 | 1902 |
| 9.5 | 11 | 9989 | 1973 | 1921 | 2059 |
| 10.4 | 12 | 9988 | 1662 | 1923 | 1944 |
| 11.3 | 13 | 9987 | 1842 | 1813 | 1755 |
| 12.1 | 14 | 9986 | 1842 | 1745 | 1848 |
| 13.0 | 15 | 9985 | 1884 | 1688 | 2079 |
| 13.9 | 16 | 9984 | 1829 | 1737 | 2173 |
| 14.7 | 17 | 9983 | 1558 | 1825 | 1845 |
| 15.6 | 18 | 9982 | 1720 | 1764 | 1564 |
| 16.5 | 19 | 9981 | 1769 | 2266 | 1511 |
| 17.3 | 20 | 9980 | 1377 | 2137 | 1574 |
| 18.2 | 21 | 9979 | 1727 | 1834 | 1668 |
| 19.1 | 22 | 9978 | 1862 | 1837 | 2162 |
| 19.9 | 23 | 9977 | 1519 | 2123 | 2318 |
| 20.8 | 24 | 9976 | 1444 | 1782 | 2149 |
| 21.7 | 25 | 9975 | 1467 | 1601 | 1864 |

Date: 4/21/15 | 4/21/15 | 4/23/15

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

Mixed Waste Landfill Neutron Logging Data Field Form (page 2 of 2)

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Winch Counter Reading (ft) | VZ-3 Counts (E Side) 4/21/15 | VZ-2 Counts (SW Corner) 4/21/15 | VZ-1 Counts (NW Corner) 4/23/15 |
|--|--------------------------------------|----------------------------------|------------------------------------|---------------------------------------|---------------------------------------|
| 26.0 | 30 | 9970 | 1860 | 1792 | 1789 |
| 30.3 | 35 | 9965 | 1690 | 1937 | 2087 |
| 34.6 | 40 | 9960 | 1882 | 1657 | 1776 |
| 39.0 | 45 | 9955 | 1645 | 1632 | 2203 |
| 43.3 | 50 | 9950 | 1950 | 1582 | 1765 |
| 47.6 | 55 | 9945 | 1836 | 2085 | 1770 |
| 52.0 | 60 | 9940 | 1754 | 1979 | 1937 |
| 56.3 | 65 | 9935 | 2250 | 2200 | 1952 |
| 60.6 | 70 | 9930 | 1337 | 2642 | 1736 |
| 65.0 | 75 | 9925 | 2431 | 2281 | 2194 |
| 69.3 | 80 | 9920 | 2275 | 1581 | 1969 |
| 73.6 | 85 | 9915 | 1920 | 1833 | 2217 |
| 77.9 | 90 | 9910 | 1456 | 2328 | 2044 |
| 82.3 | 95 | 9905 | 2109 | 2312 | 2164 |
| 86.6 | 100 | 9900 | 2196 | 2135 | 2737 |
| 90.9 | 105 | 9895 | 1991 | 2349 | 2360 |
| 95.3 | 110 | 9890 | 2308 | 1924 | 2021 |
| 99.6 | 115 | 9885 | 2158 | 1841 | 1951 |
| 103.9 | 120 | 9880 | 1623 | 1912 | 2015 |
| 108.3 | 125 | 9875 | 1706 | 2204 | 1578 |
| 112.6 | 130 | 9870 | 2410 | 2275 | 1925 |
| 116.9 | 135 | 9865 | 2423 | 2717 | 1694 |
| 121.2 | 140 | 9860 | 1767 | 1993 | 1468 |
| 125.6 | 145 | 9855 | 1540 | 2632 | 2471 |
| 129.9 | 150 | 9850 | 2550 | 2350 | 2082 |
| 134.2 | 155 | 9845 | 2041 | 2302 | 1726 |
| 138.6 | 160 | 9840 | 2654 | 2514 | 1866 |
| 142.9 | 165 | 9835 | 2646 | 2130 | 2159 |
| 147.2 | 170 | 9830 | 2418 | 1674 | 1610 |
| 151.6 | 175 | 9825 | 2481 | 2716 | 2984 |
| 155.9 | 180 | 9820 | 3287 | 2638 | 3012 |
| 160.2 | 185 | 9815 | 3166 | 2905 | 2285 |
| 164.5 | 190 | 9810 | 1738 | 1642 | 1963 |
| 168.9 | 195 | 9805 | 1881 | 2108 | 3378 |
| 173.2 | 200 | 9800 | 2107 | 3151 | 2686 |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

Tailgate Safety Meeting Form

Dept: 4142 Facility: MWL Date: 10/8/15 Time: 0900

Activities: Soil moisture monitoring using CPN503DR Hydroprobe.

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when performing field work.)

Weather Conditions:

Temp: _____ °F Wind Speed: _____ MPH Humidity: _____ % Wind Chill: _____ °F

| | |
|---|--|
| <input checked="" type="checkbox"/> Wear safety boots | <input checked="" type="checkbox"/> Wear leather gloves |
| <input checked="" type="checkbox"/> Wear safety glasses | <input type="checkbox"/> Wear sun screen |
| <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager) |
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls | <input checked="" type="checkbox"/> Using safe lifting practices were discussed. |
| <input checked="" type="checkbox"/> Be aware of pinch points on winch | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat/cold stress) |
| Does anyone have any weight restrictions on lifting? Circle YES or <u>NO</u> . If answered YES explain. | |
| <input checked="" type="checkbox"/> Practice ALARA | <input checked="" type="checkbox"/> Notify RCT when using neutron probe |

ATTENDEES

| | |
|---------------------------------------|---------------------------------|
| <u>Don Watenpaugh</u> Printed Name | <u>[Signature]</u> Signature |
| <u>Robert Zick</u> Printed Name | <u>[Signature]</u> Signature |
| _____ Printed Name | _____ Signature |
| _____ Printed Name | _____ Signature |
| _____ Printed Name | _____ Signature |
| _____ Printed Name | _____ Signature |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

Mixed Waste Landfill Neutron Logging Data Field Form (page 1 of 2)

| Date: 10/18/15 | | | Standard Count: 6748 | | |
|--|--------------------------------------|----------------------------------|--|---|---|
| Start Time: 0900 | | | Chi: 0.99 | | |
| Personnel: Don Watersbaugh Robert Z. Rock | | | Previous Count: 6643 | | |
| | | | Count Time: 30 seconds | | |
| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Winch Counter Reading (ft) | 10/18/15 VZ-3 Counts (E Side) 0910 - 1000 | 10/18/15 VZ-2 Counts (SW Corner) 1007 - 1050 | 10/18/15 VZ-1 Counts (NW Corner) 1100 - 1155 |
| 0.0 | 0 | 0 | 741 | 309 | 934 |
| 0.9 | 1 | 9999 | 2062 | 1500 | 2067 |
| 1.7 | 2 | 9998 | 2476 | 2026 | 2020 |
| 2.6 | 3 | 9997 | 2526 | 2181 | 1862 |
| 3.5 | 4 | 9996 | 2183 | 2297 | 1944 |
| 4.3 | 5 | 9995 | 1916 | 2374 | 1934 |
| 5.2 | 6 | 9994 | 2072 | 2251 | 1680 |
| 6.1 | 7 | 9993 | 1611 | 1763 | 1647 |
| 6.9 | 8 | 9992 | 1760 | 1795 | 1518 |
| 7.8 | 9 | 9991 | 1836 | 1729 | 1532 |
| 8.7 | 10 | 9990 | 1835 | 1792 | 2003 |
| 9.5 | 11 | 9989 | 1975 | 1584 | 1959 |
| 10.4 | 12 | 9988 | 1597 | 1923 | 1828 |
| 11.3 | 13 | 9987 | 1847 | 1814 | 1826 |
| 12.1 | 14 | 9986 | 1835 | 1722 | 1906 |
| 13.0 | 15 | 9985 | 1869 | 1557 | 2014 |
| 13.9 | 16 | 9984 | 1845 | 1823 | 2220 |
| 14.7 | 17 | 9983 | 1536 | 1818 | 1765 |
| 15.6 | 18 | 9982 | 1771 | 1708 | 1460 |
| 16.5 | 19 | 9981 | 1818 | 2275 | 1498 |
| 17.3 | 20 | 9980 | 1346 | 2225 | 1454 |
| 18.2 | 21 | 9979 | 1796 | 1877 | 1634 |
| 19.1 | 22 | 9978 | 1778 | 1826 | 2326 |
| 19.9 | 23 | 9977 | 1554 | 2044 | 2256 |
| 20.8 | 24 | 9976 | 1417 | 1897 | 2076 |
| 21.7 | 25 | 9975 | 1409 | 1581 | 1816 |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

Mixed Waste Landfill Neutron Logging Data Field Form (page 2 of 2)

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Winch Counter Reading (ft) | VZ-3 Counts (E Side) | VZ-2 Counts (SW Corner) | VZ-1 Counts (NW Corner) |
|---|--------------------------------|----------------------------|----------------------|-------------------------|-------------------------|
| 26.0 | 30 | 9970 | 1808 | 1764 | 1795 |
| 30.3 | 35 | 9965 | 1715 | 1893 | 2195 |
| 34.6 | 40 | 9960 | 1808 | 1703 | 1786 |
| 39.0 | 45 | 9955 | 1713 | 1557 | 2236 |
| 43.3 | 50 | 9950 | 2075 | 1570 | 1685 |
| 47.6 | 55 | 9945 | 1820 | 2135 | 1788 |
| 52.0 | 60 | 9940 | 1761 | 1850 | 1940 |
| 56.3 | 65 | 9935 | 2206 | 2142 | 1978 |
| 60.6 | 70 | 9930 | 1325 | 2615 | 1739 |
| 65.0 | 75 | 9925 | 2460 | 2230 | 2086 |
| 69.3 | 80 | 9920 | 2213 | 1609 | 1914 |
| 73.6 | 85 | 9915 | 1944 | 1836 | 2057 |
| 77.9 | 90 | 9910 | 1451 | 2249 | 2011 |
| 82.3 | 95 | 9905 | 2208 | 2332 | 2292 |
| 86.6 | 100 | 9900 | 2166 | 2105 | 2731 |
| 90.9 | 105 | 9895 | 1912 | 2379 | 2489 |
| 95.3 | 110 | 9890 | 2350 | 1909 | 2084 |
| 99.6 | 115 | 9885 | 2163 | 1821 | 2064 |
| 103.9 | 120 | 9880 | 1600 | 1835 | 1967 |
| 108.3 | 125 | 9875 | 1819 | 2138 | 1628 |
| 112.6 | 130 | 9870 | 2147 | 2261 | 1983 |
| 116.9 | 135 | 9865 | 2396 | 2645 | 1754 |
| 121.2 | 140 | 9860 | 1705 | 1973 | 1510 |
| 125.6 | 145 | 9855 | 1518 | 2569 | 2296 |
| 129.9 | 150 | 9850 | 2567 | 2170 | 2110 |
| 134.2 | 155 | 9845 | 2168 | 2322 | 1707 |
| 138.6 | 160 | 9840 | 2693 | 2331 | 1606 |
| 142.9 | 165 | 9835 | 2674 | 2239 | 2304 |
| 147.2 | 170 | 9830 | 2544 | 1646 | 1557 |
| 151.6 | 175 | 9825 | 2499 | 2816 | 2956 |
| 155.9 | 180 | 9820 | 3330 | 2714 | 3025 |
| 160.2 | 185 | 9815 | 3302 | 2951 | 2423 |
| 164.5 | 190 | 9810 | 1713 | 1604 | 1934 |
| 168.9 | 195 | 9805 | 1859 | 2565 | 3368 |
| 173.2 | 200 | 9800 | 2147 | 3164 | 2708 |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), department home page.

MIXED WASTE LANDFILL
SOIL MOISTURE MONITORING

Soil Moisture Monitoring Results Tables

Table D-1
VZ-1 Soil-Moisture Monitoring Results
April and October 2015

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Collection Period | | 2015 Average | 2015 Std Dev | Baseline Average (2004- 2006) | Difference between Baseline Average & 2015 Average | Soil-Moisture Trigger Level (% content by volume) |
|---|---|--|-----|--|-----------------|--|---|--|
| | | 2015 | | | | | | |
| | | Apr | Oct | | | | | |
| | | Soil-Moisture (% content by volume) | | Soil-Moisture (% content by volume) | | | | |
| 3.5 | 4 | 3.2 | 3.7 | 3.5 | 0.4 | 2.9 | 0.6 | NA |
| 4.3 | 5 | 3.3 | 3.0 | 3.2 | 0.2 | 2.9 | 0.2 | NA |
| 5.2 | 6 | 2.6 | 3.4 | 3.0 | 0.6 | 2.9 | 0.1 | NA |
| 6.1 | 7 | 2.5 | 2.2 | 2.4 | 0.2 | 2.6 | -0.2 | NA |
| 6.9 | 8 | 2.0 | 2.6 | 2.3 | 0.4 | 2.2 | 0.1 | NA |
| 7.8 | 9 | 2.1 | 2.8 | 2.5 | 0.5 | 1.9 | 0.5 | NA |
| 8.7 | 10 | 3.0 | 2.8 | 2.9 | 0.1 | 1.7 | 1.2 | 23 |
| 9.5 | 11 | 3.4 | 3.1 | 3.3 | 0.2 | 2.0 | 1.3 | 23 |
| 10.4 | 12 | 3.1 | 2.1 | 2.6 | 0.7 | 2.7 | -0.1 | 23 |
| 11.3 | 13 | 2.6 | 2.8 | 2.7 | 0.1 | 3.1 | -0.4 | 23 |
| 12.1 | 14 | 2.9 | 2.8 | 2.9 | 0.1 | 2.6 | 0.2 | 23 |
| 13.0 | 15 | 3.5 | 2.8 | 3.2 | 0.5 | 2.4 | 0.8 | 23 |
| 13.9 | 16 | 3.7 | 2.8 | 3.3 | 0.6 | 2.6 | 0.7 | 23 |
| 14.7 | 17 | 2.9 | 2.0 | 2.5 | 0.6 | 2.8 | -0.3 | 23 |
| 15.6 | 18 | 2.1 | 2.6 | 2.4 | 0.4 | 2.9 | -0.5 | 23 |
| 16.5 | 19 | 2.0 | 2.7 | 2.4 | 0.5 | 2.4 | -0.1 | 23 |
| 17.3 | 20 | 2.1 | 1.5 | 1.8 | 0.4 | 2.0 | -0.2 | 23 |
| 18.2 | 21 | 2.4 | 2.7 | 2.6 | 0.2 | 2.0 | 0.6 | 23 |
| 19.1 | 22 | 3.7 | 2.6 | 3.2 | 0.8 | 2.1 | 1.1 | 23 |
| 19.9 | 23 | 4.1 | 2.0 | 3.1 | 1.5 | 3.0 | 0.1 | 23 |
| 20.8 | 24 | 3.7 | 1.7 | 2.7 | 1.4 | 4.3 | -1.6 | 23 |
| 21.7 | 25 | 2.9 | 1.6 | 2.3 | 0.9 | 4.0 | -1.7 | 23 |
| 26.0 | 30 | 2.7 | 2.7 | 2.7 | 0.0 | 2.9 | -0.2 | 23 |
| 30.3 | 35 | 3.5 | 2.4 | 3.0 | 0.8 | 2.7 | 0.3 | 23 |
| 34.6 | 40 | 2.7 | 2.7 | 2.7 | 0.0 | 2.3 | 0.4 | 23 |
| 39.0 | 45 | 3.8 | 2.4 | 3.1 | 1.0 | 3.0 | 0.1 | 23 |
| 43.3 | 50 | 2.6 | 3.4 | 3.0 | 0.6 | 2.9 | 0.1 | 23 |
| 47.6 | 55 | 2.7 | 2.7 | 2.7 | 0.0 | 2.8 | -0.1 | 23 |
| 52.0 | 60 | 3.1 | 2.6 | 2.9 | 0.4 | 3.4 | -0.6 | 23 |
| 56.3 | 65 | 3.1 | 3.7 | 3.4 | 0.4 | 2.9 | 0.5 | 23 |
| 60.6 | 70 | 2.6 | 1.4 | 2.0 | 0.8 | 2.1 | -0.1 | 23 |
| 65.0 | 75 | 3.8 | 4.4 | 4.1 | 0.4 | 5.6 | -1.5 | 23 |
| 69.3 | 80 | 2.5 | 3.8 | 3.2 | 0.9 | 2.8 | 0.3 | 23 |
| 73.6 | 85 | 3.9 | 3.0 | 3.5 | 0.6 | 3.1 | 0.3 | 23 |

Table D-1
VZ-1 Soil-Moisture Monitoring Results
April and October 2015

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Collection Period | | 2015 Average | 2015 Std Dev | Baseline Average (2004- 2006) | Difference between Baseline Average & 2015 Average | Soil-Moisture Trigger Level (% content by volume) |
|---|---|--|-----|--|-----------------|--|---|--|
| | | 2015 | | | | | | |
| | | Apr | Oct | | | | | |
| | | Soil-Moisture (% content by volume) | | Soil-Moisture (% content by volume) | | | | |
| 77.9 | 90 | 3.4 | 1.7 | 2.6 | 1.2 | 3.7 | -1.2 | 23 |
| 82.3 | 95 | 3.7 | 3.7 | 3.7 | 0.0 | 3.7 | 0.0 | 23 |
| 86.6 | 100 | 5.2 | 3.6 | 4.4 | 1.1 | 5.4 | -1.0 | 23 |
| 90.9 | 105 | 4.2 | 3.0 | 3.6 | 0.8 | 5.0 | -1.4 | NA |
| 95.3 | 110 | 3.3 | 4.1 | 3.7 | 0.6 | 3.0 | 0.7 | NA |
| 99.6 | 115 | 3.1 | 3.6 | 3.4 | 0.4 | 3.6 | -0.3 | NA |
| 103.9 | 120 | 3.3 | 2.1 | 2.7 | 0.8 | 2.2 | 0.5 | NA |
| 108.3 | 125 | 2.1 | 2.7 | 2.4 | 0.4 | 2.7 | -0.3 | NA |
| 112.6 | 130 | 3.1 | 3.6 | 3.4 | 0.4 | 3.3 | 0.0 | NA |
| 116.9 | 135 | 2.5 | 4.2 | 3.4 | 1.2 | 3.1 | 0.2 | NA |
| 121.2 | 140 | 1.8 | 2.4 | 2.1 | 0.4 | 2.1 | 0.0 | NA |
| 125.6 | 145 | 4.5 | 1.9 | 3.2 | 1.8 | 3.8 | -0.6 | NA |
| 129.9 | 150 | 3.5 | 4.7 | 4.1 | 0.8 | 3.2 | 0.9 | NA |
| 134.2 | 155 | 2.5 | 3.6 | 3.1 | 0.8 | 2.7 | 0.3 | NA |
| 138.6 | 160 | 2.9 | 5.0 | 4.0 | 1.5 | 2.1 | 1.9 | NA |
| 142.9 | 165 | 3.7 | 5.0 | 4.4 | 0.9 | 3.8 | 0.5 | NA |
| 147.2 | 170 | 2.2 | 4.6 | 3.4 | 1.7 | 2.0 | 1.4 | NA |
| 151.6 | 175 | 5.9 | 4.5 | 5.2 | 1.0 | 6.0 | -0.8 | NA |
| 155.9 | 180 | 6.0 | 6.7 | 6.4 | 0.5 | 5.5 | 0.8 | NA |
| 160.2 | 185 | 4.0 | 6.6 | 5.3 | 1.8 | 4.4 | 0.9 | NA |
| 164.5 | 190 | 3.2 | 2.4 | 2.8 | 0.6 | 3.0 | -0.2 | NA |
| 168.9 | 195 | 7.0 | 2.8 | 4.9 | 3.0 | 7.0 | -2.1 | NA |
| 173.2 | 200 | 5.1 | 3.6 | 4.4 | 1.1 | 5.4 | -1.0 | NA |
| | Average | 3.3 | 3.1 | 3.2 | Average | 3.2 | | |

Note: Shaded area represents depths where 23-percent soil moisture trigger applies.

Std Dev = Standard deviation.

NA = Not applicable

Table D-2
VZ-2 Soil-Moisture Monitoring Results
April and October 2015

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Collection Period | | 2015 Average | 2015 Std Dev | Baseline Average (2004-2006) | Difference between Baseline Average & 2015 Average | Soil-Moisture Trigger Level (% content by volume) |
|--|--|--|-----|--|-----------------|------------------------------------|---|--|
| | | 2015 | | | | | | |
| | | Apr | Oct | | | | | |
| | | Soil-Moisture (% content by volume) | | Soil-Moisture (% content by volume) | | | | |
| 3.5 | 4 | 4.1 | 4.0 | 4.1 | 0.1 | 2.7 | 1.4 | NA |
| 4.3 | 5 | 4.0 | 4.2 | 4.1 | 0.1 | 3.3 | 0.8 | NA |
| 5.2 | 6 | 3.0 | 3.9 | 3.5 | 0.6 | 3.6 | -0.2 | NA |
| 6.1 | 7 | 2.4 | 2.6 | 2.5 | 0.1 | 3.6 | -1.1 | NA |
| 6.9 | 8 | 2.4 | 2.5 | 2.5 | 0.1 | 3.5 | -1.1 | NA |
| 7.8 | 9 | 2.4 | 2.5 | 2.5 | 0.1 | 3.1 | -0.7 | NA |
| 8.7 | 10 | 2.3 | 2.6 | 2.5 | 0.2 | 2.4 | 0.1 | 23 |
| 9.5 | 11 | 2.9 | 2.1 | 2.5 | 0.6 | 2.2 | 0.3 | 23 |
| 10.4 | 12 | 2.9 | 3.0 | 3.0 | 0.1 | 2.2 | 0.8 | 23 |
| 11.3 | 13 | 2.6 | 2.7 | 2.7 | 0.1 | 2.1 | 0.6 | 23 |
| 12.1 | 14 | 2.4 | 2.5 | 2.5 | 0.1 | 2.5 | 0.0 | 23 |
| 13.0 | 15 | 2.3 | 2.0 | 2.2 | 0.2 | 3.0 | -0.9 | 23 |
| 13.9 | 16 | 2.4 | 2.7 | 2.6 | 0.2 | 2.8 | -0.3 | 23 |
| 14.7 | 17 | 2.7 | 2.7 | 2.7 | 0.0 | 2.4 | 0.3 | 23 |
| 15.6 | 18 | 2.5 | 2.4 | 2.5 | 0.1 | 2.6 | -0.2 | 23 |
| 16.5 | 19 | 3.8 | 3.9 | 3.9 | 0.1 | 2.7 | 1.2 | 23 |
| 17.3 | 20 | 3.5 | 3.8 | 3.7 | 0.2 | 2.9 | 0.8 | 23 |
| 18.2 | 21 | 2.7 | 2.9 | 2.8 | 0.1 | 3.1 | -0.3 | 23 |
| 19.1 | 22 | 2.7 | 2.7 | 2.7 | 0.0 | 3.6 | -0.9 | 23 |
| 19.9 | 23 | 3.4 | 3.3 | 3.4 | 0.1 | 3.7 | -0.4 | 23 |
| 20.8 | 24 | 2.5 | 2.9 | 2.7 | 0.3 | 3.1 | -0.4 | 23 |
| 21.7 | 25 | 2.1 | 2.1 | 2.1 | 0.0 | 2.7 | -0.6 | 23 |
| 26.0 | 30 | 2.6 | 2.6 | 2.6 | 0.0 | 2.4 | 0.2 | 23 |
| 30.3 | 35 | 2.9 | 2.9 | 2.9 | 0.0 | 2.9 | 0.0 | 23 |
| 34.6 | 40 | 2.2 | 2.4 | 2.3 | 0.1 | 2.7 | -0.4 | 23 |
| 39.0 | 45 | 2.2 | 2.0 | 2.1 | 0.1 | 2.3 | -0.2 | 23 |
| 43.3 | 50 | 2.0 | 2.1 | 2.1 | 0.1 | 2.1 | -0.1 | 23 |
| 47.6 | 55 | 3.3 | 3.5 | 3.4 | 0.1 | 3.1 | 0.3 | 23 |
| 52.0 | 60 | 3.1 | 2.8 | 3.0 | 0.2 | 3.0 | 0.0 | 23 |
| 56.3 | 65 | 3.6 | 3.6 | 3.6 | 0.0 | 5.5 | -1.9 | 23 |
| 60.6 | 70 | 4.8 | 4.8 | 4.8 | 0.0 | 4.8 | 0.0 | 23 |
| 65.0 | 75 | 3.8 | 3.8 | 3.8 | 0.0 | 5.1 | -1.3 | 23 |
| 69.3 | 80 | 2.0 | 2.2 | 2.1 | 0.1 | 2.6 | -0.5 | 23 |
| 73.6 | 85 | 2.7 | 2.8 | 2.8 | 0.1 | 2.6 | 0.2 | 23 |
| 77.9 | 90 | 4.0 | 3.8 | 3.9 | 0.1 | 3.1 | 0.8 | 23 |

Table D-2
VZ-2 Soil-Moisture Monitoring Results
April and October 2015

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Collection Period | | 2015 Average | 2015 Std Dev | Baseline Average (2004-2006) | Difference between Baseline Average & 2015 Average | Soil-Moisture Trigger Level (% content by volume) |
|--|--|--|-----|--|-----------------|------------------------------------|---|--|
| | | 2015 | | | | | | |
| | | Apr | Oct | | | | | |
| | | Soil-Moisture (% content by volume) | | Soil-Moisture (% content by volume) | | | | |
| 82.3 | 95 | 3.9 | 4.1 | 4.0 | 0.1 | 3.6 | 0.4 | 23 |
| 86.6 | 100 | 3.5 | 3.5 | 3.5 | 0.0 | 4.7 | -1.2 | 23 |
| 90.9 | 105 | 4.0 | 4.2 | 4.1 | 0.1 | 3.4 | 0.7 | NA |
| 95.3 | 110 | 2.9 | 3.0 | 3.0 | 0.1 | 3.1 | -0.2 | NA |
| 99.6 | 115 | 2.7 | 2.7 | 2.7 | 0.0 | 3.6 | -0.9 | NA |
| 103.9 | 120 | 2.9 | 2.8 | 2.9 | 0.1 | 2.0 | 0.9 | NA |
| 108.3 | 125 | 3.6 | 3.6 | 3.6 | 0.0 | 3.8 | -0.2 | NA |
| 112.6 | 130 | 3.8 | 3.9 | 3.9 | 0.1 | 3.6 | 0.3 | NA |
| 116.9 | 135 | 5.0 | 4.9 | 5.0 | 0.1 | 3.4 | 1.6 | NA |
| 121.2 | 140 | 3.1 | 3.1 | 3.1 | 0.0 | 2.4 | 0.7 | NA |
| 125.6 | 145 | 4.7 | 4.7 | 4.7 | 0.0 | 5.9 | -1.2 | NA |
| 129.9 | 150 | 4.0 | 3.6 | 3.8 | 0.3 | 7.0 | -3.2 | NA |
| 134.2 | 155 | 3.9 | 4.0 | 4.0 | 0.1 | 3.6 | 0.4 | NA |
| 138.6 | 160 | 4.4 | 4.1 | 4.3 | 0.2 | 3.8 | 0.5 | NA |
| 142.9 | 165 | 3.4 | 3.8 | 3.6 | 0.3 | 3.0 | 0.6 | NA |
| 147.2 | 170 | 2.3 | 2.3 | 2.3 | 0.0 | 2.9 | -0.6 | NA |
| 151.6 | 175 | 5.0 | 5.3 | 5.2 | 0.2 | 2.4 | 2.8 | NA |
| 155.9 | 180 | 4.8 | 5.1 | 5.0 | 0.2 | 5.4 | -0.5 | NA |
| 160.2 | 185 | 5.5 | 5.7 | 5.6 | 0.1 | 5.4 | 0.2 | NA |
| 164.5 | 190 | 2.2 | 2.1 | 2.2 | 0.1 | 4.1 | -2.0 | NA |
| 168.9 | 195 | 3.4 | 4.7 | 4.1 | 0.9 | 3.5 | 0.6 | NA |
| 173.2 | 200 | 6.1 | 6.3 | 6.2 | 0.1 | 6.3 | -0.1 | NA |
| | Average | 3.3 | 3.3 | 3.3 | Average | 3.4 | | |

Note: Shaded area represents depths where 23-percent soil moisture trigger applies.

Std Dev = Standard deviation.

NA = Not applicable

Table D-3
VZ-3 Soil-Moisture Monitoring Results
April and October 2015

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Collection Period | | 2015 Average | 2015 Std Dev | Baseline Average (2004-2006) | Difference between Baseline Average & 2015 Average | Soil- Moisture Trigger Level (% content by volume) |
|--|--|--|-----|--|-----------------|------------------------------------|---|---|
| | | 2015 | | | | | | |
| | | Apr | Oct | | | | | |
| | | Soil-Moisture (% content by volume) | | Soil-Moisture (% content by volume) | | | | |
| 3.5 | 4 | 3.6 | 3.0 | 3.3 | 0.4 | 4.6 | -1.3 | NA |
| 4.3 | 5 | 2.8 | 3.0 | 2.9 | 0.1 | 4.5 | -1.6 | NA |
| 5.2 | 6 | 3.3 | 2.3 | 2.8 | 0.7 | 3.7 | -0.9 | NA |
| 6.1 | 7 | 2.2 | 2.3 | 2.3 | 0.1 | 2.9 | -0.7 | NA |
| 6.9 | 8 | 2.4 | 1.9 | 2.2 | 0.4 | 3.1 | -1.0 | NA |
| 7.8 | 9 | 2.7 | 2.0 | 2.4 | 0.5 | 2.3 | 0.1 | NA |
| 8.7 | 10 | 2.6 | 3.2 | 2.9 | 0.4 | 2.4 | 0.5 | 23 |
| 9.5 | 11 | 3.0 | 3.1 | 3.1 | 0.1 | 2.6 | 0.5 | 23 |
| 10.4 | 12 | 2.2 | 2.7 | 2.5 | 0.4 | 2.7 | -0.3 | 23 |
| 11.3 | 13 | 2.7 | 2.7 | 2.7 | 0.0 | 3.0 | -0.3 | 23 |
| 12.1 | 14 | 2.7 | 2.9 | 2.8 | 0.1 | 2.6 | 0.2 | 23 |
| 13.0 | 15 | 2.8 | 3.2 | 3.0 | 0.3 | 2.8 | 0.2 | 23 |
| 13.9 | 16 | 2.8 | 3.8 | 3.3 | 0.7 | 2.9 | 0.4 | 23 |
| 14.7 | 17 | 2.0 | 2.6 | 2.3 | 0.4 | 3.1 | -0.8 | 23 |
| 15.6 | 18 | 2.4 | 1.8 | 2.1 | 0.4 | 3.1 | -1.0 | 23 |
| 16.5 | 19 | 2.5 | 1.9 | 2.2 | 0.4 | 2.3 | -0.1 | 23 |
| 17.3 | 20 | 1.5 | 1.8 | 1.7 | 0.2 | 2.7 | -1.1 | 23 |
| 18.2 | 21 | 2.4 | 2.2 | 2.3 | 0.1 | 2.7 | -0.4 | 23 |
| 19.1 | 22 | 2.7 | 4.0 | 3.4 | 0.9 | 1.8 | 1.6 | 23 |
| 19.9 | 23 | 1.9 | 3.9 | 2.9 | 1.4 | 2.7 | 0.2 | 23 |
| 20.8 | 24 | 1.7 | 3.4 | 2.6 | 1.2 | 2.8 | -0.3 | 23 |
| 21.7 | 25 | 1.7 | 2.7 | 2.2 | 0.7 | 2.1 | 0.1 | 23 |
| 26.0 | 30 | 2.7 | 2.7 | 2.7 | 0.0 | 2.5 | 0.2 | 23 |
| 30.3 | 35 | 2.3 | 3.7 | 3.0 | 1.0 | 2.8 | 0.2 | 23 |
| 34.6 | 40 | 2.8 | 2.6 | 2.7 | 0.1 | 2.1 | 0.6 | 23 |
| 39.0 | 45 | 2.2 | 3.8 | 3.0 | 1.1 | 2.7 | 0.3 | 23 |
| 43.3 | 50 | 3.0 | 2.4 | 2.7 | 0.4 | 2.9 | -0.2 | 23 |
| 47.6 | 55 | 2.7 | 2.6 | 2.7 | 0.1 | 3.4 | -0.8 | 23 |
| 52.0 | 60 | 2.5 | 3.0 | 2.8 | 0.4 | 2.9 | -0.2 | 23 |
| 56.3 | 65 | 3.8 | 3.1 | 3.5 | 0.5 | 3.5 | 0.0 | 23 |
| 60.6 | 70 | 1.4 | 2.5 | 2.0 | 0.8 | 1.9 | 0.1 | 23 |
| 65.0 | 75 | 4.2 | 3.4 | 3.8 | 0.6 | 4.3 | -0.5 | 23 |
| 69.3 | 80 | 3.8 | 3.1 | 3.5 | 0.5 | 4.5 | -1.0 | 23 |

Table D-3
VZ-3 Soil-Moisture Monitoring Results
April and October 2015

| Vertical Depth Below Top of Casing (ft) | Linear Depth Along Casing (ft) | Collection Period | | 2015 Average | 2015 Std Dev | Baseline Average (2004-2006) | Difference between Baseline Average & 2015 Average | Soil- Moisture Trigger Level (% content by volume) |
|--|--|--|-----|--|-----------------|------------------------------------|---|---|
| | | 2015 | | | | | | |
| | | Apr | Oct | | | | | |
| | | Soil-Moisture (% content by volume) | | Soil-Moisture (% content by volume) | | | | |
| 73.6 | 85 | 2.9 | 3.3 | 3.1 | 0.3 | 3.5 | -0.4 | 23 |
| 77.9 | 90 | 1.7 | 3.2 | 2.5 | 1.1 | 1.9 | 0.6 | 23 |
| 82.3 | 95 | 3.4 | 4.0 | 3.7 | 0.4 | 3.3 | 0.4 | 23 |
| 86.6 | 100 | 3.6 | 5.1 | 4.4 | 1.1 | 3.4 | 1.0 | 23 |
| 90.9 | 105 | 3.1 | 4.5 | 3.8 | 1.0 | 3.3 | 0.5 | NA |
| 95.3 | 110 | 3.9 | 3.4 | 3.7 | 0.4 | 4.7 | -1.1 | NA |
| 99.6 | 115 | 3.5 | 3.4 | 3.5 | 0.1 | 3.6 | -0.2 | NA |
| 103.9 | 120 | 2.1 | 3.1 | 2.6 | 0.7 | 2.1 | 0.5 | NA |
| 108.3 | 125 | 2.3 | 2.2 | 2.3 | 0.1 | 1.8 | 0.5 | NA |
| 112.6 | 130 | 4.2 | 3.1 | 3.7 | 0.8 | 4.3 | -0.6 | NA |
| 116.9 | 135 | 4.2 | 2.5 | 3.4 | 1.2 | 4.0 | -0.7 | NA |
| 121.2 | 140 | 2.5 | 1.9 | 2.2 | 0.4 | 2.3 | -0.1 | NA |
| 125.6 | 145 | 1.9 | 4.0 | 3.0 | 1.5 | 2.0 | 1.0 | NA |
| 129.9 | 150 | 4.5 | 3.5 | 4.0 | 0.7 | 4.4 | -0.4 | NA |
| 134.2 | 155 | 3.2 | 2.4 | 2.8 | 0.6 | 3.6 | -0.8 | NA |
| 138.6 | 160 | 4.8 | 2.2 | 3.5 | 1.8 | 4.4 | -0.9 | NA |
| 142.9 | 165 | 4.8 | 4.0 | 4.4 | 0.6 | 5.2 | -0.8 | NA |
| 147.2 | 170 | 4.2 | 2.0 | 3.1 | 1.6 | 4.1 | -1.0 | NA |
| 151.6 | 175 | 4.4 | 5.7 | 5.1 | 0.9 | 4.3 | 0.8 | NA |
| 155.9 | 180 | 6.4 | 5.9 | 6.2 | 0.4 | 6.6 | -0.4 | NA |
| 160.2 | 185 | 6.1 | 4.3 | 5.2 | 1.3 | 5.6 | -0.4 | NA |
| 164.5 | 190 | 2.4 | 3.0 | 2.7 | 0.4 | 2.7 | 0.0 | NA |
| 168.9 | 195 | 2.8 | 6.8 | 4.8 | 2.8 | 3.1 | 1.7 | NA |
| 173.2 | 200 | 3.4 | 5.1 | 4.3 | 1.2 | 4.1 | 0.2 | NA |
| | Average | 2.9 | 3.2 | 3.1 | Average | 3.2 | | |

Note: Shaded area represents depths where 23-percent soil moisture trigger applies.

Std Dev = Standard deviation.

NA = Not applicable

ANNEX E

**Mixed Waste Landfill
Groundwater Monitoring Forms and Reports**

April 2015-March 2016

Field Forms

Data Validation Reports

Contract Verification Reviews

FIELD SAMPLING FORMS

MWL LONG-TERM MONITORING AND MAINTENANCE

GROUNDWATER MONITORING

| Form Title | Corresponding Procedure |
|---|--------------------------------|
| Tailgate Safety Briefing | PLA 05-09 |
| Groundwater Sample Collection Field Equipment Check Log | FOP 05-02 |
| Portable Pump and Tubing/Water Level Indicator Decontamination Log Form | FOP 05-03 |
| Field Measurement Log For Groundwater Sample Collection | FOP 05-01 |
| Analysis Request and Chain of Custody* | LOP 94-03 |

*Completed AR/COC forms are provided in the Data Validation Section of this Annex.

FIELD SAMPLING FORMS
APRIL 2015 GROUNDWATER MONITORING

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-BW2 Date: 04/06/15 Time: 0750

Activities: GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 69.8 °F Wind Speed: ~5 MPH Humidity: 9.1 %

Chemicals Used: _____

Other: _____

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed Name

ALFRED SANTILLANES
Printed Name

Printed Name

Printed Name

Printed Name

Signature

Signature

Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL - MW 7 Date: 04/07/15 Time: 0755Activities: GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 73.7 °F Wind Speed: 0 - 5 MPH Humidity: 17.5 %

Chemicals Used: _____

Other: _____

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Printed Name Robert LynchPrinted Name ALFRED SANTILLANESPrinted Name William Gibson

Printed Name _____

Printed Name _____

Signature Robert LynchSignature Alfred SantillanesSignature William Gibson

Signature _____

Signature _____

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-MW9 Date: 04/08/15 Time: 0750

Activities: ^{GW} GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 71.9 °F Wind Speed: 10-25 MPH Humidity: 22.6 %

Chemicals Used: _____

Other: _____

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert T Lynch
Printed Name

William Gibson
Printed Name

ALFRED SANTILLANES
Printed Name

Printed Name

Printed Name

Robert T Lynch
Signature

William Gibson
Signature

Alfred Santillanes
Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-MW8 Date: 4/13/15 Time: 0750

Activities: GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 57.9 °F Wind Speed: 5-15 MPH Humidity: 24.3 %

Chemicals Used: _____

Other: _____

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed Name

[Signature]
Signature

William Gibson
Printed Name

[Signature]
Signature

Robert L. Quintone
Printed Name

[Signature]
Signature

Printed Name

Signature

Printed Name

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | |
|---|--|
| Project Name: MWL | |
| Well I.D.: MWL-EW2 | Date: 04/08/15 |
| Method: Portable pump <input checked="" type="checkbox"/> | Dedicated pump <input type="checkbox"/> Pump depth: 496' |

PURGE MEASUREMENTS

[illegible]

Comments: ~1.5 gals purged from tubing 0814

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | |
|--|----------------|
| Project Name: MWL | |
| Well I.D.: MWL-MW 7 | Date: 04/07/15 |
| Method: Portable pump <input checked="" type="checkbox"/> Dedicated pump <input type="checkbox"/> Pump depth: 496' | |

PURGE MEASUREMENTS

[illegible]

Comments: 1.5 GALS PURGED FROM TUBING 0833

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | | |
|---|---|------------------|
| Project Name: MWL | | |
| Well I.D.: MWL-MW 8 | Date: 04/13/15 | |
| Method: Portable pump <input checked="" type="checkbox"/> | Dedicated pump <input type="checkbox"/> | Pump depth: 497' |

PURGE MEASUREMENTS

[illegible]

Comments: ~1.5 gals purged form tubing 0821

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|--|-------------------------------|-------------|------------------------------|----------------------------------|---------------|-------------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 04/06/15 | | |
| Make & Model: EXO 1 | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 14H101486 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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: 0649 | 4.01 | 19.7 | 7.00 | 19.7 | 10.00 | 19.7 |
| 2. Time: 1118 | 4.02 | 19.9 | 7.00 | 19.9 | 10.00 | 19.9 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | 4AE330 | | 4AE635 | | 4AD984 | |
| Expiration date: | 5/16 | | 5/16 | | 4/16 | |
| SC Calibration/Check | | | | | | |
| Reference Value: 1225 uS @ 25C | | | | Standard Lot No.: 4AE659 | | |
| | Value | Temp | Expiration Date: 5/16 | | | |
| 1. Time: 0648 | 1224.9 | 19.7 | | | | |
| 2. Time: 1117 | 1224.6 | 19.8 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | | Standard Lot No. 4AL183 | | |
| | Value | Temp | Expiration Date: 9/15 | | | |
| 1. Time: 0651 | 220.1 | 19.7 | | | | |
| 2. Time: 1120 | 219.9 | 19.8 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | | |
| 1. Time: 0647 | 82.0 | | 24.59 | | | |
| 2. Time: 1116 | 81.9 | | 24.58 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|------------------------------|-------|-------|-----------------------------|-------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 04/06/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | .1 | 20 | 100 | 800 |
| Standard Lot No. | A4164 | A4211 | A4195 | A4193 |
| 1. Time 0755 | .14 | 19.9 | 103 | 802 |
| 2. Time 1044 | .16 | 19.7 | 104 | 798 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|---|-------------------------------|--------|----------------------------|----------------|--------|-------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 04/07/15 | | |
| Make & Model: EXO 1 | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 14H101486 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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: | 0639 | 4.00 | 18.9 | 7.00 | 18.9 | 9.99 |
| 2. Time: | 1128 | 4.02 | 19.3 | 7.00 | 19.3 | 10.01 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | 4AE330 | | 4AE635 | | 4AD984 | |
| Expiration date: | 5/18 | | 5/16 | | 4/16 | |
| SC Calibration/Check | | | | | | |
| Reference Value: 1225 uS @ 25C | | | Standard Lot No.: 4AE659 | | | |
| | Value | Temp | Expiration Date: 5/16 | | | |
| 1. Time: | 0638 | 1224.7 | 18.9 | | | |
| 2. Time: | 1127 | 1225.1 | 19.3 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | Standard Lot No. 4AL183 | | | |
| | Value | Temp | Expiration Date: 9/15 | | | |
| 1. Time: | 0641 | 220.3 | 18.9 | | | |
| 2. Time: | 1130 | 220.6 | 19.3 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | | |
| 1. Time: | 0637 | 81.9 | 24.66 | | | |
| 2. Time: | 1126 | 81.9 | 24.69 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|-------------------------------------|--------------|--------------|------------------------------------|--------------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 04/07/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | .1 | 20 | 100 | 800 |
| Standard Lot No. | A4164 | A4211 | A4195 | A4193 |
| 1. Time | 0759 | .12 | 19.8 | 104 |
| 2. Time | 6044 | .14 | 20.1 | 102 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|--|-------------|-------------------------------|------------------------------|----------------------------------|-------------|--------------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 04/08/15 | | |
| Make & Model: EXO 1 | | | | | | |
| Sonde (S/N) with DO, Es, pH, ORP, and temperature probes: 14H101486 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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 | 3.99 | 19.6 | 7.00 | 19.6 | 10.00 |
| 2. Time: | 1239 | 3.99 | 19.8 | 7.00 | 19.8 | 16.00 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | | 4AE330 | | 4AE635 | | 4AD984 |
| Expiration date: | | 5/16 | | 5/16 | | 4/16 |
| SC Calibration/Check | | | | | | |
| Reference Value: 1225 uS @ 25C | | | | Standard Lot No.: 4AE659 | | |
| | Value | Temp | Expiration Date: 5/16 | | | |
| 1. Time: | 0641 | 1224.6 | 19.6 | | | |
| 2. Time: | 1238 | 1225.3 | 19.9 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | | Standard Lot No. 4AL183 | | |
| | Value | Temp | Expiration Date: 9/15 | | | |
| 1. Time: | 0644 | 219.8 | 19.6 | | | |
| 2. Time: | 1241 | 220.4 | 19.9 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | |
| 1. Time: | 0640 | 81.9 | 24.55 | | | |
| 2. Time: | 1237 | 81.8 | 24.52 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|-------------------------------------|--------------|--------------|------------------------------------|--------------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 04/08/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | .1 | 20 | 100 | 800 |
| Standard Lot No. | A4164 | A4211 | A4195 | A4193 |
| 1. Time 0755 | .16 | 20.3 | 102 | 795 |
| 2. Time 1014 | .14 | 20.4 | 99.8 | 793 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | | |
|--|-------------|-------------------------------|----------------------------------|----------------------------|-------------|--------------|-------------|
| SNL/NM Project Name: MWL | | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 04/13/15 | | | |
| Make & Model: EXO 1 | | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 14H101486 | | | | | | | |
| Other (S/N): NA | | | | | | | |
| pH Calibration/Check | | | | | | | |
| 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 | 4.01 | 19.8 | 7.00 | 19.8 | 10.01 | 19.8 |
| 2. Time: | 1152 | 4.00 | 19.9 | 7.00 | 19.9 | 10.02 | 19.9 |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |
| Standard lot no.: | | 4AE330 | | 4AE635 | | 4AD984 | |
| Expiration date: | | 5/16 | | 5/16 | | 4/16 | |
| SC Calibration/Check | | | | | | | |
| Reference Value: 1225 uS @ 25C | | | Standard Lot No.: 4AE659 | | | | |
| | Value | Temp | Expiration Date: 5/16 | | | | |
| 1. Time: | 0640 | 1224.6 | 19.8 | | | | |
| 2. Time: | 1151 | 1224.4 | 19.9 | | | | |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |
| ORP Calibration/Check | | | | | | | |
| Reference Value: 220 mV | | | Standard Lot No. 4AL183 | | | | |
| | Value | Temp | Expiration Date: 9/15 | | | | |
| 1. Time: | 0643 | 220.3 | 19.8 | | | | |
| 2. Time: | 1154 | 220.7 | 20.0 | | | | |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |
| DO Calibration/Check | | | | | | | |
| Calibration Value: | | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | | |
| 1. Time: | 0639 | 82.0 | 24.76 | | | | |
| 2. Time: | 1150 | 81.9 | 24.77 | | | | |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.


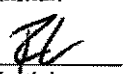
GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|-------------------------------------|--------------|--------------|------------------------------------|--------------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 04/13/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | .1 | 20 | 100 | 800 |
| Standard Lot No. | A4164 | A4211 | A4195 | A4193 |
| 1. Time 0755 | .12 | 19.8 | 103 | 796 |
| 2. Time 1019 | .14 | 20.2 | 101 | 798 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

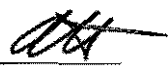

| | | |
|--|---|------------------------------------|
| Project Name: <u>MWL GWM</u> | Monitoring Well ID #: <u>MWL-BW2</u> | Date: <u>4/6/2015</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| Personnel Performing Decontamination: | | |
| Print Name: <u>Alfred Santillanes</u> |  Initial: _____ | |
| Print Name: <u>Robert Lynch</u> |  Initial: _____ | |
| Condition of Equipment | | |
| Pump: <u>Good</u> | Tubing Bundle: <u>Good</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>32415</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROC</u> | |
| | Lot Number: <u>A0316863</u> | |

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|------------------------------------|
| Project Name: <u>MWL-GWM</u> | Monitoring Well ID #: <u>MWL-MW7</u> | Date: <u>04-07-15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| Personnel Performing Decontamination: | | |
| Robert Lynch | <u>RL</u> | Initial: |
| Print Name: | | |
| William Gibson | <u>WJG</u> | Initial: |
| Print Name: | | |
| Condition of Equipment | | |
| Pump: <u>Excellent</u> | Tubing Bundle: <u>Excellent</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>03/24/15</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROS</u> | |
| | Lot Number: <u>A0316863</u> | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|---|
| Project Name: <u>MWL-GWM</u> | Monitoring Well ID #: <u>MWL-MW9</u> | Date: <u>04-08-15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| <u>Personnel Performing Decontamination:</u> | | |
| Alfred Santillanes | |  |
| Print Name: | | Initial: |
| Robert Lynch | |  |
| Print Name: | | Initial: |
| Condition of Equipment | | |
| Pump: <u>Excellent</u> | Tubing Bundle: <u>Excellent</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>03-24-15</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROS</u> | |
| | Lot Number: <u>A0316863</u> | |

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|------------------------------------|
| Project Name: <u>MWL</u> | Monitoring Well ID #: <u>MWL-MW 8</u> | Date: <u>04/13/15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| <u>Personnel Performing Decontamination:</u> | | |
| Robert Lynch | <u>RL</u> | Initial: |
| Print Name: | | |
| William Gibson | <u>WJG</u> | Initial: |
| Print Name: | | |
| Condition of Equipment | | |
| Pump: <u>GOOD</u> | Tubing Bundle: <u>GOOD</u> | Water Level Indicator: <u>GOOD</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>032415</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROC</u> | |
| | Lot Number: <u>A0316863</u> | |

**SUMMARY SHEET FOR
APRIL 2015 GROUNDWATER SAMPLES**

Sample Summary for April 2015 MWL Groundwater Monitoring

| <i>Well ID</i> | <i>Sample Date</i> | <i>ARCOC</i> | <i>Sample Number</i> | <i>Sample Type</i> | <i>Associated Equipment Blank (ARCOC #/Sample #)</i> | <i>Associated Trip Blank (ARCOC # / Sample #)</i> | <i>Associated Field Blank (ARCOC # / Sample #)</i> | <i>Comments</i> |
|---|--------------------|--------------|----------------------|--------------------|--|---|--|--|
| GEL Analytical Data: Project Task # 146422.10.11.08, Service Order # CF01-15 | | | | | | | | |
| MWL-BW2 | 6-Apr-15 | 616094 | 097578 | Environmental | n/a | 616094 / 097579 | 616094 / 097577 | |
| MWL-MW7 | 7-Apr-15 | 616095 | 097581 | Environmental | n/a | 616095 / 097582 | 616095 / 097580 | |
| MWL-MW8 | 13-Apr-15 | 616098 | 097591 | Environmental | n/a | 616098 / 097592 | 616098 / 097590 | |
| MWL-MW9 | 8-Apr-15 | 616097 | 097587 | Environmental | 616096 / 097584 | 616097 / 097589 | 616097 / 097586 | |
| MWL-MW9 | 8-Apr-15 | 616097 | 097588 | Duplicate | 616096 / 097584 | 616097 / 097589 | 616097 / 097586 | |
| MWL-EB1 | 7-Apr-15 | 616096 | 097584 | Equipment Blank | n/a | 616096 / 097585 | n/a | Equipment blank sample prior to MWL-MW9. |
| MWL-FB1 | 6-Apr-15 | 616094 | 097577 | Field Blank | n/a | 616094 / 097579 | n/a | at MWL-BW2 |
| MWL-FB2 | 7-Apr-15 | 616095 | 097580 | Field Blank | n/a | 616095 / 097582 | n/a | at MWL-MW7 |
| MWL-FB3 | 7-Apr-15 | 616096 | 097583 | DIW QC | n/a | 616096 / 097585 | n/a | DIW - source water for EB1 |
| MWL-FB4 | 8-Apr-15 | 616097 | 097586 | Field Blank | n/a | 616097 / 097589 | n/a | at MWL-MW9 |
| MWL-FB5 | 13-Apr-15 | 616098 | 097590 | Field Blank | n/a | 616098 / 097592 | n/a | at MWL-MW8 |

DATA VALIDATION REPORTS FOR ENVIRONMENTAL SAMPLES
GROUNDWATER MONITORING
APRIL 2015

AR/COC NUMBERS 616094, 616095, 616096, 616097

Memorandum

Date: May 18, 2015
To: File
From: Mary Donovan
Subject: GC/MS Organic Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616094, 616095, 616096 and 616097
SDG: 370483
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

Thirteen 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 resulted in the qualification of data.

1. The ICAL %RSD was $>15\%$ but $\leq 40\%$ and the ICV %D was $>20\%$ but $\leq 40\%$ with negative bias for acetone. The associated result for sample 370483017 was a detect and will be **qualified J-, I3, C3**. The remaining associated sample results were non-detects and will be **qualified UJ, I3, C3**.
2. The ICV and CCV %Ds were $>20\%$ but $\leq 40\%$ with positive bias for bromoform. The associated results for samples -001, -009 and -018 were detects and will be **qualified J+, C2**.
3. The ICV %D was $>20\%$ but $\leq 40\%$ with positive bias for dibromochloromethane. The associated results for samples -001, -009, -017, -018 and -025 were detects and will be **qualified J+, C2**.

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 analyzed within the prescribed holding time 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 ICV and CCV %Ds were $>20\%$ but $\leq 40\%$ with positive bias for bromoform. The bromoform results for all samples *except* -001, -009 and -018 were non-detects and, since the positive CCV %D is not considered a second calibration infraction, will not be qualified.

The ICV %D was $>20\%$ but $\leq 40\%$ with positive bias for dibromochloromethane. The remaining associated sample results were non-detects and since no other calibration infractions occurred, will not be qualified.

The ICV %D or CCV %Ds were $>20\%$ but $\leq 40\%$ with positive bias for styrene, 2-butanone and 2-hexanone. All associated sample results were non-detects and will not be qualified.

Blanks

No target analytes were detected in the blanks except as follows. Bromodichloromethane, chloroform and dibromochloromethane were detected at concentrations $>$ the PQLs in the EB, sample -018, which was associated with samples -026 and -032; FB1, sample -001, which was associated with sample -002; FB2, sample -009, which was associated with sample -010; FB3, sample -017, which had no associated field samples; and FB4, sample -025, which was associated with samples -026 and -032. Bromoform was detected at $<$ the PQL in the EB, sample -018, which was associated with samples -026 and -032; FB1, sample -001, which was associated with sample -002; and FB2, sample -009, which was associated with sample -010. Acetone was detected at $<$ the PQL in FB3, sample -017, which had no associated field samples. 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)

All MS/MSD acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS acceptance criteria were met.

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

Four TBs were submitted, one for each ARCOC. FBs were submitted with each ARCOC and were associated with the respective field samples in that ARCOC. The FB submitted with ARCOC 616096 had no associated field samples. An EB was submitted with ARCOC 616096 and was applied to the samples in ARCOC 616097. A field duplicate pair was also submitted with ARCOC 616097. 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.

Reviewed by: Monica Dymerski

Level I

Date: 05/20/15

Memorandum

Date: May 18, 2015
To: File
From: Mary Donovan
Subject: Inorganic Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616094, 616095, 616096 and 616097
SDG: 370483
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

Five unfiltered samples were prepared and analyzed with approved procedures using method EPA 6020 (ICP-MS). Data were reported for all required analytes. No problems were identified with the data package that resulted 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 prepared and analyzed within the prescribed holding times and properly preserved.

ICP-MS Instrument Tune

The ICP-MS tunes met QC acceptance criteria.

Calibration

All initial and continuing calibration criteria met QC acceptance criteria.

Reporting Limit Verification

All CRI recoveries associated with the samples met QC acceptance criteria.

It should be noted that the CRI was analyzed at the PQL and not at 2X the PQL for all target analytes.

Blanks

No target analytes were detected in the blanks except as follows. U was detected at concentrations < the PQL in the ICB and bracketing CCBs. The result for sample 370483019 was non-detect and the remaining associated sample results were detects > 5X the highest blank concentration concentration and will not be qualified.

ICP -MS Internal Standards

The ICP-MS internal standards met QC acceptance criteria.

Matrix Spike (MS)

The MS met all QC acceptance criteria.

Laboratory Replicate

The replicate met all QC acceptance criteria.

Laboratory Control Sample (LCS)

The LCS met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported.

ICP Interference Check Sample (ICS A and AB)

Results of the ICS A and AB analyses were not evaluated because the sample concentrations of Ca, Mg, Al and Fe were < that in the ICS solution.

ICP Serial Dilution

The serial dilutions met all QC acceptance criteria.

Other QC

An EB was submitted with ARCO 616096 and was applied to the samples in ARCO 616097. A field duplicate pair was submitted with ARCO 616097. 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.

Reviewed by: Monica Dymerski

Level I

Date: 05/21/15

Memorandum

Date: May 19, 2015
To: File
From: Mary Donovan
Subject: Radiochemical Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616094, 616095, 616096 and 616097
SDG: 370483
Laboratory: GEL
Project/Task: 146422.10.11.08
Analysis: RAD

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 4.

Summary

Five samples were prepared and analyzed with approved procedures using methods EPA 901.1 (gamma spec – short list), EPA 900.0 (gross alpha/beta), SM 7500 Rn B (Radon-222), and EPA 906.0 (Tritium). Problems were identified with the data package that resulted in the qualification of data.

Gammaspec, gross alpha/beta, Radon-222 and Tritium:

1. All sample results which were either < the associated 2-sigma TPU or < the associated MDA will be **qualified BD,FR3**.

Gross alpha/beta and Radon-222:

1. All sample results which were > the MDA but $\leq 3X$ the MDA will be **qualified J,FR7**.

Holding Times and Preservation

The samples were prepared and analyzed within the prescribed holding times.

Quantification

All quantification criteria were met except as noted above in the Summary section.

Calibration

The case narratives stated that the instruments used were properly calibrated.

Blanks

No target analytes were detected in the blanks at concentrations > the MDA and 2-sigma TPU.

Tracer/Carrier Recovery

Tracer/carriers were not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD met all QC acceptance criteria.

Laboratory Replicate

All replicate error ratio acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

The samples were not diluted. All required detection limits were met.

Other QC

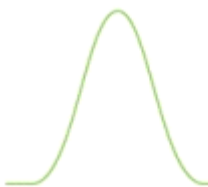
An EB was submitted with ARCO 616096 and was applied to the samples in ARCO 616097. A field duplicate pair was also submitted with ARCO 616097. There are no “required” review criteria for field duplicate analyses comparability; no data will be qualified as a result.

No other specific issues that affect data quality were identified.

Reviewed by: Monica Dymerski

Level I

Date: 05/21/15



Sample Findings Summary



AR/COC: 616094, 616095, 616096, 616097

Page 1 of 3

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|----------------------|--------------------|----------------------------|---------------|
| EPA 900.0/SW846 9310 | | | |
| | 097578-034/MWL-BW2 | ALPHA (12587-46-1) | J, FR7 |
| | 097581-034/MWL-MW7 | ALPHA (12587-46-1) | J, FR7 |
| | 097584-034/MWL-EB1 | ALPHA (12587-46-1) | BD, FR3 |
| | 097584-034/MWL-EB1 | BETA (12587-47-2) | BD, FR3 |
| | 097587-034/MWL-MW9 | ALPHA (12587-46-1) | J, FR7 |
| EPA 901.1 | | | |
| | 097578-033/MWL-BW2 | Americium-241 (14596-10-2) | BD, FR3 |
| | 097578-033/MWL-BW2 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 097578-033/MWL-BW2 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 097578-033/MWL-BW2 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 097581-033/MWL-MW7 | Americium-241 (14596-10-2) | BD, FR3 |
| | 097581-033/MWL-MW7 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 097581-033/MWL-MW7 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 097581-033/MWL-MW7 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 097584-033/MWL-EB1 | Americium-241 (14596-10-2) | BD, FR3 |
| | 097584-033/MWL-EB1 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 097584-033/MWL-EB1 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 097584-033/MWL-EB1 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 097587-033/MWL-MW9 | Americium-241 (14596-10-2) | BD, FR3 |
| | 097587-033/MWL-MW9 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 097587-033/MWL-MW9 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 097587-033/MWL-MW9 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 097588-033/MWL-MW9 | Americium-241 (14596-10-2) | BD, FR3 |
| | 097588-033/MWL-MW9 | Cesium-137 (10045-97-3) | BD, FR3 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|---------------------------|--------------------|---------------------------------|---------------|
| | 097588-033/MWL-MW9 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 097588-033/MWL-MW9 | Potassium-40 (13966-00-2) | BD, FR3 |
| EPA 906.0 Modified | | | |
| | 097578-036/MWL-BW2 | Tritium (10028-17-8) | BD, FR3 |
| | 097581-036/MWL-MW7 | Tritium (10028-17-8) | BD, FR3 |
| | 097584-036/MWL-EB1 | Tritium (10028-17-8) | BD, FR3 |
| | 097587-036/MWL-MW9 | Tritium (10028-17-8) | BD, FR3 |
| | 097588-036/MWL-MW9 | Tritium (10028-17-8) | BD, FR3 |
| SM 7500 Rn B | | | |
| | 097581-040/MWL-MW7 | Radon-222 (14859-67-7) | J, FR7 |
| | 097584-040/MWL-EB1 | Radon-222 (14859-67-7) | BD, FR3 |
| SW846 8260B DOE-AL | | | |
| | 097577-001/MWL-FB1 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097577-001/MWL-FB1 | Bromoform (75-25-2) | J+, C2 |
| | 097577-001/MWL-FB1 | Dibromochloromethane (124-48-1) | J+, C2 |
| | 097578-001/MWL-BW2 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097579-001/MWL-TB1 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097580-001/MWL-FB2 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097580-001/MWL-FB2 | Bromoform (75-25-2) | J+, C2 |
| | 097580-001/MWL-FB2 | Dibromochloromethane (124-48-1) | J+, C2 |
| | 097581-001/MWL-MW7 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097582-001/MWL-TB2 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097583-001/MWL-FB3 | Acetone (67-64-1) | J-, 13,C3 |
| | 097583-001/MWL-FB3 | Dibromochloromethane (124-48-1) | J+, C2 |
| | 097584-001/MWL-EB1 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097584-001/MWL-EB1 | Bromoform (75-25-2) | J+, C2 |
| | 097584-001/MWL-EB1 | Dibromochloromethane (124-48-1) | J+, C2 |
| | 097585-001/MWL-TB3 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097586-001/MWL-FB4 | Acetone (67-64-1) | UJ, 13,C3 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|--------------------|---------------------------------|---------------|
| | 097586-001/MWL-FB4 | Dibromochloromethane (124-48-1) | J+, C2 |
| | 097587-001/MWL-MW9 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097588-001/MWL-MW9 | Acetone (67-64-1) | UJ, 13,C3 |
| | 097589-001/MWL-TB4 | Acetone (67-64-1) | UJ, 13,C3 |

All other analyses met QC acceptance criteria; no further data should be qualified.

Data Validation Summary Worksheet

AR/COC #: 616094, 616095, 616096 and 616097

Site/Project: MWL GWM

Validation Date: 05/18/2015

SDG #: 370483

Laboratory: GEL Laboratories, LLC

Validator: Mary Donovan

Matrix: Aqueous

of Samples: 38

CVR present: Yes

Analysis Type: X Organic X Metals

AR/COC(s) present: Yes

Sample Container Integrity: OK

X Rad

Gen Chem

| Requested Analyses Not Reported | | | | | | |
|---------------------------------|---------------|---------|---------|--------|-----|----------|
| Sample Number | Laboratory ID | organic | genchem | metals | rad | Comments |
| None | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|----------|-------|------------|------------|------------|-----------------------|-----------------------|
| Sample Number | Laboratory ID | Analysis | Pres. | Coll. Date | Prep. Date | Anal. Date | Anal. within 2X HT | Anal. beyond 2X HT |
| None | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Samples collected 04/06-08/2015

Revised 7/2007

Validated By: Mary A. Donovan

Organic Worksheet (GC/MS)

AR/COC #: 616094, 616095, 616096 and 616097

SDG #: 370483

Matrix: Aqueous

Laboratory Sample IDs: 370483001, -002, -008, -009, -010, -016, -017, -018, -024, -025, -026, -032 and -038

Method/Batch #s: 1471189

Tuning (pass/fail): pass

TICs Required? (yes/no) no

| Analyte (outliers) | Calibration | | | | Method Blank | 5X (10X) Blank | LCS %R | MS %R | MSD %R | MS/ MSD RPD | EB -018 | FB1 - 001 ¹ FB2 - 009 ² FB3 - 017 ³ FB4 - 025 ⁴ | TB1 -008 TB2 -016 TB3 -024 TB4 -038 |
|-----------------------------|-------------|----|--------------------|-----------------------------|-----------------|-------------------|-----------|----------|-----------|----------------|------------|--|--|
| | Int. | RF | RSD/R ² | CCV (ICV) %D | | | | | | | | | |
| bromodichloromethane | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | 2.62 | 3.63 ¹ 3.44 ² 2.20 ³ 2.24 ⁴ | ✓ |
| bromoform | NA | ✓ | ✓ | (25.2) 25.0* 21.4** | ✓ | NA | ✓ | ✓ | ✓ | ✓ | 0.430J | 0.460J ¹ 0.550J ² | ✓ |
| chloroform | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | 1.66 | 1.90 ¹ 1.91 ² 1.75 ³ 1.68 ⁴ | ✓ |
| dibromochloromethane | NA | ✓ | ✓ | (23.1) | ✓ | NA | ✓ | ✓ | ✓ | ✓ | 1.82 | 2.83 ¹ 2.95 ² 1.62 ³ 1.56 ⁴ | ✓ |
| acetone | NA | ✓ | 33.4 | (-22.4) -46.0*** | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | 2.86J ³ | ✓ |
| styrene | NA | ✓ | ✓ | (20.7) | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2-butanone | ✓ | ✓ | ✓ | 31.7* 33.1** -23.5*** | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2-hexanone | ✓ | ✓ | ✓ | 28.6* 25.7** -24.2*** | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Surrogate Recovery Outliers | | | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | |
| IS Outliers | | | | | | | | | | | | | |
| Sample ID | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | RT |
| None | | | | | | | | | | | | | |

Comments: HTs OK, ICAL VOA9.I 03/25/15, matrix QC on sample -002

*associated with samples -001, -008, -009, -016 and -017 (04/14/15); **associated with samples -002, -010, -018, -024, -025, -026, -032 and -038 (04/15/15); ***associated with MS/MSD (04/16/15).

Inorganic Metals Worksheet

AR/COC #: 616094, 616095, 616096 and 616097

SDG #: 370483

Matrix: Aqueous

Laboratory Sample IDs: 370483003, -011, -019, -027 and -033 (UF-Cd, Cr, Ni and U)

Method/Batch #s: **3005A/6020** (ICP-MS): 1470523(prepare)/1470524

ICPMS Mass Cal (pass/fail) pass

ICPMS Resolution (pass/fail) pass

| Analyte (outliers) | Calibration | | | | | | Method Blank | 5X Blank or 5X MDL | LCS %R | MS %R | Lab Rep. RPD | Serial Dil. %D | ICS AB %R | ICS A ± MDL | CRA/ CRI %R | EB -019 | 5X EB | | | |
|-----------------------|-------------|----------------|-----|-----|---------|--------|-----------------|-----------------------------|-----------|----------|-----------------|-------------------|--------------|----------------|-------------------|------------|----------|--|--|--|
| | Int. | R ² | ICV | CCV | ICB | CCB | | | | | | | | | | | | | | |
| U | ✓ | ✓ | ✓ | ✓ | 0.00011 | 0.0001 | ✓ | 0.00055 | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| IS Outliers 60-125% | | | | IS Outliers 80-120% | | | |
|---------------------|-----------|-----------|-----------|---------------------|-----------|-----------|-----------|
| Sample ID | %Recovery | %Recovery | %Recovery | CCV/CCB ID | %Recovery | %Recovery | %Recovery |
| None | | | | None | | | |
| | | | | | | | |

Comments: HTs OK. Matrix QC performed on sample -003.

Radiochemistry Worksheet

AR/COC #: 616094, 616095, 616096 and 616097

SDG #: 370483

Matrix: Aqueous

Laboratory Sample IDs: 370483- See below

Method/Batch #s: EPA 901.1 (gamma spec): Batch 1470904 Samples -004, -012, -020, -028 and -034

Method/Batch #s: EPA 900.0 (Gross alpha/beta): Batch 1476049 Samples -005, -013, -021, -029 and -035

Method/Batch #s: SM 7500 Rn B (Radon-222): Batch 1469468 Sample -007; Batch 1470352 Samples -015, -023, -031 and -037

Method/Batch #s: EPA 906.0 (Tritium): Batch 1470768 Samples -006, -014, -022, -030 and -036

| Analyte (outliers) | Control Freq. | Control Eval. | Method Blank | 5X Blank or 5X MDC | LCS %R | MS %R | MSD %R | MS/ MSD RER | Lab Rep. RER | EB | | | |
|----------------------------------|------------------|------------------|-----------------|--------------------------|-----------|----------------|-----------|-------------------|--------------------|----------------|----|--|--|
| None | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Tracer/Carrier Recovery Outliers | | | | | | | | | | | | | |
| Sample ID | Tracer/Carrier | %R | Sample ID | | | Tracer/Carrier | %R | Sample ID | | Tracer/Carrier | %R | | |
| NA | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Comments: **Matrix QC: 901.1:** Performed on sample -004; **900.0:** Performed on sample -029; **SM 7500 Rn B:** Performed on samples -007 and -015; **906.0:** Performed on sample -006.

Gross alpha/beta samples were re-prepped due to high RPD/RER, re-analysis reported. Sample -021 was recounted due to a suspected false positive and the MS was recounted due to high alpha recovery, both recounts were reported.

Gross alpha/beta parent and DUP = 150 ml, MS/MSD=50 ml (3X dilution) –OK

Tritium MS was recounted due to low recovery, recount reported.

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

Batch No. N/A

SMO Use

AR/COC **616094**

| | | | |
|--------------------------------------|-------------------------------------|---|---|
| Project Name: MWL GWM | Date Samples Shipped: <u>4/6/15</u> | SMO Authorization: <u>[Signature]</u> | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. <input checked="" type="checkbox"/> 4° Celsius |
| Project/Task Manager: Tim Jackson | Carrier/Waybill No. <u>231218</u> | SMO Contact Phone: <u>Lorraine Herrera/505-844-3199</u> | |
| Project/Task Number: 146422.10.11.08 | Lab Contact: Edie Kent/803-556-8171 | Send Report to SMO: Rita Kavanaugh/505-284-2553 | |
| Service Order: CF01-15 | Lab Destination: GEL | | |
| Contract No.: PO 1303873 | | | |

| | | | | |
|------------|-----------|-------|-------------------|---|
| Tech Area: | Building: | Room: | Operational Site: | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 <u>370483</u> |
|------------|-----------|-------|-------------------|---|

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|----------------|---------|--------------|-------------------|-------------|----------------------------------|---------------|
| 097577 | -001 | MWL-FB1 | NA | 4/6/15 10:36 | DIW | G | 3x40 ml | HCL | G | FB | VOC (LTMMMP List) (SW846-8260B) | 001 |
| 097578 | -001 | MWL-BW2 | 496 | 4/6/15 10:36 | GW | G | 3x40 ml | HCL | G | SA | VOC (LTMMMP List) (SW846-8260B) | 002 |
| 097578 | -009 | MWL-BW2 | 496 | 4/6/15 10:37 | GW | P | 500 ml | HNO3 | G | SA | Metals (Cd,Cr,Ni,U)(SW846-6020) | 003 |
| 097578 | -033 | MWL-BW2 | 496 | 4/6/15 10:38 | GW | P | 1 L | HNO3 | G | SA | Gamma Spectroscopy (EPA 901.0) | 004 |
| 097578 | -034 | MWL-BW2 | 496 | 4/6/15 10:39 | GW | P | 1 L | HNO3 | G | SA | Gross Alpha and Beta (EPA 900.0) | 005 |
| 097578 | -036 | MWL-BW2 | 496 | 4/6/15 10:40 | GW | AG | 250 ml | None | G | SA | Tritium (EPA 906.0) | 006 |
| 097578 | -040 | MWL-BW2 | 496 | 4/6/15 10:41 | GW | AG | 2x40 ml | None | G | SA | Radon (SM 7500 Rn B) | 007 |
| 097579 | -001 | MWL-TB1 | NA | 4/6/15 10:36 | DIW | G | 3x40 ml | HCL | G | TB | VOC (LTMMMP List) (SW846-8260B) | 008 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | | | | |
|---|--------------------|--------------------|-----------|---|--|---|--|-----------------------|
| Last Chain: <input type="checkbox"/> Yes | | Sample Tracking | | SMO Use | | Special Instructions/QC Requirements: | | Conditions on Receipt |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | | Date Entered: | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| Background: <input type="checkbox"/> Yes | | Entered by: | | Negotiated TAT <input type="checkbox"/> | | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | |
| Confirmatory: <input type="checkbox"/> Yes | | QC initials: | | Return Samples By: | | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 Report specific list of VOC's (LTMMMP list provided by SNL/NM SMO) Report short list isotopes for gamma spectroscopy | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | | Lab Use | | |
| | Robert Lynch | <u>[Signature]</u> | <u>RL</u> | SNL/4142/505-844-4013/505-250-7090 | | | | |
| | Alfred Santillanes | <u>[Signature]</u> | <u>AS</u> | SNL/4142/505-284-6870/505-228-0710 | | | | |
| | | | | | | | | |

| | |
|---|---|
| 1. Relinquished by <u>Alfred Santillanes</u> Org. <u>4142</u> Date <u>4/6/15</u> Time <u>1120</u> | 3. Relinquished by _____ Org. _____ Date _____ Time _____ |
| 1. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/6/15</u> Time <u>1120</u> | 3. Received by _____ Org. _____ Date _____ Time _____ |
| 2. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/6/15</u> Time <u>1130</u> | 4. Relinquished by _____ Org. _____ Date _____ Time _____ |
| 2. Received by <u>[Signature]</u> Org. <u>GEL</u> Date <u>4-7-15</u> Time <u>0730</u> | 4. Received by _____ Org. _____ Date _____ Time _____ |

*Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1Batch No. N/A

SMO Use

AR/COC **616095**

| | | | |
|---|--|---|---|
| Project Name: <u>MWL GWM</u> | Date Samples Shipped: <u>4/7/15</u> | SMO Authorization: <u>[Signature]</u> | <input type="checkbox"/> Waste Characterization |
| Project/Task Manager: <u>Tim Jackson</u> | Carrier/Waybill No. <u>231938</u> | SMO Contact Phone: <u>Lorraine Herrera/505-844-3199</u> | <input type="checkbox"/> RMMA |
| Project/Task Number: <u>146422.10.11.08</u> | Lab Contact: <u>Edie Kent/803-556-8171</u> | Send Report to SMO: <u>Rita Kavanaugh/505-284-2553</u> | <input type="checkbox"/> Released by COC No. <input checked="" type="checkbox"/> 4° Celsius |
| Service Order: <u>CF01-15</u> | Lab Destination: <u>GEL</u> | | |
| | Contract No.: <u>PO 1303873</u> | | |

| | | |
|------------|-------------------|---|
| Tech Area: | Operational Site: | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 <u>370483</u> |
| Building: | Room: | |

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|---------|--------------|-------------------|-------------|----------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 097580 | -001 | MWL-FB2 | NA | 4/7/15 10:36 | DIW | G | 3x40 ml | HCL | G | FB | VOC (LTMMP List) (SW846-8260B) | 009 |
| 097581 | -001 | MWL-MW7 | 496 | 4/7/15 10:36 | GW | G | 3x40 ml | HCL | G | SA | VOC (LTMMP List) (SW846-8260B) | 010 |
| 097581 | -009 | MWL-MW7 | 496 | 4/7/15 10:39 | GW | P | 500 ml | HNO3 | G | SA | Metals (Cd,Cr,Ni,U)(SW846-6020) | 011 |
| 097581 | -033 | MWL-MW7 | 496 | 4/7/15 10:40 | GW | P | 1 L | HNO3 | G | SA | Gamma Spectroscopy (EPA 901.0) | 012 |
| 097581 | -034 | MWL-MW7 | 496 | 4/7/15 10:41 | GW | P | 1 L | HNO3 | G | SA | Gross Alpha and Beta (EPA 900.0) | 013 |
| 097581 | -036 | MWL-MW7 | 496 | 4/7/15 10:42 | GW | AG | 250 ml | None | G | SA | Tritium (EPA 906.0) | 014 |
| 097581 | -040 | MWL-MW7 | 496 | 4/7/15 10:38 | GW | AG | 2x40 ml | None | G | SA | Radon (SM 7500 Rn B) | 015 |
| 097582 | -001 | MWL-TB2 | NA | 4/7/15 10:36 | DIW | G | 3x40 ml | HCL | G | TB | VOC (LTMMP List) (SW846-8260B) | 016 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | |
|---|--------------------|--------------------|---|------------------------------------|--|
| Last Chain: <input type="checkbox"/> Yes | Sample Tracking | SMO Use | Special Instructions/QC Requirements: | Conditions on Receipt | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | Date Entered: | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Background: <input type="checkbox"/> Yes | Entered by: | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| Confirmatory: <input type="checkbox"/> Yes | QC inits.: | | Negotiated TAT <input type="checkbox"/> | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab |
| | Robert Lynch | <u>[Signature]</u> | RL | SNL/4142/505-844-4013/505-250-7090 | Return Samples By: Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 Report specific list of VOC's (LTMMP list provided by SNL/NM SMO) Report short list isotopes for gamma spectroscopy |
| | Alfred Santillanes | <u>[Signature]</u> | AS | SNL/4142/505-284-6870/505-228-0710 | |
| | William Gibson | <u>[Signature]</u> | WG | SNL/4142/505-284-3307/505-239-7367 | |
| | | | | | |

| | |
|---|--|
| 1. Relinquished by <u>Alfred Santillanes</u> Org. <u>4142</u> Date <u>4/7/15</u> Time <u>1055</u> | 3. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/7/15</u> Time <u>1130</u> |
| 1. Received by <u>Tim Jackson</u> Org. <u>4142</u> Date <u>4/7/15</u> Time <u>1055</u> | 3. Received by <u>[Signature]</u> Org. <u> </u> Date <u>04/08/15</u> Time <u>0850</u> |
| 2. Relinquished by <u>Tim Jackson</u> Org. <u>4142</u> Date <u>4/7/15</u> Time <u>1111</u> | 4. Relinquished by <u> </u> Org. <u> </u> Date <u> </u> Time <u> </u> |
| 2. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/7/15</u> Time <u>1111</u> | 4. Received by <u> </u> Org. <u> </u> Date <u> </u> Time <u> </u> |

*Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1Batch No. MA

SMO Use

AR/COC **616096**

| | | | |
|---|--|---|---|
| Project Name: <u>MWL GWM</u> | Date Samples Shipped: <u>4/8/15</u> | SMO Authorization: <u>[Signature]</u> | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. <input checked="" type="checkbox"/> 4° Celsius |
| Project/Task Manager: <u>Tim Jackson</u> | Carrier/Waybill No. <u>232011</u> | SMO Contact Phone: <u>[Signature]</u> | |
| Project/Task Number: <u>146422.10.11.08</u> | Lab Contact: <u>Edie Kent/803-556-8171</u> | Lorraine Herrera/505-844-3199 | |
| Service Order: <u>CF01-15</u> | Lab Destination: <u>GEL</u> | Send Report to SMO: <u>Rita Kavanaugh/505-284-2553</u> | |
| Contract No.: <u>PO 1303873</u> | | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 <u>370483</u> | |

| | | | |
|------------|-----------|-------|-------------------|
| Tech Area: | Building: | Room: | Operational Site: |
|------------|-----------|-------|-------------------|

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|---------|--------------|-------------------|-------------|----------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 097583 | -001 | MWL-FB3 | NA | 4/7/15 13:33 | DIW | G | 3x40 ml | HCL | G | FB | VOC (LTMMMP List) (SW846-8260B) | 017 |
| 097584 | -001 | MWL-EB1 | NA | 4/7/15 13:33 | DIW | G | 3x40 ml | HCL | G | EB | VOC (LTMMMP List) (SW846-8260B) | 018 |
| 097584 | -009 | MWL-EB1 | NA | 4/7/15 13:35 | DIW | P | 500 ml | HNO3 | G | EB | Metals (Cd,Cr,Ni,U)(SW846-6020) | 019 |
| 097584 | -033 | MWL-EB1 | NA | 4/7/15 13:36 | DIW | P | 1 L | HNO3 | G | EB | Gamma Spectroscopy (EPA 901.0) | 020 |
| 097584 | -034 | MWL-EB1 | NA | 4/7/15 13:37 | DIW | P | 1 L | HNO3 | G | EB | Gross Alpha and Beta (EPA 900.0) | 021 |
| 097584 | -036 | MWL-EB1 | NA | 4/7/15 13:38 | DIW | AG | 250 ml | None | G | EB | Tritium (EPA 906.0) | 022 |
| 097584 | -040 | MWL-EB1 | NA | 4/7/15 13:34 | DIW | AG | 2x40 ml | None | G | EB | Radon (SM 7500 Rn B) | 023 |
| 097585 | -001 | MWL-TB3 | NA | 4/7/15 13:33 | DIW | G | 3x40 ml | HCL | G | TB | VOC (LTMMMP List) (SW846-8260B) | 024 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | |
|---|--------------------|---|---|------------------------------------|--------------------|
| Last Chain: <input type="checkbox"/> Yes | Sample Tracking | SMO Use | Special Instructions/QC Requirements: | Conditions on Receipt | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | Date Entered: | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | |
| Background: <input type="checkbox"/> Yes | Entered by: | Negotiated TAT <input type="checkbox"/> | | | |
| Confirmatory: <input type="checkbox"/> Yes | QC inits.: | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | Return Samples By: |
| | Robert Lynch | <u>[Signature]</u> | <u>RL</u> | SNL/4142/505-844-4013/505-250-7090 | |
| | Alfred Santillanes | <u>[Signature]</u> | <u>AS</u> | SNL/4142/505-284-6870/505-228-0710 | |
| | William Gibson | <u>[Signature]</u> | <u>WG</u> | SNL/4142/505-284-3307/505-239-7367 | |
| Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 Report specific list of VOC's (LTMMMP list provided by SNL/NM SMO) Report short list isotopes for gamma spectroscopy | | | | | |

| 1. Relinquished by | Org. | Date | Time | 3. Relinquished by | Org. | Date | Time |
|---------------------------------------|------|--------|------|--------------------|------|------|------|
| <u>[Signature]</u> | 4142 | 4/8/15 | 0831 | | | | |
| 1. Received by <u>[Signature]</u> | 4142 | 4/8/15 | 0831 | 3. Received by | | | |
| 2. Relinquished by <u>[Signature]</u> | 4142 | 4/8/15 | 1000 | 4. Relinquished by | | | |
| 2. Received by <u>[Signature]</u> | | 4/9/15 | 0845 | 4. Received by | | | |

*Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 2

| Batch No. <u>MA</u> | | SMO Use <u>4/8/15</u> | | AR/COC 616097 | | | | | | | | |
|--|--------------------|--|------------|---|---------------|---|---------|------------------|-------------------|-----------------------|----------------------------------|---------------|
| Project Name: <u>MWL GWM</u> | | Date Samples Shipped: <u>4/8/15</u> | | SMO Authorization: <u>[Signature]</u> | | | | | | | | |
| Project/Task Manager: <u>Tim Jackson</u> | | Carrier/Waybill No. <u>232011</u> | | SMO Contact Phone: <u>[Signature]</u> | | | | | | | | |
| Project/Task Number: <u>146422.10.11.08</u> | | Lab Contact: <u>Edie Kent/803-556-8171</u> | | Lorraine Herrera/505-844-3199 | | | | | | | | |
| Service Order: <u>CF01-15</u> | | Lab Destination: <u>GEL</u> | | Send Report to SMO: <u>Rita Kavanaugh/505-284-2553</u> | | | | | | | | |
| Contract No.: <u>PO 1303873</u> | | | | | | | | | | | | |
| Tech Area: | | | | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. <input checked="" type="checkbox"/> 4° Celsius | | | | | | | | |
| Building: | | Room: | | Operational Site: | | | | | | | | |
| | | | | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 <u>370483</u> | | | | | | | | |
| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container Type | Volume | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
| 097586 | -001 | MWL-FB4 | NA | 4/8/15 9:57 | DIW | G | 3x40 ml | HCL | G | FB | VOC (LTMMMP List) (SW846-8260B) | 025 |
| 097587 | -001 | MWL-MW9 | 497 | 4/8/15 9:57 | GW | G | 3x40 ml | HCL | G | SA | VOC (LTMMMP List) (SW846-8260B) | 026 |
| 097587 | -009 | MWL-MW9 | 497 | 4/8/15 10:01 | GW | P | 500 ml | HNO3 | G | SA | Metals (Cd,Cr,Ni,U)(SW846-6020) | 027 |
| 097587 | -033 | MWL-MW9 | 497 | 4/8/15 10:03 | GW | P | 1 L | HNO3 | G | SA | Gamma Spectroscopy (EPA 901.0) | 028 |
| 097587 | -034 | MWL-MW9 | 497 | 4/8/15 10:05 | GW | P | 1 L | HNO3 | G | SA | Gross Alpha and Beta (EPA 900.0) | 029 |
| 097587 | -036 | MWL-MW9 | 497 | 4/8/15 10:07 | GW | AG | 250 ml | None | G | SA | Tritium (EPA 906.0) | 030 |
| 097587 | -040 | MWL-MW9 | 497 | 4/8/15 9:59 | GW | AG | 2x40 ml | None | G | SA | Radon (SM 7500 Rn B) | 031 |
| 097588 | -001 | MWL-MW9 | 497 | 4/8/15 9:57 | GW | G | 3x40 ml | HCL | G | DU | VOC (LTMMMP List) (SW846-8260B) | 032 |
| 097588 | -009 | MWL-MW9 | 497 | 4/8/15 10:01 | GW | P | 500 ml | HNO3 | G | DU | Metals (Cd,Cr,Ni,U)(SW846-6020) | 033 |
| 097588 | -033 | MWL-MW9 | 497 | 4/8/15 10:03 | GW | P | 1 L | HNO3 | G | DU | Gamma Spectroscopy (EPA 901.0) | 034 |
| Last Chain: <input type="checkbox"/> Yes | | Sample Tracking | | SMO Use | | Special Instructions/QC Requirements: | | | | Conditions on Receipt | | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | | Date Entered: | | | | EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| Background: <input type="checkbox"/> Yes | | Entered by: | | | | Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day | | | | | | |
| Confirmatory: <input type="checkbox"/> Yes | | QC inits.: | | | | Negotiated TAT <input type="checkbox"/> | | | | | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | | Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | | | Lab Use | | |
| | Robert Lynch | [Signature] | RL | SNL/4142/505-844-4013/505-250-7090 | | Return Samples By: | | | | | | |
| | Alfred Santillanes | [Signature] | AS | SNL/4142/505-284-6870/505-228-0710 | | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 | | | | | | |
| | William Gibson | [Signature] | WG | SNL/4142/505-284-3307/505-239-7367 | | Report specific list of VOC's (LTMMMP list provided by SNL/NM SMO) Report short list isotopes for gamma spectroscopy | | | | | | |
| 1. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/8/15</u> Time <u>1046</u> | | 3. Relinquished by | | Org. | | Date | | Time <u>0845</u> | | | | |
| 1. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/8/15</u> Time <u>1046</u> | | 3. Received by | | Org. | | Date | | Time | | | | |
| 2. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/8/15</u> Time <u>1100</u> | | 4. Relinquished by | | Org. | | Date | | Time | | | | |
| 2. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/8/15</u> Time <u>0845</u> | | 4. Received by | | Org. | | Date | | Time | | | | |

*Prior confirmation with SMO required for 7 and 15 day TAT

Page 2 of 2[illegible]

AR/COC NUMBER 616098

Memorandum

Date: May 27, 2015
To: File
From: Linda Thal
Subject: GC/MS Organic Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616098
SDG: 370936
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

Four 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 resulted in the qualification of data.

1. The ICAL intercept was positive and $>$ the MDL for bromoform. The bromoform result for sample 370936008 was a detect $\leq 3X$ the value of the intercept and will be **qualified J+,I5**
2. The ICAL %RSD was $>15\%$ but $\leq 40\%$ and the ICV %D was $>20\%$ but $\leq 40\%$ with negative bias for acetone. The associated sample results were non-detects and will be **qualified UJ, I3,C3**.
3. The MS/MSD RPDs were $>$ acceptance criteria for dibromochloromethane, 4-methyl-2-pentanone, tetrachloroethylene, styrene, toluene and trans-1,3-dichloropropylene. The dibromochloromethane result for sample -008 was a detect and will be **qualified J,MS5**. The remaining 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 analyzed within the prescribed holding time 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 ICAL intercept was positive and > the MDL for bromoform. The associated results for samples -001 and -002 were non-detects and will not be qualified.

The ICV %D was >20% and positive for dichlorodifluoromethane. All associated sample results were non-detects and will not be qualified.

The CCV %Ds were > 20% with negative bias and no other calibration infractions occurred for methylene chloride, 2-butanone and 1,2-dichloroethane. The associated sample results were non-detects and will not be qualified.

Blanks

No target analytes were detected in the blanks except as follows. Bromodichloromethane, chloroform, bromoform and dibromochloromethane were detected at concentrations > the PQLs in the FB, sample -008. 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)

All MS/MSD acceptance criteria were met except as noted above in the Summary section.

Laboratory Control Sample (LCS)

All LCS acceptance criteria were met.

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 TB and a FB were submitted with AR/COC 616098.

No other specific issues that affect data quality were identified.

Reviewed by: Monica Dymerski

Level I

Date: 05/28/15

Memorandum

Date: May 27, 2015
To: File
From: Linda Thal
Subject: Inorganic Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616098
SDG: 370936
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

One sample was prepared and analyzed with approved procedures using method EPA 6020 (ICP-MS). Data were reported for all required analytes. Problems were identified with the data package that resulted in the qualification of data.

1. The Ca, Mg and Al concentrations were not available for sample 370936003. Ni was detected in the ICS A at a negative value > 2X the MDL. The associated sample result was a detect <50X the absolute value of the ICS A result and will be **qualified J-,CK3**.

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 sample was prepared and analyzed within the prescribed holding times and properly preserved.

ICP-MS Instrument Tune

The ICP-MS tunes met QC acceptance criteria.

Calibration

All initial and continuing calibration criteria met QC acceptance criteria.

Reporting Limit Verification

All CRA/CRI recoveries associated with the samples met QC acceptance criteria.

It should be noted that the CRI was analyzed at the PQL and not at 2X the PQL for all target analytes.

Blanks

No target analytes were detected in the blanks except as follows. U was detected at < the PQL in the ICB/CCB. The associated sample result was a detect >5X the highest blank concentration and will not be qualified.

ICP -MS Internal Standards

The ICP-MS internal standards met QC acceptance criteria.

Matrix Spike (MS)

The MS met all QC acceptance criteria.

Laboratory Replicate

The replicate met all QC acceptance criteria.

Laboratory Control Sample (LCS)

The LCS met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported. The sample was not diluted.

ICP Interference Check Sample (ICS A and AB)

Results of the ICS A and AB analyses were evaluated because the sample concentrations of Ca, Mg and Al were not available. All QC acceptance criteria were met except as noted above in the Summary section.

ICP Serial Dilution

The serial dilution met all QC acceptance criteria.

Other QC

No other specific issues that affect data quality were identified.

Reviewed by: Monica Dymerski

Level I

Date: 05/28/15

Memorandum

Date: May 27, 2015
To: File
From: Linda Thal
Subject: Radiochemical Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616098
SDG: 370936
Laboratory: GEL
Project/Task: 146422.10.11.08
Analysis: RAD

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 4.

Summary

One sample was prepared and analyzed with approved procedures using methods SM7500 Rn B (radon-222), EPA 906.0 (tritium), EPA 901.1 (gamma spec – short list) and EPA 900.0 (gross alpha/beta). Problems were identified with the data package that resulted in the qualification of data.

Gammascpec and Tritium:

1. All sample results which were either < the associated 2-sigma TPU or < the associated MDA will be **qualified BD,FR3**.

Gross alpha/beta:

1. All sample results that were > the MDA but $\leq 3X$ the MDA will be **qualified J,FR7**.

Radon-222:

1. The sample was prepared and analyzed beyond the method specified holding time but <2X the holding time. The sample result was < the associated MDA and will be **qualified BD,H1**.

Holding Times and Preservation

The samples were prepared and analyzed within the prescribed holding times except as noted above in the Summary section.

Quantification

All quantification criteria were met except as noted above in the Summary section.

Calibration

The case narratives stated that the instruments used were properly calibrated.

Blanks

No target analytes were detected in the blanks at concentrations > the MDA and 2-sigma TPU.

Tracer/Carrier Recovery

Tracer/carriers were not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS and/or MSD met all QC acceptance criteria.

Gross alpha/beta:

It should be noted that the MS/MSD was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

Laboratory Replicate

All replicate error ratio acceptance criteria were met.

Gross alpha/beta:

It should be noted that the laboratory replicate was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

The sample was not diluted. All required detection limits were met.

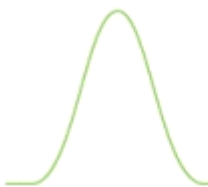
Other QC

No other specific issues that affect data quality were identified.

Reviewed by: Monica Dymerski

Level I

Date: 05/28/15



Sample Findings Summary



AR/COC: 616098

Page 1 of 2

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|------------------------|--------------------|--|---------------|
| EPA 900.0/SW846 9310 | | | |
| | 097591-034/MWL-MW8 | ALPHA (12587-46-1) | J, FR7 |
| EPA 901.1 | | | |
| | 097591-033/MWL-MW8 | Americium-241 (14596-10-2) | BD, FR3 |
| | 097591-033/MWL-MW8 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 097591-033/MWL-MW8 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 097591-033/MWL-MW8 | Potassium-40 (13966-00-2) | BD, FR3 |
| EPA 906.0 Modified | | | |
| | 097591-036/MWL-MW8 | Tritium (10028-17-8) | BD, FR3 |
| SM 7500 Rn B | | | |
| | 097591-040/MWL-MW8 | Radon-222 (14859-67-7) | BD, FR3,H1 |
| SW846 3005/6020 DOE-AL | | | |
| | 097591-009/MWL-MW8 | Nickel (7440-02-0) | J-, CK3 |
| SW846 8260B DOE-AL | | | |
| | 097590-001/MWL-FB5 | 4-Methyl-2-pentanone (108-10-1) | UJ, MS5 |
| | 097590-001/MWL-FB5 | Acetone (67-64-1) | UJ, I3,C3 |
| | 097590-001/MWL-FB5 | Bromoform (75-25-2) | J+, I5 |
| | 097590-001/MWL-FB5 | Dibromochloromethane (124-48-1) | J, MS5 |
| | 097590-001/MWL-FB5 | Styrene (100-42-5) | UJ, MS5 |
| | 097590-001/MWL-FB5 | Tetrachloroethylene (127-18-4) | UJ, MS5 |
| | 097590-001/MWL-FB5 | Toluene (108-88-3) | UJ, MS5 |
| | 097590-001/MWL-FB5 | trans-1,3-Dichloropropylene (10061-02-6) | UJ, MS5 |
| | 097591-001/MWL-MW8 | 4-Methyl-2-pentanone (108-10-1) | UJ, MS5 |
| | 097591-001/MWL-MW8 | Acetone (67-64-1) | UJ, I3,C3 |
| | 097591-001/MWL-MW8 | Dibromochloromethane (124-48-1) | UJ, MS5 |
| | 097591-001/MWL-MW8 | Styrene (100-42-5) | UJ, MS5 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|--------------------|--|---------------|
| | 097591-001/MWL-MW8 | Tetrachloroethylene (127-18-4) | UJ, MS5 |
| | 097591-001/MWL-MW8 | Toluene (108-88-3) | UJ, MS5 |
| | 097591-001/MWL-MW8 | trans-1,3-Dichloropropylene (10061-02-6) | UJ, MS5 |
| | 097592-001/MWL-TB5 | 4-Methyl-2-pentanone (108-10-1) | UJ, MS5 |
| | 097592-001/MWL-TB5 | Acetone (67-64-1) | UJ, I3,C3 |
| | 097592-001/MWL-TB5 | Dibromochloromethane (124-48-1) | UJ, MS5 |
| | 097592-001/MWL-TB5 | Styrene (100-42-5) | UJ, MS5 |
| | 097592-001/MWL-TB5 | Tetrachloroethylene (127-18-4) | UJ, MS5 |
| | 097592-001/MWL-TB5 | Toluene (108-88-3) | UJ, MS5 |
| | 097592-001/MWL-TB5 | trans-1,3-Dichloropropylene (10061-02-6) | UJ, MS5 |

All other analyses met QC acceptance criteria; no further data should be qualified.

Data Validation Summary Worksheet

AR/COC #: 616098

Site/Project: MWL GWM

Validation Date: 05/27/2015

SDG #: 370936

Laboratory: GEL

Validator: Linda Thal

Matrix: Aqueous

of Samples: 8 CVR present: Yes

Analysis Type: ☒ Organic ☒ Metals

AR/COC(s) present: Yes

Sample Container Integrity: OK

☒ Rad ☐ Gen Chem

| Requested Analyses Not Reported | | | | | | |
|---------------------------------|---------------|---------|---------|--------|-----|----------|
| Sample Number | Laboratory ID | organic | genchem | metals | rad | Comments |
| None | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|---------------------------|-------|-----------------|---------------------|---------------------|-----------------------|-----------------------|
| Sample Number | Laboratory ID | Analysis | Pres. | Coll. Date | Prep. Date | Anal. Date | Anal. within 2X HT | Anal. beyond 2X HT |
| 097591-040 | 370936007 | SM 7500 Rn B Radon-222 | ✓ | 04/13/2015 9:53 | 04/20/2015 19:54 | 04/20/2015 19:54 | Yes | No |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Sampled 04/13/2015.

Validated by:  Revised 7/2007

Organic Worksheet (GC/MS)

AR/COC #: 616098

SDG #: 370936

Matrix: Aqueous

Laboratory Sample IDs: 370936001, -002, -008

Method/Batch #s: 8260B: 1473323

Tuning (pass/fail): Pass TICs Required? (yes/no): No

| Analyte (outliers) | Calibration | | | | MB | 5X (10X) MB | LCS %R | MS %R | MSD %R | MS/ MSD RPD | TB -008 | TB X5 | FB -008 | FB X5 |
|-----------------------------|-------------|--------------|------------------------|--------------------|------|-------------------|-----------|----------|-----------|-------------------|------------|----------|------------|----------|
| | Int. | RF/ Slope | RSD/ R ² | (ICV) CCV %D | | | | | | | | | | |
| Bromodichloromethane | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | 1.9 | 9.5 |
| Chloroform | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | 1.32 | 6.6 |
| Dibromochloromethane | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 26.1 | ✓ | NA | 1.78 | 8.9 |
| Bromoform | +0.80 | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | 1.15 | 5.75 |
| 4-Methyl-2-pentanone | NA | ✓ | | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 26.9 | ✓ | NA | ✓ | NA |
| Tetrachloroethylene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 20.8 | ✓ | NA | ✓ | NA |
| Styrene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 34 | ✓ | NA | ✓ | NA |
| Toluene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 30.1 | ✓ | NA | ✓ | NA |
| trans-1,3-Dichloropropylene | NA | ✓ | ✓ | ✓ | ✓ | NA | ✓ | ✓ | ✓ | 29 | ✓ | NA | ✓ | NA |
| Acetone | NA | ✓ | 19 | (-22) -38 | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA |
| Dichlorodifluoromethane | NA | ✓ | ✓ | (+37) | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA |
| Methylene chloride | NA | ✓ | ✓ | -22 | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA |
| 2-Butanone | NA | ✓ | ✓ | -26 | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA |
| 1,2-Dichloroethane | NA | ✓ | ✓ | -24 | ✓ | NA | ✓ | ✓ | ✓ | ✓ | ✓ | NA | ✓ | NA |
| Surrogate Recovery Outliers | | | | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | |
| IS Outliers | | | | | | | | | | | | | | |
| Sample ID | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT | Area | RT |
| None | | | | | | | | | | | | | | |

Comments: HT OK; Shorter list of target analytes; MS/MSD performed on -002

VOA6.I 03/24/2015; Linear: Bromoform,

Inorganic Metals Worksheet

AR/COC #: 616098

SDG #: 370936

Matrix: Aqueous

Laboratory Sample IDs: 370396003

Method/Batch #s: **3005A/6020**: 1472276/1472277

ICPMS Mass Cal (pass/fail): Pass

ICPMS Resolution (pass/fail): Pass

[illegible]

| IS Outliers 60-125% | | | | IS Outliers 80-120% | | | |
|---------------------|-----------|-----------|-----------|---------------------|-----------|-----------|-----------|
| Sample ID | %Recovery | %Recovery | %Recovery | CCV/CCB ID | %Recovery | %Recovery | %Recovery |
| None | | | | None | | | |

Comments: HTs OK; All matrix QC -003; No sample results available for Ca, Mg or Al

Rev 07/2007

Radiochemistry Worksheet

AR/COC #: 616098

SDG #: 370936

Matrix: Aqueous

Laboratory Sample IDs: 370936-see below

Method/Batch#s: EPA 901.1 GammaSpec ; 1472672 -004

Method/Batch#s: EPA 900.0 Gross alpha/beta; 1476049 -005

Method/Batch#s: SM 7500 Rn B; 1472391 -007

Method/Batch#s: EPA 906.0 Tritium; 1475818 -006

| Analyte (outliers) | Control Freq. | Control Eval. | Method Blank | 5X Blank or 5X MDC | LCS %R | MS %R | MSD %R | MS/ MSD RER | Lab Rep. RER | | | | |
|----------------------------------|------------------|------------------|-----------------|--------------------------|-----------|----------------|-----------|-------------------|--------------------|--|----------------|----|--|
| None | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Tracer/Carrier Recovery Outliers | | | | | | | | | | | | | |
| Sample ID | Tracer/Carrier | %R | Sample ID | | | Tracer/Carrier | %R | Sample ID | | | Tracer/Carrier | %R | |
| NA | | | | | | | | | | | | | |

Comments: HT: Rn 222 analyzed past method specified HT; Matrix -004 (GS); -007 (Rn); -006 (H3); matrix QC on SNL sample from another SDG for gross A/B

Gross A/B parent 150ml; DUP =150ml; MS/MSD = 50ml (3X dilution) –no qual

Data rejected due to peak not meeting identification criteria: None

No peaks identified for: None

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

| | | | | | |
|--------------------------------------|--|--------------------------------------|--|---|--|
| Batch No. <u>11A</u> | | SMO Use | | AR/COC 616098 | |
| Project Name: MWL GWM | | Date Samples Shipped: <u>4/13/15</u> | | SMO Authorization: <u>[Signature]</u> | |
| Project/Task Manager: Tim Jackson | | Carrier/Waybill No. <u>231850</u> | | SMO Contact Phone: <u>[Signature]</u> | |
| Project/Task Number: 146422.10.11.08 | | Lab Contact: Edie Kent/803-556-8171 | | Lorraine Herrera/505-844-3199 | |
| Service Order: CF01-15 | | Lab Destination: GEL | | Send Report to SMO: Rita Kavanaugh/505-284-2553 | |
| Contract No.: PO 1303873 | | | | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. <input checked="" type="checkbox"/> 4° Celsius | |
| Tech Area: | | Operational Site: <u>T1/15</u> | | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 <u>370936</u> | |
| Building: | | Room: | | | |

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|---------|--------------|-------------------|-------------|----------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 097590 | -001 | MWL-FB5 | NA | 4/13/15 9:49 | DIW | G | 3x40 ml | HCL | G | FB | VOC (LTMMMP List) (SW846-8260B) | 001 |
| 097591 | -001 | MWL-MW8 | 497 | 3/13/15 9:49 | GW | G | 3x40 ml | HCL | G | SA | VOC (LTMMMP List) (SW846-8260B) | 002 |
| 097591 | -009 | MWL-MW8 | 497 | 3/13/15 9:55 | GW | P | 500 ml | HNO3 | G | SA | Metals (Cd,Cr,Ni,U)(SW846-6020) | 003 |
| 097591 | -033 | MWL-MW8 | 497 | 3/13/15 9:58 | GW | P | 1 L | HNO3 | G | SA | Gamma Spectroscopy (EPA 901.0) | 004 |
| 097591 | -034 | MWL-MW8 | 497 | 3/13/15 10:02 | GW | P | 1 L | HNO3 | G | SA | Gross Alpha and Beta (EPA 900.0) | 005 |
| 097591 | -036 | MWL-MW8 | 497 | 3/13/15 10:05 | GW | AG | 250 ml | None | G | SA | Tritium (EPA 906.0) | 006 |
| 097591 | -040 | MWL-MW8 | 497 | 3/13/15 9:53 | GW | AG | 2x40 ml | None | G | SA | Radon (SM 7500 Rn B) | 007 |
| 097592 | -001 | MWL-TB5 | NA | 3/13/15 9:49 | DIW | G | 3x40 ml | HCL | G | TB | VOC (LTMMMP List) (SW846-8260B) | 008 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | | |
|--|--|--|--|---|--|--|
| * Last Chain: <input checked="" type="checkbox"/> Yes * Validation Req'd: <input checked="" type="checkbox"/> Yes Background: <input type="checkbox"/> Yes Confirmatory: <input type="checkbox"/> Yes | | Sample Tracking Date Entered: Entered by: QC initials: | | SMO Use Special Instructions/QC Requirements: EDD <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Turnaround Time <input type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input checked="" type="checkbox"/> 30 Day Negotiated TAT Sample Disposal <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | Conditions on Receipt Lab Use |
| Sample Team Members Name Robert Lynch Gilbert Quintana William Gibson | | Signature <u>[Signature]</u> <u>[Signature]</u> <u>[Signature]</u> | | Init. <u>RL</u> <u>GQ</u> <u>WG</u> | | |
| Company/Organization/Phone/Cell SNL/4142/505-844-4013/505-250-7090 SNL/4143/505-844-2507/505-228-2606 SNL/4142/505-284-3307/505-239-7367 | | Return Samples By: Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 Report specific list of VOC's (LTMMMP list provided by SNL/NM SMO) Report short list isotopes for gamma spectroscopy | | | | |
| 1. Relinquished by <u>[Signature]</u> Org. <u>4143</u> Date <u>4-13-15</u> Time <u>1012</u> 1. Received by <u>T. Jackson</u> Org. <u>4142</u> Date <u>4-13-15</u> Time <u>1012</u> 2. Relinquished by <u>T. Jackson</u> Org. <u>4142</u> Date <u>4-13-15</u> Time <u>1026</u> 2. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4-13-15</u> Time <u>1026</u> | | 3. Relinquished by <u>[Signature]</u> Org. <u>4142</u> Date <u>4/13/15</u> Time <u>1045</u> 3. Received by <u>[Signature]</u> Org. <u>4142</u> Date <u>4-14-15</u> Time <u>0755</u> 4. Relinquished by <u>[Signature]</u> Org. <u> </u> Date <u> </u> Time <u> </u> 4. Received by <u>[Signature]</u> Org. <u> </u> Date <u> </u> Time <u> </u> | | | | |

*Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT VERIFICATION REVIEW FORMS
GROUNDWATER MONITORING
APRIL 2015

| AR/COC Number | Sample Type |
|----------------------|--------------------|
| 616094 | Environmental* |
| 616095 | Environmental* |
| 616096 | Environmental* |
| 616097 | Environmental* |
| 616098 | Environmental* |

* AR/COC forms are provided in the Data Validation Section of this Annex.

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL GWM

Project/Task No. 146422_10.11.08

ARCOC No. 616094, 616095, 616096, 616097

Analytical Lab GEL

SDG No. 370483

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | X | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | X | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | | X | VOC PSD recovery failed for 1,1,1-Trichloroethane, 1,1-Dichloroethylene, Dichlorodifluoromethane (1203299230) |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Detected in FB1, FB2, EB1: Bromodichloromethane, Bromoform, Chloroform, Dibromochloromethane (097577-001, 097580-001, 097584-001). Detected in FB3: Acetone, Bromodichloromethane, Chloroform, Dibromochloromethane (097583-001). Detected in FB4: Bromodichloromethane, Chloroform, Dibromochloromethane (097586-001) |
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | X | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) | N/A | | |
| | a) 12-hour tune check provided | | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) a) Initial calibration provided | X | | |
| | b) Continuing calibration provided | X | | |
| | c) ICP interference check sample data provided | X | | |
| | d) ICP serial dilution provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.6 | Radiochemistry and General Chemistry a) Instrument run logs provided | X | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Lorraine R. Herrera Date: 05-13-2015 13:14:00

Closed by: Lorraine R. Herrera Date: 05-13-2015 13:14:00

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL GWM

Project/Task No. 146422_10.11.08

ARCOC No. 616098

Analytical Lab GEL

SDG No. 370936

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|---|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | X | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | | X | Radon-222 analyzed out of hold time due to lab error (097591-040) |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | X | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | | X | VOC PSD failed for 4-Methyl-2-pentanone, Dibromochloromethane, Styrene, Tetrachloroethylene, Toluene, Xylenes (total), trans-1,3-Dichloropropylene (1203304773) |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Detected in FB5: Bromodichloromethane, Bromoform, Chloroform (097590-001) |
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | X | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |
| | c) Continuing calibration provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | c) CRI provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | X | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | X | | |
| | c) ICP interference check sample data provided | X | | |
| | d) ICP serial dilution provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.6 | Radiochemistry and General Chemistry | X | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

| Line No. | Item | Yes | No | If no, explain |
|----------|------|-----|----|----------------|
|----------|------|-----|----|----------------|

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Lorraine R. Herrera Date: 05-26-2015 09:56:00

Closed by: Lorraine R. Herrera Date: 05-26-2015 09:56:00

FIELD SAMPLING FORMS
OCTOBER 2015 GROUNDWATER MONITORING

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-BW2Date: 10/12/15Time: 0755Activities: Groundwater monitoring and sampling

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 67.4°F Wind Speed: 0-10 MPHHumidity: 24.3%Chemicals Used: Decon - detergent + HNO₃, sample preservativesOther: Be aware of possible UXO

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input checked="" type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed Name

William Gibson
Printed Name

ALFRED SANTILLANES
Printed Name

Printed Name

Printed Name

Robert Lynch
Signature

William Gibson
Signature

Alfred Santillanes
Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-MW7Date: 10/13/15Time: 0755Activities: GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 79.1 °F Wind Speed: 0 MPHHumidity: 17.6 %Chemicals Used: sample preservatives, decon process (HNO₃, detergent)Other: Be aware of possible UXO

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input checked="" type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed Name

ALFRED SANTILLANES
Printed Name

William Gibson
Printed Name

Printed Name

Printed Name

Robert Lynch
Signature

Alfred Santillanes
Signature

William Gibson
Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-MW9Date: 10/14/15Time: 0757Activities: GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 77.6 °F Wind Speed: 0-10 MPHHumidity: 20.4 %Chemicals Used: sample preservation, decon process (detergent, HNO₃)Other: Be aware of possible UXO

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input checked="" type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed Name

ALFRED SANTILLANES
Printed Name

William Gibson
Printed Name

Printed Name

Printed Name

[Signature]
Signature

[Signature]
Signature

[Signature]
Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-MW8Date: 10/15/15Time: 0755Activities: GROUND WATER MONITORING AND SAMPLING

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 69.8 °F Wind Speed: 0-5 MPHHumidity: 24.7 %Chemicals Used: sample preservation, decon process (detergent, HNO₃)Other: Be aware of possible UXO

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input checked="" type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed NameALFRED SANTILLANES
Printed NameGilbert L. Quintana
Printed NameWilliam Gibson
Printed Name

Printed Name

Ratt Snell
SignatureAlfred Santillanes
SignatureGilbert L. Quintana
SignatureWilliam Gibson
Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | |
|---|--|
| Project Name: MWL | |
| Well I.D.: MWL-BW2 | Date: 10/12/15 |
| Method: Portable pump <input checked="" type="checkbox"/> | Dedicated pump <input type="checkbox"/> Pump depth: 496' |

PURGE MEASUREMENTS

[illegible]

Comments: ~1.5 GALS PURGED FROM TUBING 0820

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | |
|--|----------------|
| Project Name: MWL | |
| Well I.D.: MWL-MW7 | Date: 10/13/15 |
| Method: Portable pump <input checked="" type="checkbox"/> Dedicated pump <input type="checkbox"/> Pump depth: 496' | |

PURGE MEASUREMENTS

[illegible]

Comments: ~1.5 gals purged from tubing 0829

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | |
|---|--|
| Project Name: MWL | |
| Well I.D.: MWL-MW8 | Date: 10/15/15 |
| Method: Portable pump <input checked="" type="checkbox"/> | Dedicated pump <input type="checkbox"/> Pump depth: 497' |

PURGE MEASUREMENTS

[illegible]

Comments: ~1.5 gals purged from tubing 0824

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|--|-------------------------------|-------------|----------------------------------|-----------------------|---------------|-------------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 10/12/15 | | |
| Make & Model: EXO1 | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 13C101167 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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 | 4.01 | 22.2 | 7.00 | 22.2 | 10.00 | 22.2 |
| 2. Time: 1116 | 4.02 | 22.0 | 7.00 | 22.0 | 10.00 | 22.0 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | 5GE740 | | 5AD829 | | 5GE556 | |
| Expiration date: | 5/17 | | 4/17 | | 5/17 | |
| SC Calibration/Check | | | | | | |
| Reference Value: 1413 uS | | | Standard Lot No.: 5AD820 | | | |
| | Value | Temp | Expiration Date: 5/16 | | | |
| 1. Time: 0641 | 1412.8 | 22.2 | | | | |
| 2. Time: 1115 | 1413.3 | 22.0 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | Standard Lot No. 5AD891 | | | |
| | Value | Temp | Expiration Date: 1/16 | | | |
| 1. Time: 0642 | 220.0 | 22.2 | | | | |
| 2. Time: 1118 | 220.2 | 22.0 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | | |
| 1. Time: 0757 | 83.0 | | 24.79 | | | |
| 2. Time: 1114 | 82.9 | | 24.79 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|------------------------------|-------|-------|-----------------------------|-------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 10/12/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | 0.1 | 20 | 100 | 800 |
| Standard Lot No. | A5162 | A5247 | A5251 | A5246 |
| 1. Time 0759 | .12 | 20.2 | 103 | 798 |
| 2. Time 1027 | .11 | 20.1 | 102 | 796 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | | |
|---|-------|-------------------------------|-----------------------|----------------------------|-------|--------|------|
| SNL/NM Project Name: MWL | | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 10/13/15 | | | |
| Make & Model: EXO1 | | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 13C101167 | | | | | | | |
| Other (S/N): NA | | | | | | | |
| pH Calibration/Check | | | | | | | |
| 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: | 0633 | 4.03 | 21.7 | 7.00 | 21.7 | 10.01 | 21.7 |
| 2. Time: | 1118 | 4.02 | 21.5 | 7.01 | 21.5 | 10.01 | 21.5 |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |
| Standard lot no.: | | 5GE740 | | 5AD829 | | 5GE556 | |
| Expiration date: | | 5/17 | | 4/17 | | 5/17 | |
| SC Calibration/Check | | | | | | | |
| Reference Value: 1413 uS | | | | Standard Lot No: 5AD820 | | | |
| | Value | Temp | Expiration Date: 5/16 | | | | |
| 1. Time: | 0632 | 1412.8 | 21.7 | | | | |
| 2. Time: | 1117 | 1413.3 | 21.5 | | | | |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |
| ORP Calibration/Check | | | | | | | |
| Reference Value: 220 mV | | | | Standard Lot No. 5AD891 | | | |
| | Value | Temp | Expiration Date: 1/16 | | | | |
| 1. Time: | 0635 | 219.8 | 21.7 | | | | |
| 2. Time: | 1120 | 220.2 | 21.5 | | | | |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |
| DO Calibration/Check | | | | | | | |
| Calibration Value: | | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | | |
| 1. Time: | 0631 | 82.1 | 24.81 | | | | |
| 2. Time: | 1116 | 82.2 | 24.79 | | | | |
| 3. Time: | | | | | | | |
| 4. Time: | | | | | | | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|------------------------------|-------|-------|-----------------------------|-------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 10/13/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | 0.1 | 20 | 100 | 800 |
| Standard Lot No. | A5162 | A5247 | A5251 | A5246 |
| 1. Time 0758 | .11 | 19.9 | 102 | 803 |
| 2. Time 1002 | .13 | 20.1 | 104 | 798 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|--|-------------|--------------------------------------|------------------------------|----------------------------------|-------------|---------------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 10/14/15 | | |
| Make & Model: EXO1 | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 13C101167 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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: | 0627 | 4.02 | 20.6 | 7.00 | 20.6 | 9.99 |
| 2. Time: | 1118 | 4.03 | 20.9 | 7.01 | 20.9 | 10.01 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | | 5GE740 | | 5AD829 | | 5GE556 |
| Expiration date: | | 5/17 | | 4/17 | | 5/17 |
| SC Calibration/Check | | | | | | |
| Reference Value: 1413 uS | | | | Standard Lot No.: 5AD820 | | |
| | Value | Temp | Expiration Date: 5/16 | | | |
| 1. Time: | 0626 | 1412.8 | 20.6 | | | |
| 2. Time: | 1117 | 1413.7 | 20.9 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | | Standard Lot No. 5AD891 | | |
| | Value | Temp | Expiration Date: 1/16 | | | |
| 1. Time: | 0629 | 219.8 | 20.6 | | | |
| 2. Time: | 1121 | 220.3 | 20.9 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | |
| 1. Time: | 0625 | 82.1 | 24.86 | | | |
| 2. Time: | 1116 | 82.2 | 24.88 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |

IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|------------------------------|----------|-------|-----------------------------|-------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 10/14/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | 0.1 | 20 | 100 | 800 |
| Standard Lot No. | A5162 | A5247 | A5251 | A5246 |
| 1. Time | 0808 .13 | 19.8 | 102 | 797 |
| 2. Time | 1038 .14 | 20.1 | 101 | 796 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|--|-------------|-------------------------------|------------------------------|----------------------------------|-------------|---------------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 10/15/15 | | |
| Make & Model: EXO1 | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 13C101167 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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: | 0627 | 4.03 | 20.2 | 7.01 | 20.2 | 10.00 |
| 2. Time: | 1054 | 4.02 | 20.6 | 7.00 | 20.6 | 10.01 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | | 5GE740 | | 5AD829 | | 5GE556 |
| Expiration date: | | 5/17 | | 4/17 | | 5/17 |
| SC Calibration/Check | | | | | | |
| Reference Value: 1413 US | | | | Standard Lot No. 5AD820 | | |
| | Value | Temp | Expiration Date: 5/16 | | | |
| 1. Time: | 0626 | 1412.8 | 20.2 | | | |
| 2. Time: | 1053 | 1413.2 | 20.7 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | | Standard Lot No. 5AD891 | | |
| | Value | Temp | Expiration Date: 1/16 | | | |
| 1. Time: | 0629 | 220.4 | 20.2 | | | |
| 2. Time: | 1056 | 220.1 | 20.6 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | |
| 1. Time: | 0625 | 82.0 | 24.81 | | | |
| 2. Time: | 1052 | 82.1 | 24.80 | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|------------------------------|-------|-------|-----------------------------|-------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 10/15/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 14060C033238 | |
| Reference Value | 0.1 | 20 | 100 | 800 |
| Standard Lot No. | A5162 | A5247 | A5251 | A5246 |
| 1. Time 0800 | .13 | 20.1 | 99.8 | 796 |
| 2. Time 0950 | .11 | 19.9 | 101 | 802 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|------------------------------------|
| Project Name: <u>MWL</u> | Monitoring Well ID #: <u>MWL-BW2</u> | Date: <u>10-12-15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| <u>Personnel Performing Decontamination:</u> | | |
| Robert Lynch | | <u>RL</u> |
| Print Name: | | Initial: |
| Alfred Santillanes | | <u>AS</u> |
| Print Name: | | Initial: |
| Condition of Equipment | | |
| Pump: <u>Good</u> | Tubing Bundle: <u>Good</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>09-09-15</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROS</u> | |
| | Lot Number: <u>A0316863</u> | |


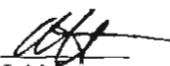
IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|------------------------------------|
| Project Name: <u>MWL-GWM</u> | Monitoring Well ID #: <u>MWL-MW7</u> | Date: <u>10-13-15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| Personnel Performing Decontamination: | | |
| William Gibson | | <u>WJG</u> |
| Print Name: | | Initial: |
| Robert Lynch | | <u>RL</u> |
| Print Name: | | Initial: |
| Condition of Equipment | | |
| Pump: <u>Good</u> | Tubing Bundle: <u>Good</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>09-09-15</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROS</u> | |
| | Lot Number: <u>A0316863</u> | |

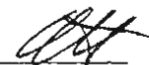
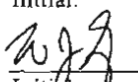
IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|------------------------------------|
| Project Name: <u>MWL GWM</u> | Monitoring Well ID #: <u>MWL-MW9</u> | Date: <u>10/14/15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| Personnel Performing Decontamination: | | |
| Robert Lynch |  | |
| Print Name: | Initial: | |
| Alfred Santillanes |  | |
| Print Name: | Initial: | |
| Condition of Equipment | | |
| Pump: <u>Good</u> | Tubing Bundle: <u>Good</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>100515</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROC</u> | |
| | Lot Number: <u>A0316863</u> | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form

| | | |
|--|---|---|
| Project Name: <u>MWL-GWM</u> | Monitoring Well ID #: <u>MWL-MW8</u> | Date: <u>10-15-15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| Personnel Performing Decontamination: | | |
| Alfred Santillanes | |  |
| Print Name: | | Initial: |
| William Gibson | |  |
| Print Name: | | Initial: |
| Condition of Equipment | | |
| Pump: <u>Good</u> | Tubing Bundle: <u>Good</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO ₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>09-09-15</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROS</u> | |
| | Lot Number: <u>A0316863</u> | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

**SUMMARY SHEET FOR
OCTOBER 2015 GROUNDWATER SAMPLES**

Sample Summary for October 2016 MWL Groundwater Monitoring

| <i>Well ID</i> | <i>Sample Date</i> | <i>ARCOC</i> | <i>Sample Number</i> | <i>Sample Type</i> | <i>Associated Equipment Blank (ARCOC #/Sample #)</i> | <i>Associated Trip Blank (ARCOC #/ Sample #)</i> | <i>Associated Field Blank (ARCOC #/ Sample #)</i> | <i>Comments</i> |
|---|--------------------|--------------|----------------------|--------------------|--|--|---|--|
| GEL Analytical Data: Project Task # 146422.10.11.08, Service Order # CF01-16 | | | | | | | | |
| MWL-BW2 | 12-Oct-15 | 616355 | 098344 | Environmental | n/a | 616355 / 098345 | 616355 / 098343 | |
| MWL-MW7 | 13-Oct-15 | 616356 | 098347 | Environmental | n/a | 616356 / 098348 | 616356 / 098346 | |
| MWL-MW8 | 15-Oct-15 | 616359 | 098356 | Environmental | 616358 / 098353 | 616359 / 098358 | 616359 / 098355 | |
| MWL-MW8 | 15-Oct-15 | 616359 | 098357 | Duplicate | 616358 / 098353 | 616359 / 098358 | 616359 / 098355 | |
| MWL-MW9 | 14-Oct-15 | 616357 | 098350 | Environmental | n/a | 616357 / 098351 | 616357 / 098349 | |
| MWL-EB1 | 14-Oct-15 | 616358 | 098353 | Equipment Blank | n/a | 616358 / 098354 | n/a | Equipment blank sample prior to MWL-MW8. |
| MWL-FB1 | 12-Oct-15 | 616355 | 098343 | Field Blank | n/a | 616355 / 098345 | n/a | at MWL-BW2 |
| MWL-FB2 | 13-Oct-15 | 616356 | 098346 | Field Blank | n/a | 616356 / 098348 | n/a | at MWL-MW7 |
| MWL-FB3 | 14-Oct-15 | 616357 | 098349 | Field Blank | n/a | 616357 / 098351 | n/a | at MWL-MW9 |
| MWL-FB4 | 14-Oct-15 | 616358 | 098352 | DIW QC | n/a | 616358 / 098354 | n/a | DIW - source water for EB1 |
| MWL-FB5 | 15-Oct-15 | 616359 | 098355 | Field Blank | n/a | 616359 / 098358 | n/a | at MWL-MW8 |

DATA VALIDATION REPORTS FOR ENVIRONMENTAL SAMPLES
GROUNDWATER MONITORING
OCTOBER 2015

AR/COC NUMBERS 616355, 616356, 616357, 616358, 616359

Memorandum

Date: November 19, 2015

To: File

From: Mary Donovan

Subject: GC/MS Organic Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616355, 616356, 616357, 616358 and 616359
SDG: 383129
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

Sixteen 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 resulted in the qualification of data.

1. The ICAL %RSD was >15% but ≤40% for acetone. The associated results for samples 383129001, -009, -017, -025, -026 and -033 were detects and will be **qualified J,I3**.
2. Methylene chloride was detected at a concentration < the PQL in the MB associated with samples -001, -002 and -008. The associated sample results were detects < the PQL and ≤10X the MB concentration and will be **qualified 10U,B** at 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 analyzed within the prescribed holding time 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 ICAL %RSD was >15% but ≤40% for acetone. The remaining associated sample results were non-detects and since no other calibration infractions occurred, will not be qualified.

Blanks

No target analytes were detected in the blanks except as noted above in the Summary section and as follows. Methylene chloride was detected at concentrations < the PQL in FB1, sample -001, and TB1, sample -008, which were both associated with sample -002. The methylene chloride results for the FB and TB were qualified non-detect due to MB contamination and will not be applied to the field sample result.

Acetone was detected at concentrations < the PQL in FB1, sample -001, which was associated with sample -002; FB2, sample -009 which was associated with sample -010; FB3, sample -017, which was associated with sample -018; FB4, sample -025, which had no associated field samples; FB5, sample -033, which was associated with samples -034 and -040 and the EB, sample -026, which was associated with samples -034 and -040. The associated sample results were non-detects and will not be qualified.

2-Butanone was detected at concentrations < the PQL in FB1, sample -001, which was associated with sample -002 and FB3, sample -017, which was associated with sample -018. The associated sample results were non-detect 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)

All MS/MSD acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS acceptance criteria were met.

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

Mass spectra were verified during data validation and met QC acceptance criteria.

Five TBs were submitted, one for each ARCOC. FBs were submitted with each ARCOC and were associated with the respective field samples in that ARCOC. The FB submitted with ARCOC 616358 had no associated field samples. An EB was submitted with ARCOC 616358 and was applied to the samples in ARCOC 616359. A field duplicate pair was also submitted with ARCOC 616359. 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.

Reviewed by: Linda Thal

Level I

Date: 12/04/2015

Memorandum

Date: November 20, 2015
To: File
From: Mary Donovan
Subject: Inorganic Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616355, 616356, 616357, 616358 and 616359
SDG: 383129
Laboratory: GEL
Project/Task: 146422.10.11.08
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 4.

Summary

Six unfiltered samples were prepared and analyzed for Cd, Cr, Ni and U with approved procedures using method EPA 6020 (ICP-MS). Data were reported for all required analytes. No problems were identified with the data package that resulted 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 prepared and analyzed within the prescribed holding times and properly preserved.

ICP-MS Instrument Tune

The ICP-MS tunes met QC acceptance criteria.

Calibration

All initial and continuing calibration criteria met QC acceptance criteria.

Reporting Limit Verification

All CRI recoveries associated with the samples met QC acceptance criteria.

It should be noted that the CRI was analyzed at the PQL and not at 2X the PQL for all target analytes.

Blanks

No target analytes were detected in the blanks except as follows. U was detected at concentrations < the PQL in the ICB and bracketing CCBs. The U result for sample 383129027 was non-detect and the remaining associated sample results were detects > 5X the highest blank concentration concentration and will not be qualified.

ICP -MS Internal Standards

The ICP-MS internal standards met QC acceptance criteria.

Matrix Spike (MS)

The MS met all QC acceptance criteria.

Laboratory Replicate

The replicate met all QC acceptance criteria.

Laboratory Control Sample (LCS)

The LCS met all QC acceptance criteria.

Detection Limits/Dilutions

All detection limits were properly reported.

ICP Interference Check Sample (ICS A and AB)

Results of the ICS A and AB analyses were not evaluated because the sample concentrations of Ca, Mg, Al and Fe were < that in the ICS solution.

ICP Serial Dilution

The serial dilutions met all QC acceptance criteria.

Other QC

An EB was submitted with ARCO 616358 and was applied to the samples in ARCO 616359. A field duplicate pair was submitted with ARCO 616359. 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.

Reviewed by: Linda Thal

Level I

Date: 12/04/2015

Memorandum

Date: November 20, 2015

To: File

From: Mary Donovan

Subject: Radiochemical Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616355, 616356, 616357, 616358 and 616359
SDG: 383129
Laboratory: GEL
Project/Task: 146422.10.11.08
Analysis: RAD

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 4.

Summary

Six samples were prepared and analyzed with approved procedures using methods EPA 901.1 (gamma spec – short list), EPA 900.0 (gross alpha/beta), SM 7500 Rn B (Radon-222), and EPA 906.0 (Tritium). Problems were identified with the data package that resulted in the qualification of data.

Radon-222:

1. Samples 383129007 and -015 were analyzed beyond 2X the method specified holding time. The associated result for sample -007 was > the associated MDA and will be **qualified J,H3**. The associated result for sample -015 was < the associated MDA and will be **qualified R,H3**.
2. The remaining associated samples were analyzed beyond the method specified holding time but <2X the holding time. The associated result for sample -031 was < the associated MDA and will be **qualified BD,H1** and the remaining associated sample results were detects and will be **qualified J,H1**.

Gamma spec, gross alpha/beta, Radon-222 and Tritium:

1. All sample results which were either < the associated 2-sigma TPU or < the associated MDA will be **qualified BD,FR3**.

Gamma spec, gross alpha/beta and Radon-222:

1. All sample results which were > the MDA but $\leq 3X$ the MDA will be **qualified J,FR7**.

Holding Times and Preservation

The samples were prepared and analyzed within the prescribed holding times except as noted above in the Summary section.

Quantification

All quantification criteria were met except as noted above in the Summary section.

Calibration

The case narratives stated that the instruments used were properly calibrated.

Blanks

No target analytes were detected in the blanks at concentrations > the MDA and 2-sigma TPU.

Tracer/Carrier Recovery

Tracer/carriers were not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The MS/MSD met all QC acceptance criteria.

Laboratory Replicate

All replicate error ratio acceptance criteria were met.

Laboratory Control Sample (LCS)

All LCS recoveries met QC acceptance criteria.

Detection Limits/Dilutions

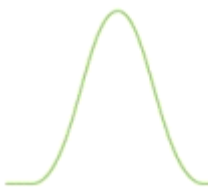
The samples were not diluted. All required detection limits were met.

Other QC

An EB was submitted with ARCO 616358 and was applied to the samples in ARCO 616359. A field duplicate pair was also submitted with ARCO 616359. 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.

Reviewed by: Linda Thal **Level I** **Date:** 12/04/2015



Sample Findings Summary



AR/COC: 616355, 616356, 616357, 616358, 616359

Page 1 of 3

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|----------------------|--------------------|----------------------------|---------------|
| EPA 900.0/SW846 9310 | | | |
| | 098344-034/MWL-BW2 | BETA (12587-47-2) | J, FR7 |
| | 098347-034/MWL-MW7 | BETA (12587-47-2) | J, FR7 |
| | 098353-034/MWL-EB1 | ALPHA (12587-46-1) | BD, FR3 |
| | 098353-034/MWL-EB1 | BETA (12587-47-2) | BD, FR3 |
| | 098356-034/MWL-MW8 | BETA (12587-47-2) | J, FR7 |
| | 098357-034/MWL-MW8 | BETA (12587-47-2) | J, FR7 |
| EPA 901.1 | | | |
| | 098344-033/MWL-BW2 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098344-033/MWL-BW2 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 098344-033/MWL-BW2 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098344-033/MWL-BW2 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 098347-033/MWL-MW7 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098347-033/MWL-MW7 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 098347-033/MWL-MW7 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098347-033/MWL-MW7 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 098350-033/MWL-MW9 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098350-033/MWL-MW9 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 098350-033/MWL-MW9 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098350-033/MWL-MW9 | Potassium-40 (13966-00-2) | J, FR7 |
| | 098353-033/MWL-EB1 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098353-033/MWL-EB1 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 098353-033/MWL-EB1 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098353-033/MWL-EB1 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 098356-033/MWL-MW8 | Americium-241 (14596-10-2) | BD, FR3 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|---------------------------|--------------------|------------------------------|---------------|
| | 098356-033/MWL-MW8 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 098356-033/MWL-MW8 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098356-033/MWL-MW8 | Potassium-40 (13966-00-2) | BD, FR3 |
| | 098357-033/MWL-MW8 | Americium-241 (14596-10-2) | BD, FR3 |
| | 098357-033/MWL-MW8 | Cesium-137 (10045-97-3) | BD, FR3 |
| | 098357-033/MWL-MW8 | Cobalt-60 (10198-40-0) | BD, FR3 |
| | 098357-033/MWL-MW8 | Potassium-40 (13966-00-2) | BD, FR3 |
| EPA 906.0 Modified | | | |
| | 098344-036/MWL-BW2 | Tritium (10028-17-8) | BD, FR3 |
| | 098347-036/MWL-MW7 | Tritium (10028-17-8) | BD, FR3 |
| | 098350-036/MWL-MW9 | Tritium (10028-17-8) | BD, FR3 |
| | 098353-036/MWL-EB1 | Tritium (10028-17-8) | BD, FR3 |
| | 098356-036/MWL-MW8 | Tritium (10028-17-8) | BD, FR3 |
| | 098357-036/MWL-MW8 | Tritium (10028-17-8) | BD, FR3 |
| SM 7500 Rn B | | | |
| | 098344-040/MWL-BW2 | Radon-222 (14859-67-7) | J, H3,FR7 |
| | 098347-040/MWL-MW7 | Radon-222 (14859-67-7) | R, H3 |
| | 098350-040/MWL-MW9 | Radon-222 (14859-67-7) | J, H1 |
| | 098353-040/MWL-EB1 | Radon-222 (14859-67-7) | BD, H1,FR3 |
| | 098356-040/MWL-MW8 | Radon-222 (14859-67-7) | J, H1,FR7 |
| | 098357-040/MWL-MW8 | Radon-222 (14859-67-7) | J, H1,FR7 |
| SW846 8260B DOE-AL | | | |
| | 098343-001/MWL-FB1 | Acetone (67-64-1) | J, I3 |
| | 098343-001/MWL-FB1 | Methylene chloride (75-09-2) | 10U, B |
| | 098344-001/MWL-BW2 | Methylene chloride (75-09-2) | 10U, B |
| | 098345-001/MWL-TB1 | Methylene chloride (75-09-2) | 10U, B |
| | 098346-001/MWL-FB2 | Acetone (67-64-1) | J, I3 |
| | 098349-001/MWL-FB3 | Acetone (67-64-1) | J, I3 |
| | 098352-001/MWL-FB4 | Acetone (67-64-1) | J, I3 |

| Analytical Method | Sample ID | Analyte Name (CAS#) | Qualifier, RC |
|-------------------|--------------------|---------------------|---------------|
| | 098353-001/MWL-EB1 | Acetone (67-64-1) | J, I3 |
| | 098355-001/MWL-FB5 | Acetone (67-64-1) | J, I3 |

All other analyses met QC acceptance criteria; no further data should be qualified.

CONTRACT VERIFICATION REVIEW FORMS
GROUNDWATER MONITORING
OCTOBER 2015

| AR/COC Number | Sample Type |
|----------------------|--------------------|
| 616355 | Environmental* |
| 616356 | Environmental* |
| 616357 | Environmental* |
| 616358 | Environmental* |
| 616359 | Environmental* |

* AR/COC forms are provided in the Data Validation Section of this Annex.

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL GWM **Project/Task No.** 146422_10.11.08

ARCOC No. 616355, 616356, 616357, 616358 & 616359

Analytical Lab GEL

SDG No. 383129

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|----------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | X | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | X | | |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | X | | |
| | c) Matrix spike recovery data reported and met | X | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | X | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | | X | Methylene chloride detected in method blank (QC1203417917) |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|--|
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | | X | Acetone, 2-butanone and methylene chloride detected in MWL-FB1. Methylene chloride detected in MWL-TB1. Acetone detected in MWL-FB2, MWL-FB4, MWL-EB1 and MWL-FB5. Acetone and 2-butanone detected in MWL-FB3. |
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | X | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | X | | |
| | b) Initial calibration provided | X | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | c) Continuing calibration provided | X | | |
| | d) Internal standard performance data provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) | N/A | | |
| | a) 12-hour tune check provided | | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) | N/A | | |
| | a) Initial calibration provided | | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | X | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | X | | |
| | c) ICP interference check sample data provided | X | | |
| | d) ICP serial dilution provided | X | | |
| | e) Instrument run logs provided | X | | |
| 4.6 | Radiochemistry and General Chemistry | X | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 11-19-2015 07:35:00

Closed by: Wendy Palencia Date: 11-19-2015 07:35:00

FIELD SAMPLING FORMS

DECEMBER 2015 GROUNDWATER RE-SAMPLE MWL-MW7

TAILGATE SAFETY MEETING FORM

Dept: 4142 Well Location: MWL-MW7 Date: 12/14/15 Time: 0829

Activities: Ground water monitoring and sampling

(Anyone has the right to cease field activities for safety concerns. The buddy system will be used when needed.)

Weather Conditions:

Temp: 32.1 °F Wind Speed: 0-5 MPH Humidity: 61.1 %

Chemicals Used: _____

Other: Be aware of possible UXO

Safety Topics Presented

| | |
|--|---|
| <input checked="" type="checkbox"/> Be aware of slips, trips, and falls. Keep work area clean and use a stepping stool when necessary. | <input checked="" type="checkbox"/> Be aware of environmental conditions (heat / cold stress). Dress accordingly. Wear sunscreen if necessary. Stay hydrated. |
| <input checked="" type="checkbox"/> Wear safety boots. | <input checked="" type="checkbox"/> Be aware of electrical hazards |
| <input checked="" type="checkbox"/> Use safe lifting practices. Wear leather gloves if necessary. | <input checked="" type="checkbox"/> Be aware of pressure hazards. |
| <input checked="" type="checkbox"/> Be aware of pinch points on pump cable reel and hydraulic tailgate lift. | <input checked="" type="checkbox"/> No eating or drinking at sampling counter. |
| <input checked="" type="checkbox"/> Be aware of chemical hazards. | <input checked="" type="checkbox"/> Be aware of biohazards (snakes, spiders, etc.) |
| <input checked="" type="checkbox"/> Wear nitrile or latex gloves when sampling. | <input checked="" type="checkbox"/> Wear communication device (cell phone, EOC pager). |
| <input checked="" type="checkbox"/> Wear chemical safety goggles. | <input checked="" type="checkbox"/> Avoid spilling purge / decon water. |

Hospital/Clinic: Sandia Medical Clinic Phone: 844-0911/911

Attendees

Robert Lynch
Printed Name

William Gibson
Printed Name

Alfred Santillanes
Printed Name

Printed Name

Printed Name

Robert Lynch
Signature

William Gibson
Signature

Alfred Santillanes
Signature

Signature

Signature

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

FIELD MEASUREMENT LOG FOR GROUNDWATER SAMPLE COLLECTION

| | |
|---|--|
| Project Name: MWL | |
| Well I.D.: MWL-MW 7 | Date: 12/14/15 |
| Method: Portable pump <input checked="" type="checkbox"/> | Dedicated pump <input type="checkbox"/> Pump depth: 496' |

PURGE MEASUREMENTS

[illegible]

Comments: ~1.5 gals purged from tubing 0847

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG

Page 1 of 2

| | | | | | | |
|--|-------------------------------|--------------|----------------------------------|-----------------------|---------------|-------------|
| SNL/NM Project Name: MWL | | | | | | |
| Calibrations done by: R Lynch | | | | Date: 12/14/15 | | |
| Make & Model: EXO1 | | | | | | |
| Sonde (S/N) with DO, Ec, pH, ORP, and temperature probes: 14H101486 | | | | | | |
| Other (S/N): NA | | | | | | |
| pH Calibration/Check | | | | | | |
| 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: 0635 | 4.02 | 21.0 | 7.00 | 21.0 | 10.02 | 21.0 |
| 2. Time: 1053 | 4.01 | 20.8 | 7.01 | 20.9 | 10.01 | 20.9 |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| Standard lot no.: | 5GE740 | | 5AD829 | | 5GE556 | |
| Expiration date: | 05/17 | | 04/17 | | 05/17 | |
| SC Calibration/Check | | | | | | |
| Reference Value: 1413 uS | | | Standard Lot No.: 5AD820 | | | |
| | Value | Temp | Expiration Date: 05/16 | | | |
| 1. Time: 0634 | 1413.3 | 21.1 | | | | |
| 2. Time: 1052 | 1414.0 | 20.9 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| ORP Calibration/Check | | | | | | |
| Reference Value: 220 mV | | | Standard Lot No. 5AD891 | | | |
| | Value | Temp | Expiration Date: 01/16 | | | |
| 1. Time: 0637 | 220.2 | 21.0 | | | | |
| 2. Time: 1055 | 220.3 | 20.8 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |
| DO Calibration/Check | | | | | | |
| Calibration Value: | 81% air saturation @ 5200 ft. | | Atmospheric Pressure in Hg | | | |
| 1. Time: 0633 | 81.7 | 24.42 | | | | |
| 2. Time: 1051 | 81.9 | 24.47 | | | | |
| 3. Time: | | | | | | |
| 4. Time: | | | | | | |


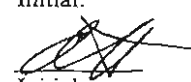
IMPORTANT NOTICE:

A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

GROUNDWATER SAMPLE COLLECTION FIELD EQUIPMENT CHECK LOG (continued) Page 2 of 2

| | | | | |
|-------------------------------------|--------------|--------------|------------------------------------|--------------|
| SNL/NM Project Name: MWL | | | | |
| Calibration done by: R Lynch | | | Date: 12/14/15 | |
| TURBIDIMETER | | | | |
| Make & Model: HACH 2100Q | | | Serial No. S/N 10060C003035 | |
| Reference Value | 0.1 | 20 | 100 | 800 |
| Standard Lot No. | A5162 | A5247 | A5251 | A5246 |
| 1. Time 0831 | .11 | 20.3 | 99.8 | 802 |
| 2. Time 0946 | .13 | 20.1 | 101 | 797 |
| 3. Time | | | | |
| 4. Time | | | | |
| Comments: | | | | |

**Portable Pump and Tubing / Water Level Indicator
Decontamination Log Form**

| | | |
|--|--|---|
| Project Name: <u>MWL</u> | Monitoring Well ID #: <u>MWL-MW7</u> | Date: <u>12-14-15</u> |
| The following equipment was decontaminated at completion of sampling activities in accordance with FOP-05-03 | | |
| Pump and Tubing Bundle ID #: <u>1806-814</u> | Water Level Indicator ID #: <u>210269</u> | |
| <u>Personnel Performing Decontamination:</u> | | |
| Robert Lynch Print Name: _____ | |  Initial: _____ |
| Alfred Santillanes Print Name: _____ | |  Initial: _____ |
| Condition of Equipment | | |
| Pump: <u>Excellent</u> | Tubing Bundle: <u>Excellent</u> | Water Level Indicator: <u>Good</u> |
| List of Decontamination Materials | | |
| Deionized Water | HNO₃ | |
| Source: <u>Culligan</u> | Grade: <u>Reagent</u> | |
| Lot Number: <u>12-04-15</u> | UN #: <u>2031</u> | |
| | Manufacturer: <u>ACROS</u> | |
| | Lot Number: <u>A0316863</u> | |

IMPORTANT NOTICE: A printed copy of this document may not be the document currently in effect. The official version is located on the Sandia Restricted Network (SRN), 4100 Controlled Documents home page.

DATA VALIDATION REPORTS FOR ENVIRONMENTAL SAMPLES
GROUNDWATER MONITORING
DECEMBER 2015

AR/COC NUMBER 616458

Memorandum

Date: January 4, 2016
To: File
From: Mary Donovan
Subject: Radiochemical Data Review and Validation – SNL
Site: MWL GWM
AR/COC: 616458
SDG: 387477
Laboratory: GEL
Project/Task: 146422.10.11.08
Analysis: RAD

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 4.

Summary

One sample was prepared and analyzed with the approved procedure using method SM 7500 Rn B (Radon-222). Problems were identified with the data package that resulted in the qualification of data.

Radon-222:

1. The sample was analyzed beyond the method specified holding time but <2X the holding time. The associated result for sample 387477001 was < the associated MDA and will be **qualified BD,H1**.
2. The associated sample result was < the associated MDA will be **qualified BD,FR3**.

Holding Times and Preservation

The sample was prepared and analyzed within the prescribed holding time except as noted above in the Summary section.

Quantification

All quantification criteria were met except as noted above in the Summary section.

Calibration

The case narratives stated that the instruments used were properly calibrated.

Blanks

No target analytes were detected in the blanks at concentrations > the MDA and 2-sigma TPU.

Tracer/Carrier Recovery

Tracer/carriers were not required.

Matrix Spike (MS)

The MS met all QC acceptance criteria.

Laboratory Replicate

All replicate error ratio acceptance criteria were met.

Laboratory Control Sample (LCS)

The LCS recovery met QC acceptance criteria.

Detection Limits/Dilutions

The sample was not diluted. All required detection limits were met.

Other QC

No other specific issues that affect data quality were identified.

Reviewed by: Linda Thal

Level: I

Date: 01/04/2016

Sandia Data Validation Summary Worksheet

| | | |
|---|------------------------------------|---------------------------|
| ARCOG#: 616458 | Site/Project: MWL GWM | Validation Date: 01/04/16 |
| SDG #: 387477 | Laboratory: GEL Laboratories, Inc. | Validator: Mary Donovan |
| Matrix: Aqueous | # of Samples: 1 | CVR present: Yes |
| ARCOG(s) present: Yes | Sample Container Integrity: OK | |
| Analysis Type: <input type="checkbox"/> Organic <input type="checkbox"/> Metals <input type="checkbox"/> Genchem <input checked="" type="checkbox"/> Rad | | |

| Requested Analyses Not Reported | | | |
|---------------------------------|---------------|----------|----------|
| Client Sample ID | Lab Sample ID | Analysis | Comments |
| None | | | |
| | | | |
| | | | |

| Hold Time/Preservation Outliers | | | | | | | | |
|---------------------------------|---------------|--------------------------|-------|-----------------|------------------|----------------|-----------------|-----------------|
| Client Sample ID | Lab Sample ID | Analysis | Pres. | Collection Date | Preparation Date | Analysis Date | Analysis <2X HT | Analysis ≥2X HT |
| 098664-040 | 387477001 | SM 7500Rn B Radon-222 | ✓ | 12/14/15 09:37 | 12/15/15 | 12/21/15 15:52 | Yes | No |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments: Collected: 12/14/2015

Validated by:

Mary A. Donovan

CONTRACT LABORATORY ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Page 1 of 1

| | | | | | |
|--------------------------------------|--|-------------------------------------|--|---|--|
| Batch No. | | SMO Use | | AR/COC 616458 | |
| Project Name: MWL GWM | | Date Samples Shipped: 12/14/15 | | SMO Authorization: <i>[Signature]</i> | |
| Project/Task Manager: Tim Jackson | | Carrier/Waybill No. 240748 | | SMO Contact Phone: Wendy Palencia/505-844-3132 | |
| Project/Task Number: 146422.10.11.08 | | Lab Contact: Edie Kent/843-556-8171 | | Send Report to SMO: Stephanie Montano/505-284-2553 | |
| Service Order: CF01-16 | | Lab Destination: GEL | | | |
| | | Contract No.: PO 1303873 | | | |
| Tech Area: | | Operational Site: | | <input type="checkbox"/> Waste Characterization <input type="checkbox"/> RMMA <input type="checkbox"/> Released by COC No. <input checked="" type="checkbox"/> 4° Celsius | |
| Building: | | Room: | | Bill to: Sandia National Laboratories (Accounts Payable), P.O. Box 5800, MS-0154 Albuquerque, NM 87185-0154 | |

| Sample No. | Fraction | Sample Location Detail | Depth (ft) | Date/Time Collected | Sample Matrix | Container | | Preservative | Collection Method | Sample Type | Parameter & Method Requested | Lab Sample ID |
|------------|----------|------------------------|------------|---------------------|---------------|-----------|---------|--------------|-------------------|-------------|------------------------------|---------------|
| | | | | | | Type | Volume | | | | | |
| 098664 | -040 | MWL-MW7 | 496 | 12/14/15 9:37 | GW | AG | 2x40 ml | None | G | SA | Radon (SM 7500 Rn B) | 001 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | | | | | |
|---|--------------------|--------------------|---------------|------------------------------------|--------------------|---|------|-----------------------|------|
| Last Chain: <input checked="" type="checkbox"/> Yes | | Sample Tracking | | SMO Use | | Special Instructions/QC Requirements: | | Conditions on Receipt | |
| Validation Req'd: <input checked="" type="checkbox"/> Yes | | Date Entered: | | EDD | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Background: <input type="checkbox"/> Yes | | Entered by: | | Turnaround Time | | <input checked="" type="checkbox"/> 7 Day* <input type="checkbox"/> 15 Day* <input type="checkbox"/> 30 Day | | | |
| Confirmatory: <input type="checkbox"/> Yes | | QC inits.: | | Negotiated TAT | | <input checked="" type="checkbox"/> | | | |
| Sample Team Members | Name | Signature | Init. | Company/Organization/Phone/Cell | | Sample Disposal | | Lab Use | |
| | Robert Lynch | <i>[Signature]</i> | RL | SNL/4142/505-844-4013/505-250-7090 | | <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab | | | |
| | Alfred Santillanes | <i>[Signature]</i> | AS | SNL/4142/505-284-6870/505-228-0710 | | Return Samples By: | | | |
| | William Gibson | <i>[Signature]</i> | WG | SNL/4142/505-284-3307/505-239-7367 | | Comments: Send report to Tim Jackson/4142/MS 0729/284-2547 | | | |
| 1. Relinquished by <i>[Signature]</i> | | Org. 4142 | Date 12/14/15 | Time 10:21 | 3. Relinquished by | | Org. | Date | Time |
| 1. Received by <i>[Signature]</i> | | Org. 4142 | Date 12/14/15 | Time 10:21 | 3. Received by | | Org. | Date | Time |
| 2. Relinquished by <i>[Signature]</i> | | Org. 4142 | Date 12/14/15 | Time 11:00 | 4. Relinquished by | | Org. | Date | Time |
| 2. Received by <i>[Signature]</i> | | Org. | Date 12/15/15 | Time 11:45 | 4. Received by | | Org. | Date | Time |

*Prior confirmation with SMO required for 7 and 15 day TAT

CONTRACT VERIFICATION REVIEW FORMS
GROUNDWATER MONITORING
DECEMBER 2015

| AR/COC Number | Sample Type |
|----------------------|--------------------|
| 616458 | Environmental* |

* AR/COC forms are provided in the Data Validation Section of this Annex.

Contract Verification Form (CVR)

Project Leader Jackson

Project Name MWL GWM

Project/Task No. 146422_10.11.08

ARCOC No. 616458

Analytical Lab GEL

SDG No. 387477

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

| Line No. | Item | Complete? | | If no, explain |
|----------|---|-----------|----|----------------|
| | | Yes | No | |
| 1.1 | All items on ARCOG complete - data entry clerk initialed and dated | X | | |
| 1.2 | Container type(s) correct for analyses requested | X | | |
| 1.3 | Sample volume adequate for # and types of analyses requested | X | | |
| 1.4 | Preservative correct for analyses requested | X | | |
| 1.5 | Custody records continuous and complete | X | | |
| 1.6 | Lab sample number(s) provided and SNL sample number(s) cross referenced and correct | X | | |
| 1.7 | Date samples received | X | | |
| 1.8 | Condition upon receipt information provided | X | | |

2.0 Analytical Laboratory Report

| Line No. | Item | Complete? | | If no, explain |
|----------|--|-----------|----|-----------------------|
| | | Yes | No | |
| 2.1 | Data reviewed, signature | X | | |
| 2.2 | Method reference number(s) complete and correct | X | | |
| 2.3 | QC analysis and acceptance limits provided (MB, LCS, Replicate) | X | | |
| 2.4 | Matrix spike/matrix spike duplicate data provided | X | | |
| 2.5 | Detection limits provided; PQL and MDL(or IDL), MDA and Lc | X | | |
| 2.6 | QC batch numbers provided | X | | |
| 2.7 | Dilution factors provided and all dilution levels reported | X | | |
| 2.8 | Data reported in appropriate units and using correct significant figures | X | | |
| 2.9 | Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported | X | | |
| 2.10 | Narrative provided | X | | |
| 2.11 | TAT met | X | | |
| 2.12 | Holding times met | | X | Holding time exceeded |
| 2.13 | Contractual qualifiers provided | X | | |
| 2.14 | All requested result and TIC (if requested) data provided | X | | |

3.0 Data Quality Evaluation

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.1 | Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data | X | | |
| 3.2 | Quantitation limit met for all samples | X | | |
| 3.3 | Accuracy a) Laboratory control sample accuracy reported and met for all samples | X | | |
| | b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique | N/A | | |
| | c) Matrix spike recovery data reported and met | X | | |
| 3.4 | Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples | X | | |
| | b) Matrix spike duplicate RPD data reported and met for all organic samples | N/A | | |
| 3.5 | Blank data a) Method or reagent blank data reported and met for all samples | X | | |
| | b) Sampling blank (e.g., field, trip, and equipment) data reported and met | N/A | | |

| Line No. | Item | Yes | No | If no, Sample ID No./Fraction(s) and Analysis |
|----------|--|-----|----|---|
| 3.6 | Contractual qualifiers provided: "J"- estimated quantity; "B"- analyte found in method blank above the MDL for organic and inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"- analysis done beyond the holding time; "h" - analysis done beyond the extraction/preparation holding time; "N" - result associated with spike analysis outside control limits | X | | |
| 3.7 | Narrative addresses planchet flaming for gross alpha/beta | N/A | | |
| 3.8 | Narrative included, correct, and complete | X | | |
| 3.9 | Second column confirmation data provided for methods 8330 (high explosives), pesticides/PCBs 8081 and 8082 and herbicides 8151. | N/A | | |

4.0 Calibration and Validation Documentation

| Line No. | Item | Yes | No | Comments |
|----------|---|-----|----|----------|
| 4.1 | GC/MS (8260 and 8270) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | e) Instrument run logs provided | N/A | | |
| 4.2 | GC/HPLC (8330, 8082, 9070A, and 8010) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) Instrument run logs provided | N/A | | |
| 4.3 | HRGC/HRMS (1668) a) 12-hour tune check provided | N/A | | |
| | b) Initial calibration provided | N/A | | |
| | c) Continuing calibration provided | N/A | | |
| | d) Internal standard performance data provided | N/A | | |
| | e) Labeled compound recovery data provided | N/A | | |
| | f) RRTs for samples and standards provided | N/A | | |
| | g) Ion abundance ratios for samples and standards provided | N/A | | |
| | h) Instrument run logs provided | N/A | | |
| 4.4 | LC/MS/MS (6850) a) Initial calibration provided | N/A | | |
| | b) Continuing calibration provided | N/A | | |
| | c) CRI provided | N/A | | |

| Line No. | Item | Yes | No | Comments |
|----------|--|-----|----|----------|
| | d) Internal standard performance data provided | N/A | | |
| | e) Chlorine isotope ratios provided (perchlorate only) | N/A | | |
| | f) ICS provided (perchlorate only) | N/A | | |
| 4.5 | Inorganics (metals) | N/A | | |
| | a) Initial calibration provided | | | |
| | b) Continuing calibration provided | N/A | | |
| | c) ICP interference check sample data provided | N/A | | |
| | d) ICP serial dilution provided | N/A | | |
| | e) Instrument run logs provided | N/A | | |
| 4.6 | Radiochemistry and General Chemistry | X | | |
| | a) Instrument run logs provided | | | |

5.0 Data Anomaly Report

| Line No. | Item | Yes | No | If no, explain |
|----------|---|-----|----|----------------|
| 5.1 | DAR completed for monitoring and surveillance sample data | N/A | | |
| 5.2 | Problems or outliers noted | N/A | | |
| 5.3 | Verification or reanalysis requested from lab | N/A | | |

6.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies has been noted.

| Sample/Fraction No. | Analysis | Problems/Comments/Resolutions |
|---------------------|----------|-------------------------------|
|---------------------|----------|-------------------------------|

Were deficiencies unresolved? ☐ Yes ☒ No

Based on the review, this data package is complete. ☒ Yes ☐ No

Reviewed by: Wendy Palencia Date: 01-04-2016 13:43:00

Closed by: Wendy Palencia Date: 01-04-2016 13:43:00

ANNEX F

Mixed Waste Landfill Inspection Forms

April 2015-March 2016

Soil-Vapor Monitoring Network

Soil-Moisture Monitoring Network

Groundwater Monitoring Network

Cover Inspection

Biology Inspection

Note: Radon monitoring system inspection forms are provided in Annex A

Mixed Waste Landfill

Soil-Vapor Monitoring Network Checklist/Form

1. Date of Inspection 4-13-15
2. Time of Inspection 0745
3. Name of Inspector Robert Lynch

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required.

| I. SOIL-VAPOR MONITORING LOCATIONS [Semiannually or Annually] | | | |
|--|--|--|------------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Concrete pads, bollards, and protective casings in need of repair/maintenance. | YES | NO | |
| B. Well cover caps in need of repair/maintenance. | YES | NO | |
| C. Well casing or sampling ports in need of repair/maintenance. | YES | NO | |
| D. Monitoring location and sampling ports properly labeled. | YES | NO | |
| E. Locks in need of cleaning or replacement. | YES | NO | |
| II. SAMPLING EQUIPMENT [Semiannually or Annually] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Sampling pump in need of repair/maintenance. | YES | NO | |
| B. Sampling assembly (e.g., tubing, gauges, and valves) in need of repair/maintenance. | YES | NO | |
| III. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | |

**Mixed Waste Landfill
Soil-Vapor Monitoring Network Checklist/Form (Continued)**

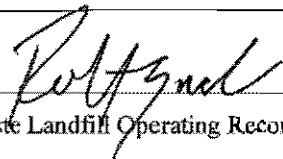
NOTES

| Note Number | Description |
|------------------------|--------------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Action (Note Number) _____ assigned to _____ Date action completed _____
 Action (Note Number) _____ assigned to _____ Date action completed _____
 Action (Note Number) _____ assigned to _____ Date action completed _____
 Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Inspector's Signature _____



Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

Mixed Waste Landfill Soil-Vapor Monitoring Network Checklist/Form

1. Date of Inspection 10/08/15
2. Time of Inspection 0800
3. Name of Inspector Robert Lynch

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required.

| I. SOIL-VAPOR MONITORING LOCATIONS [Semiannually or Annually] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Concrete pads, bollards, and protective casings in need of repair/maintenance. | YES | NO | |
| B. Well cover caps in need of repair/maintenance. | YES | NO | |
| C. Well casing or sampling ports in need of repair/maintenance. | YES | NO | |
| D. Monitoring location and sampling ports properly labeled. | YES | NO | |
| E. Locks in need of cleaning or replacement. | YES | NO | |
| II. SAMPLING EQUIPMENT [Semiannually or Annually] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Sampling pump in need of repair/maintenance. | YES | NO | |
| B. Sampling assembly (e.g., tubing, gauges, and valves) in need of repair/maintenance. | YES | NO | |
| III. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | |

**Mixed Waste Landfill
Soil-Vapor Monitoring Network Checklist/Form (Continued)**

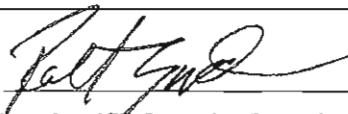
NOTES

| Note Number | Description |
|-------------|-------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Action (Note Number) _____ assigned to _____ Date action completed _____
Action (Note Number) _____ assigned to _____ Date action completed _____
Action (Note Number) _____ assigned to _____ Date action completed _____
Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Soil-Moisture Monitoring Network Checklist/Form**

1. Date of Inspection 4/21/15 & 4/23/15
2. Time of Inspection 1237 & 1316
3. Name of Inspector Robert Ziock

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required.

| I. SOIL-MOSITURE MONITORING LOCATIONS [Semiannually or Annually] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| F. Concrete pads, bollards, and protective casings in need of repair/maintenance. | yes | No | |
| G. Access tube cover caps in need of repair/maintenance. | yes | No | |
| H. Access tube casing in need of repair/maintenance. | yes | No | |
| I. Monitoring location properly labeled. | yes | No | |
| J. Locks in need of cleaning or replacement. | yes | No | |
| II. SAMPLING EQUIPMENT [Semiannually or Annually] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Neutron probe in need of repair/maintenance. | yes | No | |
| B. Cable reel or cable in need of repair/maintenance. | yes | No | |
| III. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | |

**Mixed Waste Landfill
Soil-Moisture Monitoring Network Checklist/Form (Continued)**

NOTES

| Note Number | Description |
|----------------|-------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Inspector's Signature _____



Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Soil-Moisture Monitoring Network Checklist/Form**

1. Date of Inspection October 8, 2015
2. Time of Inspection 09:40
3. Name of Inspector Robert Zick

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required.

| I. SOIL-MOSITURE MONITORING LOCATIONS [Semiannually or Annually] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| F. Concrete pads, bollards, and protective casings in need of repair/maintenance. | yes | yes | 1 |
| G. Access tube cover caps in need of repair/maintenance. | yes | No | |
| H. Access tube casing in need of repair/maintenance. | yes | No | |
| I. Monitoring location properly labeled. | yes | No | |
| J. Locks in need of cleaning or replacement. | yes | No | |
| II. SAMPLING EQUIPMENT [Semiannually or Annually] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Neutron probe in need of repair/maintenance. | yes | No | |
| B. Cable reel or cable in need of repair/maintenance. | yes | No | |
| III. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | |

**Mixed Waste Landfill
Soil-Moisture Monitoring Network Checklist/Form (Continued)**

NOTES

| Note Number | Description |
|-------------|---|
| 1 | MWL VZ-3 has an animal burrow entrance on the north side of the concrete pad. The burrow goes under the concrete pad. |
| | |
| | |
| | |
| | |
| | |

Action (Note Number) 1 assigned to Robert Lick Date action completed 11/4/2015
 Action (Note Number) _____ assigned to _____ Date action completed _____
 Action (Note Number) _____ assigned to _____ Date action completed _____
 Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

A downhole video inspection of the animal burrow was performed on November 4, 2015 by biologist Evan Fahy and Matt Baumann. The burrow was backfilled after it was determined that no animal was present in the burrow.

Inspector's Signature Robert Lick

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Groundwater Monitoring Network Checklist/Form**

1. Date of Inspection 4-6-15
2. Time of Inspection 0745
3. Name of Inspector Robert Lynch

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required.

| I. GROUNDWATER MONITORING LOCATIONS [Semiannually] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Concrete pads, bollards, and protective casings in need of repair/maintenance. | YES | NO | |
| B. Well cover caps in need of repair/maintenance. | YES | NO | |
| C. Well casing in need of repair/maintenance. | YES | NO | |
| D. Monitoring well properly labeled. | YES | NO | |
| E. Locks in need of cleaning or replacement. | NO | NA | 1 |
| II. GROUNDWATER SAMPLING EQUIPMENT [Semiannually] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Sampling pump in need of repair/maintenance. | YES | NO | |
| B. Sampling assembly (e.g., tubing, gauges, and valves) in need of repair/maintenance. | YES | NO | |
| III. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | |

**Mixed Waste Landfill
Groundwater Monitoring Network Checklist/Form (Continued)**

NOTES

| Note Number | Description |
|----------------|-----------------------------|
| 1 | Baroball installed on wells |
| | |
| | |
| | |
| | |
| | |
| | |

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Inspector's Signature _____

Raltyn

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Groundwater Monitoring Network Checklist/Form**

1. Date of Inspection 10/12/15
2. Time of Inspection 0750
3. Name of Inspector Robert Lynch

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required.

| I. GROUNDWATER MONITORING LOCATIONS [Semiannually] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Concrete pads, bollards, and protective casings in need of repair/maintenance. | YES | NO | |
| B. Well cover caps in need of repair/maintenance. | YES | NO | |
| C. Well casing in need of repair/maintenance. | YES | NO | |
| D. Monitoring well properly labeled. | YES | NO | |
| E. Locks in need of cleaning or replacement. | NO | NA | 1 |
| II. GROUNDWATER SAMPLING EQUIPMENT [Semiannually] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Sampling pump in need of repair/maintenance. | YES | NO | |
| B. Sampling assembly (e.g., tubing, gauges, and valves) in need of repair/maintenance. | YES | NO | |
| III. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | |

**Mixed Waste Landfill
Groundwater Monitoring Network Checklist/Form (Continued)**

NOTES

| Note Number | Description |
|-------------|-----------------------------|
| 1 | Baroball installed on wells |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Action (Note Number) _____ assigned to _____ Date action completed _____

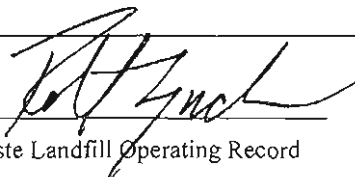
Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Cover Inspection Checklist/Form**

1. Date of Inspection 5/21/15
2. Time of Inspection 0900
3. Name of Inspector Don Waterpaul

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required in notes section at the end of this form.

| I. COVER SYSTEM [Quarterly] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Visible settlement of the soil cover in excess of 6 inches. | yes | No | NA |
| B. Erosion of the soil cover in excess of 6 inches deep. | yes | No | NA |
| C. Evidence of water ponding on the MWL cover surface in excess of 100 square feet. | yes | No | NA |
| D. Animal intrusion burrows in excess of 4 inches in diameter. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | No | NA |
| E. Contiguous areas of no vegetation greater than 200 ft ² . Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | No | NA |
| F. Potentially deep-rooted plants present. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | yes | 1 |

| II. SURFACE-WATER (STORM-WATER) DIVERSION STRUCTURES [Quarterly] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Channel or sidewall erosion in excess of 6 inches deep. | yes | No | NA |
| B. Channel sediment accumulation in excess of 6 inches deep. | yes | No | NA |
| C. Debris that blocks more than 1/3 of the channel width. | yes | No | NA |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

| III. SECURITY FENCE [Quarterly] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Accumulation of wind-blown plants and debris. | yes | yes | Z |
| B. Fence wires and posts in need of repair/maintenance. | yes | NO | NA |
| C. Gates in need of oiling/repair/maintenance. | yes | NO | NA |
| D. Locks in need of cleaning or replacement. | yes | NO | NA |
| E. Warning signs in need of repair or replacement. | yes | NO | NA |
| F. Survey monuments in vicinity of MWL visible. | yes | NO | NA |
| IV. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | NA |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

NOTES

[illegible]

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

Action (Note Number) 1 assigned to Don Schofield Date action completed 7/8/15

Action (Note Number) 2 assigned to Don Waterman Date action completed 5/21/15

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

#1 Weed removal will be scheduled within 60 days

#2 Wind blown plants were removed from west fence line
at the time of the Cover Inspection.

#1 Sequoia Removed the weeds from site on July 6-8, 2015. *[Signature]*
7/22/15

Inspector's Signature *Don Waterman*

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

Mixed Waste Landfill Cover Inspection Checklist/Form

1. Date of Inspection 8/7/15
2. Time of Inspection 12:30
3. Name of Inspector Don m. Waterpaul

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required in notes section at the end of this form.

| I. COVER SYSTEM [Quarterly] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Visible settlement of the soil cover in excess of 6 inches. | yes | NO | NA |
| B. Erosion of the soil cover in excess of 6 inches deep. | yes | NO | NA |
| C. Evidence of water ponding on the MWL cover surface in excess of 100 square feet. | yes | NO | NA |
| D. Animal intrusion burrows in excess of 4 inches in diameter. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | NA |
| E. Contiguous areas of no vegetation greater than 200 ft ² . Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | NA |
| F. Potentially deep-rooted plants present. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | NA |
| II. SURFACE-WATER (STORM-WATER) DIVERSION STRUCTURES [Quarterly] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Channel or sidewall erosion in excess of 6 inches deep. | yes | NO | NA |
| B. Channel sediment accumulation in excess of 6 inches deep. | yes | NO | NA |
| C. Debris that blocks more than 1/3 of the channel width. | yes | NO | NA |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

| III. SECURITY FENCE [Quarterly] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Accumulation of wind-blown plants and debris. | yes | No | NA |
| B. Fence wires and posts in need of repair/maintenance. | yes | No | NA |
| C. Gates in need of oiling/repair/maintenance. | yes | No | NA |
| D. Locks in need of cleaning or replacement. | yes | yes | 1 |
| E. Warning signs in need of repair or replacement. | yes | No | NA |
| F. Survey monuments in vicinity of MWL visible. | yes | No | NA |
| IV. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | NA | NA | NA |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

NOTES

| Note Number | Description |
|-------------|---|
| 1 | South Gate Lock wouldn't lock after opening. Replaced lock mw-1 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

Action (Note Number) 1 assigned to Don Waterhouse Date action completed 8/2/15

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

#1 Replaced lock at time of inspection 8/2/15
by Don Waterhouse

Inspector's Signature



Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Cover Inspection Checklist/Form**

1. Date of Inspection 11/4/15
2. Time of Inspection 0800
3. Name of Inspector Don Watenpaugh

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required in notes section at the end of this form.

| I. COVER SYSTEM [Quarterly] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Visible settlement of the soil cover in excess of 6 inches. | yes | NO | / |
| B. Erosion of the soil cover in excess of 6 inches deep. | yes | No | 1 |
| C. Evidence of water ponding on the MWL cover surface in excess of 100 square feet. | yes | NO | / |
| D. Animal intrusion burrows in excess of 4 inches in diameter. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | / |
| E. Contiguous areas of no vegetation greater than 200 ft ² . Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | / |
| F. Potentially deep-rooted plants present. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | / |
| II. SURFACE-WATER (STORM-WATER) DIVERSION STRUCTURES [Quarterly] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Channel or sidewall erosion in excess of 6 inches deep. | yes | NO | / |
| B. Channel sediment accumulation in excess of 6 inches deep. | yes | No | / |
| C. Debris that blocks more than 1/3 of the channel width. | yes | NO | / |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

| III. SECURITY FENCE [Quarterly] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Accumulation of wind-blown plants and debris. | yes | NO | / |
| B. Fence wires and posts in need of repair/maintenance. | yes | NO | / |
| C. Gates in need of oiling/repair/maintenance. | yes | NO | / |
| D. Locks in need of cleaning or replacement. | yes | NO | / |
| E. Warning signs in need of repair or replacement. | yes | yes | 2 |
| F. Survey monuments in vicinity of MWL visible. | yes | NO | / |
| IV. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | yes | NO | / |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

NOTES

| Note Number | Description |
|-------------|--|
| 1 | Erosion of Soil cover not in excess of 6" however, evidence of soil erosion observed along west and south cover slopes. Overall side slopes in good condition but will continue to monitor slopes for erosion and make repairs as necessary. |
| 2 | Several warning signs were separating and several were loose. These issues were repaired at the time of the inspection. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

Action (Note Number) 2 assigned to Don Waterpugh Date action completed 11/4/2015
Action (Note Number) _____ assigned to _____ Date action completed _____
Action (Note Number) _____ assigned to _____ Date action completed _____
Action (Note Number) _____ assigned to _____ Date action completed _____
Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Two SNL Staff Biologists and two MWL project staff
assisted in the inspection of the ET cover and
surrounding vicinity for signs of animal intrusion.
Burrows on the ET cover were not observed,
but several areas of small burrows (4" in
diameter) in the surrounding vicinity were observed,
and inspected by the SNL Staff Biologists.
Burrows around some of the perimeter monitoring
wells were observed, but did not require follow-up

Inspector's Signature Don Waterpugh

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments: *Cont' from previous page.*

*actions. Inspection and repair (as best
management practice) at the MWL-V2-3
Soil moisture monitoring access tube was
addressed on the Oct 8, 2015 Soil Moisture
Monitoring Network Checklist/Form.*

Inspector's Signature *Donald [Signature]*

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

Mixed Waste Landfill Cover Inspection Checklist/Form

1. Date of Inspection 2/17/16
2. Time of Inspection 1400
3. Name of Inspector Don Watenpaugh

Provide explanatory notes for each parameter not inspected or each action required. Include any maintenance or repair required in notes section at the end of this form.

| I. COVER SYSTEM [Quarterly] | | | |
|--|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Visible settlement of the soil cover in excess of 6 inches. | yes | NO | NA |
| B. Erosion of the soil cover in excess of 6 inches deep. | yes | NO | ↓ |
| C. Evidence of water ponding on the MWL cover surface in excess of 100 square feet. | yes | NO | ↓ |
| D. Animal intrusion burrows in excess of 4 inches in diameter. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | yes | ↓ |
| E. Contiguous areas of no vegetation greater than 200 ft ² . Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | NA |
| F. Potentially deep-rooted plants present. Note: During period when the Biology Inspection is occurring quarterly, this inspection requirement will be covered on the Biology Inspection Checklist/Form. | yes | NO | NA |
| II. SURFACE-WATER (STORM-WATER) DIVERSION STRUCTURES [Quarterly] | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Channel or sidewall erosion in excess of 6 inches deep. | yes | NO | NA |
| B. Channel sediment accumulation in excess of 6 inches deep. | yes | NO | ↓ |
| C. Debris that blocks more than 1/3 of the channel width. | yes | NO | ↓ |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

| III. SECURITY FENCE [Quarterly] | | | |
|---|--|--|--------------------|
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| A. Accumulation of wind-blown plants and debris. | yes | NO | NA |
| B. Fence wires and posts in need of repair/maintenance. | yes | NO | |
| C. Gates in need of oiling/repair/maintenance. | yes | NO | |
| D. Locks in need of cleaning or replacement. | yes | NO | |
| E. Warning signs in need of repair or replacement. | yes | NO | |
| F. Survey monuments in vicinity of MWL visible. | yes | NO | ✓ |
| IV. PREVIOUS DEFICIENCIES | | | |
| <i>Inspection Parameter</i> | <i>Parameter Inspected (Yes or No)</i> | <i>Action Required (Yes or No)</i> | <i>Note Number</i> |
| Uncorrected/undocumented previous deficiencies. | yes | NO | NA |

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

NOTES

| Note Number | Description |
|-------------|--|
| 1 | 2 Burrows in excess of 4" were observed outside of the Fenced landfill area. |
| | Burrows looked new and active. Located Northeast of the perimeter fence. |
| | Project Biologist observed these burrows. |
| | Continued observation of burrows will be performed during future Quarterly Inspections |
| | There were no animal burrows identified on the ET cover (including side slopes), only dormant anthills. The staff biologist supported my inspection of the ET cover and perimeter area, both inside and outside of the security fence, and documented our collective observations regarding ant hills and animal burrows. One animal burrow entrance $\approx 4.25"$ in diameter was present under the MWL-023 monitoring well concrete pad located to the east of the ET cover. Other animal burrows were identified in the perimeter area surrounding the ET cover. Please refer |

to the supporting documentation attached to this inspection Form for a detailed summary of Biology Inspection requirements, associated repairs, best management practices actions, and staff biologist recommendations associated with this February ET cover / Surface inspection

**Mixed Waste Landfill
Cover Inspection Checklist/Form (continued)**

Action (Note Number) 1 assigned to Tem. Ger Payne Date action completed 3/21/16 2/17/16 on

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Action (Note Number) _____ assigned to _____ Date action completed _____

Additional Comments:

Project Biologist was present providing additional
support during this Quarterly inspection.

No active burrows were found on the cover at
the time of this inspection.

See attached MWL Biology Quarterly Inspection
Action Item 1 completed during current Quarterly
Inspection.

Inspector's Signature 

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

Mixed Waste Landfill – Long-Term Monitoring and Maintenance
February 17, 2016 Quarterly ET Cover/Surface Inspection
Documentation for Staff Biologist Support

Mixed Waste Landfill (MWL) Final Cover System inspections address the Evapotranspirative (ET) Cover vegetation and the ET Cover surface. As documented in the August 2014 Biology Inspection, the ET Cover vegetation meets successful revegetation criteria (LTMMMP, Section 4.1). Therefore the Biology Inspection has transitioned to an annual frequency and is performed by the SNL staff biologist during the New Mexico growing season in August or September. As a result, documentation of animal intrusion (burrows in excess of 4-inches in diameter) and contiguous areas lacking vegetation in excess of 200 square feet are noted on both the *Cover Inspection Checklist/Form* (these inspections are performed quarterly) and the *Biology Inspection Checklist/Form* (these inspections are performed annually). During the February 17, 2016 quarterly ET Cover/Surface Inspection, the SNL staff biologist inspected the ET Cover (i.e., cover surface and side slopes) for signs of animal intrusion (i.e., burrows in excess of 4-inches in diameter) and barren areas greater than 200 square feet. As a best management practice, the staff biologist also inspected the perimeter area beyond the toe of the ET Cover slope. The perimeter area inspected includes the following areas:

- area between the security fence and the perimeter road on the east and west sides of the ET Cover, and
- area between the toe of the ET Cover slope and the security fence on the north and south sides of the ET Cover.

LTMMMP Biology Inspection requirements apply to the ET Cover. In addition, inspection and repair requirements associated with animal burrows also apply to all perimeter monitoring wells. Inspection, recommendations, and repairs addressing the ET Cover perimeter areas not associated with monitoring wells are performed as protective, best management practices to ensure early detection and repair of issues that could impact the Final Cover System in the future.

The following information compiled by the SNL staff biologist documents both Biology Inspection requirements and best management practice actions associated with the February 17, 2016 quarterly ET Cover/Surface Inspection performed by an SNL field technician. This information supplements the February 17, 2016 *Cover Inspection Checklist/Form* and is specific to ET Cover vegetation and animal burrows. The annual Biology Inspection performed in August 2015 is documented on a separate *Biology Inspection Checklist/Form*.

Vegetation

The vegetation on the MWL ET Cover appears to be in very good condition. The February inspection occurs during the dormant season so none of the native warm season grasses are photosynthesizing. Very few broad-leaf winter annuals were observed on the cover.

Observations of the ET Cover vegetation are consistent with the August 2015 Biology Inspection. No follow-up actions are recommended.

Mixed Waste Landfill – Long-Term Monitoring and Maintenance
February 17, 2016 Quarterly ET Cover/Surface Inspection
Documentation for Staff Biologist Support

Burrows - Inside the MWL Fenceline

No burrows were observed on the ET Cover. Ant hills were observed on the cover but none were active due to winter dormancy.

Small mammal burrows were observed on the flat areas surrounding the cover.

Inside the fence the only burrow entrances that were observed were those of kangaroo rats in the soil stockpile maintained for future maintenance at the northwest corner, north of the ET Cover. Numerous entrances were present in the mound, as is the normal burrow structure for kangaroo rats. This area will continue to be monitored during future inspections.

Burrows - Outside the MWL Fenceline

Many burrow entrances were observed within approximately a 50-foot perimeter beyond the fence surrounding the ET Cover, as described in more detail below.

North of the MWL Fenceline

A potentially abandoned kangaroo rat mound is located just inside the perimeter road curve, to the NW of the NW fence corner. To the east of this mound is another potentially abandoned kangaroo rat mound, located north of the 2nd T-post from the NW fence corner. Located further to the east (north of ER Site #76 sign) is a potentially active kangaroo rat mound. This represents normal activity and no follow-up action is recommended other than continued monitoring during routine inspections.

East of the MWL Fenceline

Approximately 136 feet to the south and 35 feet to the east of the NE fence corner, burrow entrances less than 4-inches in diameter are present. Approximately 16 feet south of these burrows, 35 and 16 feet east of the ET Cover and fence, there are two larger (approximately 10-inches in diameter) burrow entrances. One of these burrows was freshly dug; the other is older and does not show signs of recent activity. These are most likely badger burrows that may represent hunting activities; there was no sign of an animal present during the inspection (see photos below).

One burrow entrance approximately 4.25-inches in diameter is present under the MWL-VZ3 monitoring well concrete pad. Two additional burrows, approximately 2 inches and 3 inches in diameter, are also present under the MWL-VZ3 monitoring well concrete pad.

Follow-up Action: Continue to monitor the larger burrows near the NE corner of the fence. For the burrows in the immediate vicinity of the MWL-VZ3 monitoring well concrete pad, perform a follow-up inspection and backfill.

Action Closeout: The three burrows in the immediate vicinity of the MWL-VZ3 monitoring well concrete pad were re-inspected and enlarged on March 14, 2016 to allow for any animals to safely relocate, and backfilled on March 21, 2016 using gravel to prevent burrow reestablishment.

**Mixed Waste Landfill – Long-Term Monitoring and Maintenance
February 17, 2016 Quarterly ET Cover/Surface Inspection
Documentation for Staff Biologist Support**

West of the MWL Fenceline

A burrow entrance approximately 4-inches in diameter is located to the west of the SW fence corner, near a pink pinflag. A kangaroo rat mound is located to the south of monitoring well MWL-VZ1. One of the kangaroo rat entrances is located immediately south of monitoring well MWL-VZ1.

Follow-up Action: Continue to monitor the kangaroo rat mound and the general vicinity during future inspections. Inspect and backfill the burrow immediately south of monitoring well MWL-VZ1 as a best management practice.

Action Closeout: This burrow was inadvertently collapsed by foot traffic along the western fence between February 17 and March 14, and could not be re-inspected and backfilled.

Conclusion

No animal burrows were observed on the ET Cover (including side slopes), only dormant ant hills. Burrows observed in the ET Cover perimeter area, both inside and outside the perimeter security fence, represent normal ant and animal activity. The types and locations of the burrows do not represent an issue relative to ET Cover performance. Backfilling burrows in the immediate vicinity of perimeter monitoring wells, regardless of the diameter size, was requested by the Project Leader as a protective, best management practice. Planning is underway to establish a protective surface barrier around the perimeter monitoring well concrete pads to prevent burrowing in the future and to minimize long-term maintenance.



Figure 1. Recently dug ~10-inch diameter burrow (Burrow 1) located approximately 35 feet to the east of the MWL ET Cover.

**Mixed Waste Landfill – Long-Term Monitoring and Maintenance
February 17, 2016 Quarterly ET Cover/Surface Inspection
Documentation for Staff Biologist Support**



Figure 2. Burrow 1 looking west toward the perimeter fence and MWL ET Cover.



Figure 3. Older ~10-inch burrow entrance approximately 16 feet to the east of the MWL ET Cover, and approximately 12 feet to the SW of Burrow 1.

Mixed Waste Landfill
Biology Inspection Checklist/Form for the MWL Cover

Approximate vegetative coverage (actively photosynthesizing*): 54 %

Approximate percent native vegetation of the total vegetative cover: 100 %

Listed below are the main plant species identified as growing on the MWL cover and the percentage of the cover populated by each species.

| <u>Scientific Name</u> | <u>Common Name (optional)</u> | <u>% of Cover¹</u> |
|-------------------------------|-------------------------------|-------------------------------|
| <u>Pleuraphis jamesii</u> | <u>Galleta grass</u> | <u>40 %</u> |
| <u>Bouteloua gracilis</u> | <u>Blue grama</u> | <u>4 %</u> |
| <u>Sporobolus flexuosus</u> | <u>Mesa dropseed</u> | <u>6 %</u> |
| <u>Bouteloua eriopoda</u> | <u>Black grama</u> | <u>4 %</u> |
| <u>Xanthisma spinulosum</u> | <u>Spiny goldenweed</u> | <u>< 0.5%**</u> |
| <u>Salsola tragus</u> | <u>Russian thistle</u> | <u>< 0.5%</u> |
| <u>Sporobolus contractus</u> | <u>Spike dropseed</u> | <u>< 0.5%</u> |
| <u>Gutierrezia sarothrae</u> | <u>Snakeweed</u> | <u>< 0.5%</u> |
| <u>Sphaeralcea hastulata</u> | <u>Wrinkled globemallow</u> | <u>< 0.5%</u> |
| <u>Bouteloua curtipendula</u> | <u>Side-oats grama</u> | <u>< 0.5%</u> |
| <u>Solanum elaeagnifolium</u> | <u>Silverleaf nightshade</u> | <u>< 0.5%</u> |
| <u> </u> | <u> </u> | <u> </u> |
| <u> </u> | <u> </u> | <u> </u> |

Note: ¹ Percentage of total MWL Cover populated by actively-photosynthesizing plants of this species

* Living plants per Section 4.1 of the MWL LTMMMP.

** All species observed to be present at less than one-half of one-percent are not calculated into the total vegetative coverage

Mixed Waste Landfill
Biology Inspection Checklist/Form for the MWL Cover
(continued)

Are there any contiguous areas of no vegetation greater than 200 square feet? (approximately 14 x 14 ft)? No

If "Yes," mark such areas on a map and attach to this checklist. Address actions and schedule to improve such area(s) in the notes section below.

Are there any very deeply rooted (roots greater than 8 feet deep at maturity) plant species present on the cover? No

If "Yes," describe the plant(s) and their general distribution. Address actions and schedule to remove plant(s) from the cover in the notes section below.

Notes: _____

Inspection for Animal and Insect Intrusion into MWL Cover

Are any burrows present on the cover? No

Do any of the burrows appear to be active? No

Any ant hills/nests? Yes

Describe below observations regarding animal and insect features. If burrows with an entrance diameter of 4 inches or greater are present or appear to be that of a species that is able to burrow 6 feet deep or greater, indicate the location(s) on a map and attach to this checklist. Address actions and schedule to repair cover damage that exceeds prescribed limits. As appropriate, identify animal and insect features and have them surveyed and marked for biota sampling.

Notes: No burrows were observed on the cover. A limited number of very small diameter (less than 1 inch) and shallow abandoned entrance diggings were observed, where the soil was excavated approximately 1.5 inches or less deep by a small animal and abandoned. Due to no burrows observed, no burrow sampling will occur in 2015.

Fourteen ant hills were observed, primarily occurring on the side-slopes of the cover. Two ant hill locations were selected, flagged for biota sampling, and surveyed using a GPS unit. The sampling locations are shown in the biological inspection map.

**Mixed Waste Landfill
Biology Inspection Checklist/Form for the MWL Cover
(continued)**

Notes (continued):

General Observations:

- Very few weeds present on the MWL cover. The limited number of Russian thistle were all observed to be small in size.
- The northwest corner of the cover was noted in previous surveys as having the lowest perennial grass density. The grass density in this area has increased and there is no longer a notable density difference between this area and any other areas of the ET cover.
- Many whiptail lizards were observed across the cover.
- Overall the MWL ET is in excellent biological condition. The species complexity, spacing, and appearance of the mature native perennial grasses increasingly mimics the surrounding vegetation. The native bunch grasses in the 2015 growing season are now a mix of old, brown vegetative growth from previous years and green, actively photosynthesizing blades of grass. This expected and normal mixture of grass blade ages gives the bunchgrasses a less green appearance than in 2014 when most of the above ground biomass was the 2014 green growth.
- The 2015 growing season has received above average precipitation, boosting growth of native plants throughout the area in 2015. During the prime growth months of May, June, and July, 4.95 inches of precipitation was recorded at nearby meteorological tower A36. This is more than half the average annual precipitation. A total of 6.65 inches of precipitation was recorded from January-July 2015.
- A two-person field crew was actively removing the final pieces of the temporary watering system during the survey. The workers and a few PVC pieces they were removing were captured in some of the photographs. The watering system was not used in 2015.

Biological Aspects Map -- [note: sketch map to locate specific features described above will be attached as appropriate]

Inspector's Signature: _____

Date: _____

Original to: Mixed Waste Landfill Operating Record

Copy to: SNL/NM Records Center

ANNEX G

Mixed Waste Landfill Biology Report

April 2015-March 2016

2015-2016 Mixed Waste Landfill Biology Report

1.0 Introduction

As required by the Mixed Waste Landfill (MWL) Long-Term Monitoring and Maintenance Plan (LTMMP) (SNL/NM March 2012, Section 4.2.1), this summary report for the annual reporting period (April 1, 2015-March 31, 2016) presents the results of vegetation inspection and monitoring activities performed by the staff biologist on the MWL evapotranspirative (ET) Cover. The purpose of this report is to provide relevant background information, describe local climate trends over the 2015 growing season and reporting period, expand on the inspection results, if appropriate, and provide recommendations for future ET Cover vegetation monitoring and maintenance. Biology inspection of the ET Cover was conducted on August 3, 2015. The inspection observations are documented on the *Biology Inspection Checklist/Form for the MWL Cover* and included in Annex F of this MWL Annual Long-Term Monitoring and Maintenance (LTMM) Report.

A self-sustaining plant community is an important component of overall ET Cover performance. Vegetation minimizes erosion by stabilizing the ET Cover surface and moves soil moisture from the ET Cover Topsoil and Native Soil Layers to the atmosphere through transpiration. Vegetation species that are native to the area create the optimal, self-sustaining plant community because the species are specifically adapted to the local climate and soil conditions. The MWL is located at an elevation of 5,380 feet in a challenging, semi-arid climate that experiences high temperatures throughout the summer, cold temperatures in the winter, drying winds in the spring, and infrequent precipitation. Perennial native grass species are ideal due to their extensive near-surface root systems that are poised to uptake moisture throughout the year and prevent precipitation from percolating more deeply into the subsurface soil. The deeper, permanent roots of perennial native grasses enable them to best withstand drought conditions, provide soil stabilization, and remove moisture from deeper within the Native Soil Layer relative to non-native or annual species.

2.0 Background Information

To meet the revegetation criteria as required in the MWL LTMMP, Section 4.1, the MWL was seeded in August 2009 after cover construction was completed. The native seed mix was drill-seeded and hand-broadcast uniformly across the cover. To facilitate seed germination and seedling growth, supplemental watering was performed as approved by NMED (Bearzi December 2008). Specific conditions and limits for supplemental watering are addressed in Section 4.2.3 of the LTMMP (SNL/NM March 2012). The MWL LTMMP documents all cover maintenance and supplemental watering activities from 2009 through 2011. ET Cover maintenance and supplemental watering activities performed since 2011 are documented in MWL Annual Long-Term Monitoring & Maintenance (LTMM) Reports.

ET Cover Biology Inspections were initiated in May 2013 prior to LTMMP approval, which occurred on January 8, 2014. The ET Cover has met the LTMMP criteria for successful revegetation as documented in all quarterly inspections. In accordance with the LTMMP, the frequency of Biology Inspections transitioned to an annual frequency after the August 2014 growing season inspection, which provided confirmation that all successful revegetation criteria had been met (SNL/NM June 2015).

2015-2016 Mixed Waste Landfill Biology Report

Percentage of cover of each species across the site is determined by dividing the cover into smaller sections of approximately 35 meters by 35 meters. Each section is visually assessed for the percent cover of each species; the sections are then averaged overall for the entire cover. Species that are present at a rate of less than one-half of one-percent are recorded as "< 0.5%." Due to the presence of these species in very low numbers, they are not calculated into the total vegetative coverage. Species that are present between one-half and one percent are recorded as "1%" and are calculated into the total vegetative coverage.

3.0 Local Climate Trends for 2015 Growing Season

Climate trends for north-central New Mexico are presented in this section as they have a significant impact on the cover vegetation. Since the seeding occurred in August 2009, the local climate has primarily been dominated by below average precipitation with temperature extremes across the seasons. During the time since seeding, 2013 and 2015 have been the only years to receive above average annual precipitation.

Vegetation during the growing season is directly affected by the summer meteorological conditions, and it is also strongly influenced by the conditions during the preceding autumn, winter and spring. Soil moisture during the dormant seasons can significantly stress or assist the root systems, which compose the bulk of each native plant. An extended period of very low soil moisture can severely injure root systems during the dormant season, whereas ample soil moisture during the dormant season can promote vigorous above ground growth during the growing season.

The winter and spring preceding the 2015 growing season experienced a few favorable precipitation months that provided good soil moisture and bolstered vegetation root health. December 2014 had above average precipitation and May 2015 received nearly nine times the average precipitation for May. This substantial spring rainfall in combination with below average winds in the spring and summer, and above average spring relative humidity, set the stage for healthy plant growth during the 2015 growing season.

Table 1 provides meteorological data for CY 2015. Table 2 provides meteorological data for the first 3-month period of CY 2016. The mean monthly meteorological data is expanded and updated from what was previously available for this MWL Biology Report. A 20-year data set (1995-2014) has replaced the previous 17-year data set. This change alters the monthly means, in some cases significantly, as the inclusion or exclusion of El Nino years affects local climate averages. The 1995-2014 data will be the reference mean data set until 2019, when a 25-year data set will be created for the 1994-2018 time period.

Precipitation, Relative Humidity and Winds

Drought has been the dominant meteorological trend in the MWL area since 2008. However total annual precipitation for 2015 was 11.17 inches, which exceeded the 20-year annual precipitation average by 2.45 inches(i.e., was 128% of normal). Precipitation in 2013 and 2014 was also greater than recent years and as of January 26, 2016 the area was no longer in drought status according to the U.S. Drought Monitor (U.S. Drought Monitor January 2016).

2015-2016 Mixed Waste Landfill Biology Report

Table 1
Summary of 2015 Meteorological Data at the Mixed Waste Landfill^a

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|---------------------|
| Temperature (°F) | | | | | | | | | | | | | Annual ^b |
| Monthly Mean | 37.0 | 43.7 | 52.2 | 56.4 | 60.0 | 75.9 | 73.3 | 76.3 | 71.9 | 59.7 | 44.6 | 35.9 | 57.3 |
| 20-year Temp Means | 37.7 | 41.7 | 48.8 | 55.8 | 66.1 | 75.4 | 76.7 | 74.8 | 68.9 | 57.9 | 46.4 | 37.0 | 57.3 |
| Precipitation (Inches) | | | | | | | | | | | | | Annual ^c |
| Monthly Total | 0.64 | 0.35 | 0.29 | 0.43 | 2.29 | 0.35 | 2.30 | 0.49 | 0.74 | 1.29 | 0.84 | 1.16 | 11.17 |
| 20-year Precip Means | 0.34 | 0.45 | 0.56 | 0.50 | 0.26 | 0.49 | 1.64 | 1.57 | 1.00 | 0.93 | 0.41 | 0.57 | 8.72 |
| Relative Humidity (%) | | | | | | | | | | | | | Annual ^b |
| Monthly Mean | 65.6 | 47.1 | 38.6 | 29.5 | 44.3 | 33.1 | 50.2 | 38.7 | 41.4 | 51.8 | 53.1 | 56.1 | 45.8 |
| 20-year RH Means | 49.9 | 44.9 | 36.4 | 30.3 | 26.3 | 24.9 | 40.9 | 44.6 | 45.6 | 46.6 | 47.6 | 48.6 | 40.6 |
| Wind (Miles/hour) | | | | | | | | | | | | | Annual ^b |
| Monthly Mean | 6.8 | 8.0 | 7.8 | 9.3 | 9.6 | 8.1 | 6.6 | 7.8 | 7.7 | 8.1 | 8.2 | 6.8 | 7.9 |
| 20-year Wind Means | 6.9 | 8.1 | 9.1 | 10.5 | 10.0 | 9.8 | 8.4 | 7.9 | 8.0 | 7.8 | 7.1 | 6.8 | 8.4 |

^aInformation Source: SNL/NM Meteorological Monitoring Network.

^bValues provided are averages of the monthly data.

^cValues provided are totals of the monthly data.

2015-2016 Mixed Waste Landfill Biology Report

Table 2
Summary of January-March 2015 Meteorological Data at the Mixed Waste Landfill^a

| Month | January | February | March |
|-------------------------------|---------|----------|-------|
| Temperature (°F) | | | |
| Monthly Mean | 35.5 | 44.5 | 51.1 |
| 20-year Temp Means | 37.7 | 41.7 | 48.8 |
| Precipitation (Inches) | | | |
| Monthly Total | 0.45 | 0.06 | 0.01 |
| 20-year Precip Means | 0.34 | 0.45 | 0.56 |
| Relative Humidity (%) | | | |
| Monthly Mean | 56.7 | 37.2 | 25.7 |
| 20-year RH Means | 49.9 | 44.9 | 36.4 |
| Wind (Miles/hour) | | | |
| Monthly Mean | 6.6 | 7.3 | 9.7 |
| 20-year Wind Means | 6.9 | 8.1 | 9.1 |

^aInformation Source: SNL/NM Meteorological Monitoring Network.

2015-2016 Mixed Waste Landfill Biology Report

The MWL received 3.07 inches of precipitation during the second quarter of 2015, more than twice the average of 1.25 inches for these months. This was due to 2.29 inches of rain in May, just over two inches above the monthly average of 0.26 inches. During the 2015 monsoon season (July-September), there was a total of 3.53 inches of precipitation, below the monsoon season average of 4.21 inches. Most of the monsoon season moisture occurred in July, when the rainfall totaled 2.30 inches, 40% above the monthly mean. Precipitation in the fourth quarter of 2015 was 3.29 inches, 1.38 inches above the mean of 1.91 inches.

Average relative humidity at the MWL was 45.8% for the year, 5.2 percentage points above the mean of 40.6%. Four months (January, May, June, and July) experienced relative humidity that was 8 to 18 percentage points greater than the respective monthly mean humidity for those months.

In 2015 average wind speed was 7.9 miles per hour (mph) overall, slightly below the mean of 8.4 mph. Four months (March, April, June, and July) recorded average wind speeds that were 1.2 to 1.8 miles per hour lower than their respective monthly means.

Temperature

In 2015 the MWL experienced 88 degrees of temperature variability, with a low of 13.3°F in December and a high of 101.7°F in June. The average temperature for the year was equal to the mean of 57.3°F.

4.0 August 2015 Inspection Results

The August 2015 MWL ET Cover Biology Inspection results confirmed the ET Cover continues to meet the successful revegetation criteria defined in the MWL LTMMMP, Section 4.1 (SNL/NM March 2012). The approximate foliar coverage of living plants was 54%, with 100% of the foliar coverage comprised of native perennial species. There were no contiguous bare areas that exceeded 200 square feet.

Galleta grass was the dominant grass species, and along with other native grasses comprised nearly all of the MWL ET Cover vegetation (Figures 1 and 2). The vegetative community was observed to be very healthy overall, a combination of native species were spaced evenly across the cover. The overall appearance of the mature native grass community was observed to increasingly parallel the surrounding vegetation. The native bunch grasses in 2015 were green, actively-photosynthesizing blades of grass mixed with brown blades of grass from previous years. This expected and normal mixture of grass blade ages gives the bunch grasses a less green appearance than in 2014, when most of the above ground biomass consisted of the new 2014 green growth. Very few weeds were present on the MWL ET Cover, primarily a limited number of small Russian thistle seedlings.

The native grass coverage at the northwest corner of the ET Cover was noted in previous surveys as having lower perennial grass density. The grass density in this area has

2015-2016 Mixed Waste Landfill Biology Report

increased and there is no longer a notable density difference between this area and any other areas of the ET cover.

The August 2015 MWL ET Cover Biology Inspection occurred during the New Mexico growing season (i.e., August), which typically comes to a close in mid-September as evening temperatures begin to fall. The growing season inspections allow the most accurate assessment of living plant coverage because the greatest amount of photosynthesis occurs during this time of the year.

No burrows were observed on the MWL ET Cover during the August 2015 inspection. A limited number of very small diameter (less than 1 inch) and shallow abandoned entrance diggings were observed, where the soil was excavated approximately 1.5 inches or less deep by a small animal and abandoned. Thirteen ant hills were observed, primarily occurring on the side-slopes of the cover.

Biota sampling locations were identified for anthills during the August 2015 Biology Inspection. Two anthills were marked in the field and surveyed. The anthill sampling locations were selected based on signs of current ant activity and to sample different areas of the ET Cover. No burrows or potentially deep-rooted plants were observed in 2015. Biota sampling activities and results are presented in Chapter 8 of this MWL Annual LTMM Report.

5.0 February ET Cover/Surface Inspection

During the February 17, 2016 quarterly ET Cover/Surface Inspection, the SNL staff biologist inspected the ET Cover (i.e., cover surface and side slopes) for signs of insect and animal intrusion (i.e., ant hills and burrows) and barren areas greater than 200 square feet. As a best management practice, the staff biologist also inspected the perimeter area beyond the toe of the ET Cover slope, including areas inside and outside of the security fence. No animal burrows were observed on the ET Cover, only dormant ant hills. Burrows observed in the ET Cover perimeter area, both inside and outside the security fence, represent normal ant and animal activity. Three small animal burrows in the immediate vicinity of soil moisture access tube MWL-VZ3 were backfilled on March 21, 2016 using gravel to prevent burrow reestablishment. Backfilling burrows in the immediate vicinity of perimeter monitoring wells, regardless of the diameter size, was requested by the SNL Project Leader as a protective, best management practice. Burrows were identified in other perimeter areas and will continue to be monitored during future inspections. More detailed documentation is provided with the February 17, 2016 *Cover Inspection Checklist/Form* (Annex F).

6.0 Cover Maintenance and Supplemental Watering

Maintenance activities performed on the MWL ET Cover during the 2015 – 2016 reporting period are summarized in Section 9.7 of this MWL Annual LTMM Report. The maintenance activities for this reporting period were minimal, with most of the effort focused on clearing the perimeter fence of windblown tumbleweeds.

2015-2016 Mixed Waste Landfill Biology Report

No supplemental watering activities were performed on the MWL ET Cover during the 2015 – 2016 reporting period due to the mature condition of the native grasses and adequate natural precipitation. The temporary irrigation system installed on top of the ET Cover surface in 2011 was dismantled and removed from July 30 – August 3, 2015. The polyvinyl chloride pipe was deteriorating and there no longer appears to be the need for supplemental watering based on current ET Cover conditions. If supplemental watering is needed in the future, other options will be used to apply the water.

7.0 Recommendations

The MWL ET Cover Biology Inspections will continue on an annual frequency and be conducted in August or September. As a best management practice, the SNL staff biologist will also participate in the quarterly site inspections and monitor biological aspects (e.g., vegetation and signs of insect and animal activity) on the ET Cover and perimeter area. Observations and repairs will be documented as part of the quarterly inspections.

Weed removal events will likely be needed during the 2016 – 2017 reporting period to clear the perimeter fence and remove tumbleweeds based on LTMMMP inspection requirements. Pre- and Post-emergent herbicides should be applied to the graveled staging areas to prevent weed growth in these areas. If present, other annual weedy species on the MWL ET Cover should also be removed during the growing season weed removal events. Fourwing saltbush and any other potentially deep-rooted plants will be pulled by hand, clipped at the ground surface, or removed for biota sampling.

Planning is underway to establish a protective surface barrier around the perimeter monitoring wells to prevent burrowing and to minimize long-term maintenance.

Supplemental watering could possibly be needed in the autumn of 2016 pending monsoon and previous 12-month precipitation totals. The mature native plant community documented in 2015 should be capable of surviving moderate drought conditions without supplemental water.

8.0 References

Sandia National Laboratories/New Mexico (SNL/NM), March 2012. “Long-Term Monitoring and Maintenance Plan for the Mixed Waste Landfill,” Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), June 2015. “Mixed Waste Landfill Annual Long-Term Monitoring and Maintenance Report, January – March 2015,” Sandia National Laboratories, Albuquerque, New Mexico.

U. S. Drought Monitor (January 2016)

Accessed January 2016.

<http://droughtmonitor.unl.edu/>

2015-2016 Mixed Waste Landfill Biology Report



North portion of the cover from approximate center of ET cover



West portion of the cover from approximate center of ET cover



South portion of the cover from approximate center of ET cover



East portion of the cover from approximate center of ET cover

Figure 1 August 3, 2015 MWL ET Cover Photographs – Main Cover Surface

2015-2016 Mixed Waste Landfill Biology Report



North Slope: facing east from the western end



West Slope: facing north from southern end



South Slope: facing west from the eastern end



East Slope: facing south from the northernmost end

Figure 2 August 3, 2015 MWL ET Cover Photographs – Cover Side Slopes