



**DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)**

14-Oct-21

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Dear Mr. Maestas

Attached, please find the *Bioventilation Pilot Testing Report for the Bulk Fuels Facility, Solid Waste Management Units ST-106/SS-111, Kirtland Air Force Base, New Mexico*, dated October 2021. This report summarizes the events that occurred through both the dry and wet respiration pilot tests as well as the long-term bioventing pilot test associated with Solid Waste Management Units ST-106/SS-111.

If you have any questions or concerns, please contact Mr. Ryan Wortman at commercial line (505) 853-3484 or email ryan.wortman.3@us.af.mil.

Sincerely

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Attachment:

Bioventilation Pilot Testing Report, Bulk Fuels Facility, Solid Waste Management Units ST-106/SS-111, Kirtland Air Force Base, New Mexico, dated October 2021.

cc:

NMED Resource Protection Division (Catechis), letter and CD
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**KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO**

**BIOVENTILATION PILOT TESTING REPORT
BULK FUELS FACILITY
SOLID WASTE MANAGEMENT UNITS ST-106/SS-111**

OCTOBER 2021



**377 MSG/CEI
2050 Wyoming Boulevard SE
Kirtland Air Force Base, New Mexico 87117-5270**

**KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO**

**Bioventilation Pilot Testing Report
Bulk Fuels Facility
Solid Waste Management Units ST-106/SS-111**

October 2021

Prepared for

Kirtland Air Force Base
2050 Wyoming Boulevard SE
Kirtland Air Force Base, New Mexico 87117-5270

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14. ABSTRACT This Bioventilation Pilot Testing Report details the events that occurred through both dry and wet respiration pilot tests and the long-term bioventing pilot test. The report provides details for the collection and calculation of bioventing parameters and includes an assessment of bioventing to inform the CME.				
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KIRTLAND AIR FORCE BASE
377th Air Base Wing Public Affairs

15-Oct-21

Date

PREFACE

This report was prepared for Kirtland Air Force Base under U.S. Army Corps of Engineers Contract Number W9128F-13-D-0006, Delivery Order DM02 by EA Engineering, Science, and Technology, Inc., PBC. The report pertains to bioventing pilot testing performed at the Bulk Fuels Facility, Solid Waste Management Units ST-106/SS 111, located in Albuquerque, New Mexico. The dry and wet respiration pilot tests were conducted between April and July 2019. The data obtained from these tests were used to provide operational parameters for the implementation of the long-term bioventing pilot test. The long-term bioventing pilot test was performed between October 7, 2019, and November 23, 2020. Data collected from the long-term bioventing pilot test were used to assess the effectiveness of bioventing to remediate hydrocarbons in a timely manner.

This report was prepared in accordance with applicable federal, state, and local laws and regulations, including the New Mexico Hazardous Waste Act, New Mexico Statutes Annotated 1978, New Mexico Hazardous Waste Management Regulations, Resource Conservation and Recovery Act, and regulatory correspondence between the New Mexico Environment Department Hazardous Waste Bureau and the U.S. Air Force, dated March 25 and May 20, 2016.

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ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	microgram(s) per cubic meter
%	percent
AFB	Air Force Base
BFF	Bulk Fuels Facility
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CME	Corrective Measures Evaluation
EDB	ethylene dibromide
EPA	U.S. Environmental Protection Agency
ft	foot (feet)
GRO	gasoline range organic
HC	hydrocarbon
KAFB	Kirtland Air Force Base
mg/kg-day	milligram(s) per kilogram per day
NMED	New Mexico Environment Department
NOD	Notice of Disapproval
ppm _v	part(s) per million by volume
psi	pound(s) per square inch
RCRA	Resource Conservation and Recovery Act
ROI	radius of influence
scfm	standard cubic feet per minute
SIM	selected ion monitoring
SVE	soil vapor extraction
SVEW	soil vapor extraction well
SVMW	soil vapor monitoring well
SWMU	Solid Waste Management Unit
TPH	total petroleum hydrocarbon
VOC	volatile organic compound
wt. %	weight percent

EXECUTIVE SUMMARY

The investigation and remediation of the Kirtland Air Force Base (AFB) Bulk Fuels Facility (BFF) leak (Solid Waste Management Units [SWMUs] ST-106/SS 111) are being implemented pursuant to the Resource Conservation and Recovery Act (RCRA) corrective action provisions in Part 6 of Kirtland AFB's Hazardous Waste Treatment Facility Operating Permit (Permit Number NM9570024423 [RCRA Permit]) (New Mexico Environment Department [NMED], 2010).

A historic release of petroleum hydrocarbons occurred at the BFF, and the use of bioventing has been evaluated to assess its effectiveness at site remediation. The goal of the bioventing respiration pilot test is to measure the oxygen utilization rate by microbes in the subsurface. The rate of oxygen utilization is directly proportional to the aerobic biodegradation rate of fuel hydrocarbons in the subsurface and can be used as an indication of the effectiveness of bioventing to achieve site cleanup.

The bioventing pilot test is being performed in accordance with the Bioventing Respiration Pilot Testing Procedure (Kirtland AFB, 2018) and the Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests, dated November 2017 (Work Plan [Kirtland AFB, 2017a]). These documents were approved by NMED in letters dated February 25, 2019 (NMED, 2019), and April 6, 2018 (NMED, 2018a), respectively, and are provided in Appendix A-1. The bioventing soil vapor monitoring wells (SVMWs) KAFB-106V1 and KAFB-106V2 were installed under the Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling, Revision 1 dated December 2017 (Kirtland AFB, 2017b). This Work Plan was approved by NMED in a letter dated February 23, 2018 (NMED, 2018b).

The Bioventilation Construction and Initiation Report – Revision 1, BFF SWMUs ST-106/SS-111 (Kirtland AFB, 2021b) was submitted in April 2021. This report was requested by NMED in a letter dated February 25, 2019 (NMED, 2019). At the time of submittal, the bioventing pilot test had not been completed and sufficient data to inform the CME of the feasibility of the bioventing had not been collected. As a result, the Bioventilation Construction and Initiation Report included only respirometry and very preliminary pilot testing data.

The scope of work described in the Work Plan included the following tasks:

1. Installation of bioventing monitoring wells
2. Installation of the bioventing pilot testing system
3. Collection of baseline respirometry parameters and analytical samples
4. Performance of short-term respiration tests, both dry and wet, in nine bioventing test wells
5. Performance of a long-term (2-year) bioventing pilot test utilizing the data from the short-term respiration tests to determine the air injection parameters

The bioventing respiration pilot test utilizes existing soil vapor extraction wells and existing SVMWs for air injection. Installation of two nested SVMWs (KAFB-106V1 and KAFB-106V2) was completed in the first quarter of 2019 as part of the Work Plan (Kirtland AFB, 2017b). Well installation activities were initiated in October 2018 and were concluded in March 2019.

Installation of the bioventing equipment was performed between February 25 and March 5, 2019. Baseline respirometry readings and laboratory analytical sampling were performed prior to the initiation

of the respiration test. Respiration testing was performed to determine the optimal air injection flow rates and other operational parameters for the long-term bioventing pilot test. Oxygen utilization rates and biodegradation rates were calculated based on respiration testing data to assess operational air and moisture inputs. Radius of influence (ROI) calculations were made to assess the effective zone or area of remedial effect for the pilot test.

The oxygen utilization rates and corresponding biodegradation rates were calculated for both dry and wet conditions. The overall average oxygen utilization rate for the dry respiration test was 0.41 percent (%) per day. The overall average oxygen utilization rate for the wet respiration test was 0.32% per day. Oxygen utilization rates were marginally higher during the dry respiration testing compared to the wet respiration testing. Biodegradation rates for the dry respiration testing averaged 0.25 milligrams per kilogram per day (mg/kg-day) while the wet respiration testing averaged 0.19 mg/kg-day.

Oxygen demand flow rates for the dry respiration test ranged between 0.49 and 3.74 standard cubic feet per minute (scfm). Oxygen demand flow rates for the wet respiration test ranged between 0.42 and 0.37 scfm. The oxygen demand flow rate was marginally higher for the dry respiration testing due to the higher oxygen utilization rates. As a result, the long-term bioventing operational flow rates were determined using the oxygen demand flow rates from the dry respiration testing to ensure an adequate oxygen supply.

The ROI was monitored using two methods: physical or pressure response and oxygen response. Due to low injection flow rates and low injection pressures, a reliable pressure ROI was not obtained. The oxygen ROI ranged between 138 and 143 feet (ft) for the dry respiration test and between 140 and 152 ft for the wet respiration test.

The long-term bioventing pilot test was initiated on October 7, 2019, utilizing operational parameters obtained from the data analysis of the respiration tests. Pilot test operation and monitoring was performed in accordance with the Work Plan (Kirtland AFB, 2017a). Respirometry data obtained during the long-term bioventing pilot test showed elevated oxygen concentrations within the observation wells. This indicates that oxygen was sufficiently delivered within the vadose zone. Monitoring was performed daily and then weekly during the early portion of the test and then on a monthly basis for the full duration of the pilot test. Respiration monitoring events were performed on a quarterly basis during which the bioventing blowers were shut down for a week and respiration monitoring was performed. Data obtained from these respiration monitoring events were used to calculate oxygen utilization and biodegradation rates. Additionally, analytical laboratory samples were collected to assess the potential degradation of site contaminants.

The oxygen utilization rates and corresponding biodegradation rates were calculated for each quarterly monitoring event. The site-wide average oxygen utilization rate decreased from 0.18 % per day in Q4 2019 to 0.06% per day in Q3 2020 and generally decreased through the first year of the bioventing pilot test. The corresponding site-wide biodegradation rate decreased from 0.11 mg/kg-day in Q4 2019 to 0.04 mg/kg-day in Q3 2020 and also decreased throughout the first year of the bioventing pilot test. Oxygen utilization rates remained low and appear to have stabilized over the first year of long-term bioventing averaging approximately 0.09% per day over the final three quarters of operation. This indicates that while biodegradation may be occurring, it is doing so at rates that will not result in cleanup in a timely manner. Therefore, the use of bioventing as a corrective action measure is not feasible under current conditions and is not recommended as corrective action. There is sufficient data collected to inform the CME on the feasibility of this technology.

The low oxygen utilization coupled with the continuous air injection created the potential for vapor migration away from the source area. Due to the potential for enhanced contaminant migration and

collection of sufficient data indicating that bioventing was not being effective, the pilot test was concluded on November 23, 2020. The shut-down of the pilot test was performed with concurrence from NMED in a formal correspondence letter dated February 11 2021.

1. INTRODUCTION

Solid Waste Management Units (SWMUs) ST-106/SS-111 are located at Kirtland Air Force Base (AFB) in Bernalillo County, New Mexico. Kirtland AFB is located southeast of, and adjacent to, the City of Albuquerque and the Albuquerque International Sunport. The approximate area of the Base is 52,287 acres. The Bulk Fuels Facility (BFF or Site) is located in the northwestern portion of Kirtland AFB (Figure 1-1). The bioventing pilot test was performed within the source area of the BFF as shown on Figure 1-2.

1.1 Bioventing pilot Test Objectives

The bioventing pilot test was performed to evaluate the feasibility of this technology to inform the Corrective Measures Evaluation (CME) and is not part of the ongoing Site characterization, monitoring, or interim measure activities. The bioventing pilot test was conducted in a limited scale; therefore, significant contaminant reduction was not expected. Rather, the data collected from the pilot test was used to assess the potential for the use of bioventing as a corrective measure. The goal of the bioventing pilot test was to measure oxygen utilization rate by microorganisms in the subsurface. The rate of oxygen utilization is directly proportional to the aerobic biodegradation rate of fuel hydrocarbons in the subsurface and can be used as an indication of the effectiveness of bioventing to achieve site cleanup. Assessment of the bioventing parameters and discussion of the effectiveness of bioventing to remediate hydrocarbons in a timely manner is discussed in this report.

Dr. Robert Hinchey, co-author of Principles and Practices of Bioventing, Volume 2: Bioventing Design (Leeson and Hinchey, 1996), acted as subject matter expert for the pilot test. Dr. Hinchey provided technical guidance on pilot test operation, reviewed data, and assisted with the data interpretation.

2. BACKGROUND INFORMATION

2.1 Site History

The BFF and associated infrastructure operated from 1953 until 1999. During this time, the fueling area was separated into a tank holding area where bulk shipments of fuel were received and a fuel loading area where individual fuels trucks were filled. Kirtland AFB removed the underground piping at the facility from service in 1999 due to discovery of underground leakage.

As an interim measure impacted soil was excavated to a depth of approximately 20 feet (ft) below ground surface (bgs) in the area shown on Figure 1-2. Soil vapor extraction (SVE) activities were performed at the site between 2003 and 2015 to reduce the mass of contaminants in the vadose zone. The SVE system was shut down in the second quarter of 2015 due to low mass removal rates. Rebound and bio-respiration testing was performed following the shut-down of the SVE system which confirmed that soil bacteria continued to biodegrade fuel contaminants. As stated in the New Mexico Environmental Department 2018 Strategic Plan for Kirtland Air Force Base Aviation Fuel Cleanup (NMED, 2018c), “a bioventing pilot test (interim measure) is a logical next step.” Based on this, a bioventing pilot test was proposed to inform the CME of the feasibility of this technology (Kirtland AFB, 2017a).

2.2 Ongoing Soil Vapor Monitoring

Semiannual soil vapor monitoring has been ongoing at the BFF to monitor the nature and extent of soil vapor concentrations in the vadose zone. A total of 299 soil vapor monitoring points at 59 soil vapor monitoring locations are sampled semiannually in accordance with the approved Work Plan (Kirtland AFB, 2017b). Soil vapor monitoring location are shown in Figure 2-1.

3. REGULATORY CRITERIA

Environmental restoration efforts at the BFF are being performed pursuant to the corrective action provisions in Part 6 of the Resource Conservation and Recovery Act (RCRA) Permit Number NM9570024423 (RCRA Permit). The NMED is the lead regulatory agency (NMED, 2010).

The bioventing pilot test was performed in accordance with the Bioventing Respiration Pilot Testing Procedure (Kirtland AFB, 2018) and the Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests, dated November 2017 (Work Plan [Kirtland AFB, 2017a]). These documents were approved by NMED in letters dated February 25, 2019 (NMED, 2019) and April 6, 2018 (NMED, 2018a), respectively, and are provided in Appendix A-1. The Air-Lift Enhanced Bioremediation Pilot Test was deferred by NMED due to review of information that indicated infeasibility of this technology at the site. The correspondence letter from Kirtland AFB, detailing deferral of the Pilot Test is provided Appendix A-1. Verbal concurrence for deferring the pilot test was given by NMED. The bioventing soil vapor monitoring wells (SVMWs) KAFB-106V1 and KAFB-106V2 were installed under the Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling, Revision 1 dated December 2017 (Kirtland AFB, 2017b). This Work Plan was approved by NMED in a letter dated February 23, 2018 (NMED, 2018b).

The Bioventilation Construction and Initiation Report, BFF SWMUs ST-106/SS-111 was submitted as requested by the NMED in a letter dated February 25, 2019 (NMED, 2019). At the time of submittal, the bioventing pilot test had not been completed and sufficient data to inform the CME of the feasibility of the bioventing had not been collected. As a result, this report only included respirometry data and very preliminary pilot testing data.

A Notice of Disapproval (NOD) of the Bioventilation Construction and Initiation Report, BFF SWMUs ST-106/SS-111 was received from NMED on September 23, 2020 (NMED, 2020) and is provided in Appendix A-1. A revised report (Kirtland AFB, 2021b), dated April 2021 and addressing the NMED comments, was submitted to NMED based on the Notice of Disapproval.

Low oxygen utilization rates observed during the pilot test are representative of what can be achieved with bioventing under the current site conditions. The low oxygen utilization coupled with the continuous air injection created the potential for vapor migration away from the source area. Due to this, the pilot test was concluded on November 23, 2020. A Technical Memorandum (Kirtland AFB, 2021a) was submitted to NMED on January 13, 2021, detailing the operational concerns, notifying NMED that the bioventing system was temporarily shut down, and requesting that the bioventing pilot test be terminated. Official correspondence from NMED was received on February 11, 2021 (NMED, 2021), concurring with the decision to terminate the bioventing pilot test. The official correspondence letter is provided in Appendix A-1. Due to NMED concurrence on pilot testing termination, NOD comments (NMED, 2020) requesting additional data collection or changes to pilot testing operation no longer apply. An updated response to the NOD comments is provided in Appendix A-2. This report is being submitted to provide Pilot Test findings in accordance with the approved Work Plan (Kirtland AFB, 2017a), with the NOD comments on data evaluation and reporting (NMED, 2020), and in accordance with the Pilot Test termination letter (NMED, 2021).

4. SCOPE OF ACTIVITIES

This section describes the field activities for the bioventing pilot test. The Air-Lift Enhanced Bioremediation Pilot Test was deferred by NMED due to review of information that indicated infeasibility of this technology at the site (Appendix A-1), and as a result is not included in this report. Section 4.1 provides a brief summary of the SVMW installation. Section 4.2 provides a summary of the bioventing equipment and installation. Section 4.3 provides a summary of the respiration testing and vapor sampling procedures. Section 4.4 provides the procedures for calculation the long-term bioventing pilot test parameter. Section 4.5 provides a summary of the long-term bioventing pilot testing procedures. Section 4.6 lists the deviations from the approved Work Plan (Kirtland AFB, 2017a). Field activities were conducted in accordance with the NMED-approved Work Plan (Kirtland AFB, 2017a). Field forms documenting bioventing activities, excluding SVMW installation, are provided in Appendix B.

4.1 Soil Vapor Monitoring Well Installation

The vadose zone coring and well installation was initiated in October 2018 with the installation of the SVMWs KAFB-106V1 and KAFB-106V2 (Figure 1-2). Well installation was performed in accordance with the Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling Work Plan (Kirtland AFB, 2017b). A summary of construction details for the SVMWs is provided Section 5.3 of this document. Further details for the drilling, sampling, and well installation are provided in the Source Zone Characterization Report Revision 1 (Kirtland AFB, 2021c), that is currently under NMED review.

4.2 Bioventing Equipment Installation

Installation of the bioventing system began in February 2019. A 230-volt, 3-phase electrical service was installed between February 25 and March 5, 2019. Electrical service was obtained from Building 1033 within the BFF and consists of the following components:

- 100-amp breaker within Building 1033
- Overhead power line installed across the service road
- Electrical panel with disconnect
- Digital electric meter
- Buried electrical completed with surface-mounted outlets for rotary vane pump power supply
- Electrical connection of the 1.5-horsepower regenerative blower

Air injection is performed using a combination of a 1.5-horsepower regenerative blower and two 1-horsepower rotary vane pumps. Air injection is performed concurrently at all locations utilizing the regenerative blower and both rotary vane pumps.

The 1.5-horsepower regenerative blower is part of a turnkey air injection blower skid equipped with a high-pressure shutoff and pressure relief valve that was built by Geotech Environmental Equipment, Inc. The regenerative blower is used for the soil vapor extraction wells (SVEWs) that have a 2-inch diameter. These wells consist of SVEW-01-260, SVEW-02/03-160, and SVEW-04/05-313. The larger diameter of these wells allows for lower head loss through these wells providing sufficient air injection for the pilot test. The regenerative blower provides injection air to the SVEWs through a 2-inch diameter polyethylene conveyance line that manifolds to the individual SVEWs. Each SVEW is equipped with a direct read-out flow meter located at the wellhead. Conveyance piping is connected to the wellhead via rubber couplings. The system layout is provided in Figure 4-1.

Due to head losses associated with high volume injection flow rates through the 0.5-inch diameter wells SVMW-10 and SVMW-11(Appendix D-1), the regenerative blower could not be used for injection. As a result, a dedicated 1-horsepower Gast rotary vane pump was installed at the wellhead of SVMW-10 and SVMW-11. The rotary vane pumps used for these wells are capable of producing a maximum pressure of approximately 15 pounds per square inch (psi) gauge. Each vane pump is equipped with a copper cooling coil, galvanized steel manifold, direct read-out rotameters, and quick connect fittings. The system layout is provided in Figure 4-1.

4.3 Respirometry Testing and Vapor Sampling

The main objective of the bioventing respiration testing was to assess oxygen utilization rates and corresponding biodegradation rates for both the natural state (dry) and moisture added (wet) conditions. Short-term respiration pilot tests were conducted under both dry and wet conditions to assess the oxygen utilization rates under each condition. Respirometry testing consisted of the injection of a prescribed volume of ambient air into each injection well. The prescribed volume was calculated to achieve displacement of the estimated pore volume of air (porosity assumed to be 35 percent [%]) of the test cell. The test cell is assumed to be a cylindrical shaped volume of the vadose zone with a specified radius and thickness that surrounds the vapor monitoring well screen. A 15-ft radius from the injection well was used for the calculation of each test cell control volume. The thickness of each test cell control volume was the filter pack length, plus five feet above and below to account for vertical air flow. The injection rate was calculated based on the addition of four pore volumes of the test cell in each well to safeguard against unknowns such as heterogeneity in permeability or porosity, and vertical gas movement beyond the defined thickness to ensure the entire cell is flooded with ambient air. The oxygen utilization rates were then used to determine bioventing operational parameters to assist with the long-term bioventing pilot test. Field activities associated with the bioventing respiration testing are discussed below, and a chronology of events is provided in Table 4-1.

4.3.1 Baseline Respirometry and Vapor Sampling

Baseline respirometry was performed on the testing wells identified in Table 4-2. Respirometry field parameters were collected in accordance with Table 4-3. Respirometry readings were collected using the method described below.

A sample train, consisting of 0.5-inch fluorinated ethylene propylene tubing and four-way stainless-steel cross equipped with quick connects, was connected to the wellhead. Wellhead pressures were collected using a digital manometer.

Well purging was performed by removing one well volume (casing volume plus the filter pack pore space volume of the screened interval) from the monitoring well utilizing a Gast rotary vane pump that is dedicated for sampling purposes. Each well was purged at a predetermined flow rate for a given amount of time to ensure adequate volume removal. Soil vapor relative humidity and temperature were collected during purging by placing an Amprobe TH 3 humidity meter inside a clear flow cell and positioning the instrument where the extracted soil vapor passes directly over the sensor. Relative humidity and temperature readings were collected just prior to completing the purge to allow stabilization.

After purging was completed, hydrocarbons (HC), oxygen, carbon dioxide, methane, and barometric pressure readings were collected. Barometric pressure and methane readings were collected using a calibrated Landtec GEM 5000 portable gas analyzer. Oxygen, carbon dioxide, and HC readings were collected using the Horiba Mexa-584L. The range of oxygen detection of the Horiba Mexa-584L is between 0.0 and 30.0 % with a 0.1% accuracy. The equipment measurement ranges and data collection

frequency are presented on Table 4-3.

According to Principles and Practices of Bioventing (Leeson and Hinchee, 1996), oxygen utilization rates greater than 1% per day are a good indicator that bioventing may be feasible at the site. The lowest range on the instrument is 0.1%, indicating that it is capable of detecting changes in oxygen that would support biodegradation as a result of bioventing. Field calibration was performed on each instrument prior to use and is documented on the field forms (Appendix B). Baseline respirometry readings for the injection wells are presented in Tables 4-4 through 4-12. Baseline respirometry readings for the observation wells are presented in Tables 4-13 through 4-24.

Immediately after collection of field parameters, soil vapor samples were collected from each well screen depth on observation wells SVMWs KAFB-106V1 and KAFB-106V2 and submitted for laboratory analysis. Soil vapor samples were collected using six-liter Summa™ canisters and shipped to Eurofins Air Toxics under chain-of-custody documentation. The soil vapor samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX)/total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) by U.S. Environmental Protection Agency (EPA) Method TO-3, volatile organic compounds (VOCs) by EPA Method TO-15 selected ion monitoring (SIM), and fixed gases/C1-C5 hydrocarbon compounds by ASTM International D1945 (Table 4-25).

4.3.2 Dry Respiration Testing

Dry respiration testing was performed between April 22 and May 9, 2019, and consisted of the injection of ambient air under natural state (dry) conditions. Respiration monitoring and soil vapor sampling was performed following air injection. The number of air injection volumes introduced into the subsurface, the respiration monitoring frequency, and collection and analysis of soil vapor samples were conducted and are discussed below. Field measurements were collected from each testing well over an 11-day period for the dry respiration test. Respirometry monitoring was conducted with technical guidance from Dr. Robert Hinchee.

4.3.2.1 Dry Respirometry Air Injection and Pressure Monitoring

Table 4-26 presents the design inputs, prescribed injection volumes, and air injection totals used for the dry and wet respiration testing. Injection of ambient air was performed between April 22 and 28, 2019, and consisted of the injection of air into each well sufficient to achieve displacement of four times the volume of the calculated test cell. The injection rate was calculated based on the addition of four pore volumes of the test cell in each well. Air injection was monitored and controlled using direct read-out flow meters located at the injection wellhead. Air injection flow rates and wellhead pressures were recorded daily and are presented in Tables 4-27 through 4-29. During air injection, wellhead pressures were monitored in wells KAFB-106V1 and KAFB-106V2 and are presented in Table 4-30.

4.3.2.2 Dry Respirometry Data Collection

Dry respirometry data collection began after air injection was completed and was performed as described in Section 4.3.1. Respirometry data were collected between April 28 and May 8, 2019, and are presented in Tables 4-4 through 4-12. The oxygen concentrations within the subsurface were plotted against time for each well location, and a linear regression was applied to assess the oxygen utilization rate.

4.3.2.3 Dry Respirometry Vapor Sampling

Soil vapor samples were collected following the dry respirometry testing from each well screen of observation wells KAFB-106V1 and KAFB-106V2 on May 9, 2019. Soil vapor samples were collected

using six-liter Summa™ canisters and analyzed for BTEX/TPH-GRO by EPA Method TO-3, VOCs by EPA Method TO-15 SIM and for fixed gases/C1-C5 hydrocarbon compounds by ASTM International D1945. Samples were shipped to Eurofins Air Toxics under chain-of-custody documentation. Analytical results are presented and discussed in Section 6.2.

4.3.3 Wet Respiration Testing

Wet respiration testing was performed between May 23 and July 5, 2019. The testing consisted of water injection into the air injection wells followed by an acclimation period before air injection and respiration monitoring began. Field measurements were collected from each testing well over a nine-day period for the wet respiration test. Respirometry monitoring was conducted with technical guidance from Dr. Robert Hinchee.

4.3.3.1 Water Injection

Water was injected into the respiration testing wells on May 23 and 24, 2019, after completion of the dry respiration field test. The injection was performed in batches utilizing 250-gallon graduated polyethylene totes staged at the wellheads. The water utilized for injection was obtained from the Kirtland AFB BFF groundwater treatment system. The water was staged in lined roll-off containers until laboratory results were received and it was confirmed that no hydrocarbon contamination was present (Appendix E-1). Prior to injection, the water was field tested for residual chlorine in order to make sure that chlorine was not present in the injected water that could inhibit microbial growth. This was performed in accordance with the NMED approval letter for Bioventing Air Lift Bioremediation (NMED, 2018a). Upon confirmation that residual chlorine was not present (field notes are provided in Appendix B), the water injection proceeded.

Water was delivered to the totes using a 500-gallon, trailer-mounted water tank. The totes were filled to a graduated marking and then gravity drained into the wells. Batch volumes were recorded in the field notes (Appendix B). Water injections in wells SVMW-10 and SVMW-11 were performed directly down the well casing. Water injections in wells SVEW-01, SVEW-02/03, and SVEW-04/05 were performed through a 1-inch diameter polyethylene tremie pipe that was placed near the bottom of the screen. Water injection totals for each well are provided in Table 4-31. Table 4-26 presents the design inputs used to determine the prescribed injection volumes, the calculated prescribed injection volumes, as well as the actual volumes of air injected during the respiration test. After completion of the water injection, the subsurface was allowed to equilibrate for four weeks (28 days) before air injection for the wet respiration test began.

4.3.3.2 Post-Water Injection Respirometry

Post-water injection respirometry data was collected from the test wells prior to air injection (Table 4-2). Respirometry field parameters were collected in accordance with Table 4-3. Respirometry readings were collected to provide a baseline for the wet respirometry testing; soil vapor samples for laboratory analysis were not collected.

4.3.3.3 Wet Respirometry Air Injection and Pressure Monitoring

Table 4-26 presents the design inputs used to determine the prescribed injection volumes, the calculated prescribed injection volumes, as well as the actual volumes of air injected during the respiration test. Injection of ambient air was performed between June 20 and 26, 2019, and consisted of the injection of air into each well sufficient to achieve displacement of four times the volume of the calculated test cell.

The injection rate was calculated based on the addition of four pore volumes of the test cell in each well. Air injection was monitored and controlled using direct read-out flow meters located at the injection wellhead. Air injection flow rates and wellhead pressures were recorded daily and are presented in Tables 4-26 through 4-28. During air injection, wellhead pressures were monitored in wells KAFB-106V1 and KAFB-106V2 and are presented in Table 4-30.

4.3.3.4 Wet Respirometry Data Collection

Wet respirometry data collection began after the air injection was completed and was performed as described in Section 4.3.1. Respirometry data were collected between June 26 and July 5, 2019, and are presented in Tables 4-4 through 4-12. Oxygen concentrations within the subsurface were plotted against time for each well location, and a linear regression was applied to assess the oxygen utilization rate.

4.3.3.5 Post-Wet Respirometry Soil Vapor Sampling

Post-wet respirometry soil vapor samples were collected from all depths of observation wells KAFB-106V1 and KAFB-106V2 on July 5, 2019. Analytical samples were collected using six-liter SummaTM canisters and analyzed for BTEX/TPH-GRO by EPA Method TO-3, VOCs by EPA Method TO-15 SIM, and fixed gases/C1-C5 hydrocarbon compounds by ASTM International D1945. Samples were shipped to Eurofins Air Toxics under chain-of-custody documentation. Analytical results are presented and discussed in Section 6.2.

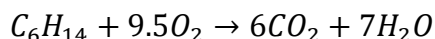
4.4 Calculation of Long-Term Bioventing Pilot Test Parameters

Data collected during the respiration tests were utilized to calculate oxygen utilization rates and corresponding biodegradation rates. These data were used to calculate long-term bioventing pilot test operational parameters including bioventing flow rate and radius of influence (ROI). Field data from both the dry and wet respiration tests are provided in Tables 4-4 through 4-12. Long-term bioventing pilot test operational parameters were calculated using the respirometry field data that were collected and calculated as described in Work Plan (Kirtland AFB, 2017a).

Calculation of the long-term bioventing pilot test operational parameters was performed in the Bioventing Construction and Initiation Report – Revision 1 (Kirtland AFB, 2021b), submitted to the NMED in April 2021. The remediation area for the long-term bioventing test is defined as a control radius of 70 ft (the farthest distance between injection wells and observation wells) along with the filter pack thickness of the injection well to obtain a volume of impacted soil. Table 4-32 presents the design inputs and calculated pore volumes. A discussion of the operational parameters is provided below.

4.4.1 Oxygen Utilization Rate

Oxygen utilization in aerobic degradation is generally estimated stoichiometrically using a representative straight chain aliphatic. Leeson and Hinchey (1996) use hexane degradation to establish oxygen utilization as such:



This stoichiometric relationship renders the relation that one pound of fuel hydrocarbon is degraded with 3.53 pounds of oxygen. This mass relationship is applicable for all hydrogen-saturated alkanes. If the oxygen utilization rate due to biodegradation is known, the air injection rate necessary to supply the required oxygen mass can be calculated.

The oxygen utilization rate is determined from the respiration test data by plotting oxygen content in soil gas versus time (Leeson and Hinchee, 1996). The roughly linear slope obtained during early oxygen depletion (decreasing from approximately 20 to 5% oxygen by volume) yields the oxygen utilization rate. Note that oxygen data collection ceased before oxygen concentrations reached 5%, with concurrence from Dr. Hinchee, due to the possibility of influx of ambient soil vapor.

4.4.2 Biodegradation Rate

Biodegradation rates for each well were calculated using the formula below as specified in Leeson and Hinchee (1996).

$$k_b = \frac{-\frac{k_o}{100} \theta_a \frac{1 L}{1000 cm^3} \rho_{O_2} C}{\rho_k \left(\frac{1 kg}{1000 g} \right)} = \frac{-k_o \theta_a \rho_{O_2} C (0.01)}{\rho_k}$$

Where:

- k_b = biodegradation rate (milligrams per kilogram per day [mg/kg-day])
- k_o = Oxygen utilization rate (% day)
- θ_a = Gas-filled pore space (volumetric content at the vapor phase, cubic meters_{gas}/cubic centimeter_{soil})
- ρ_{O_2} = Density of oxygen (milligrams per liter)
- C = Mass ratio of hydrocarbons to oxygen required for mineralization (=1/3.5 for hexane-equivalent)
- ρ_k = Soil bulk density (grams per cubic centimeter)

4.4.3 Oxygen Demand Air Flow Rate

The required bioventing flow rate is determined from the oxygen utilization rate established from the respiration test (Leeson and Hinchee, 1996) using the formula below.

$$Q = \frac{k_o V \theta_a}{(20.9\% - 5\%) \times 60 \frac{min}{hr}}$$

Where:

- Q = Flow rate (cubic feet per minute)
- k_o = Oxygen utilization rate (% per hour)
- V = Volume of contaminated soil (cubic feet)
- θ_a = Gas-filled pore space (cubic centimeters_{air}/cubic centimeters_{soil}, ~ 0.2 or 0.3)

The oxygen demand flow rate represents the minimum ambient air injection flow rate required to maintain the biodegradation rates obtained in the respirometry calculations. The oxygen demand air flow rate was calculated based on the oxygen utilization rate and corresponding biodegradation rates for each well under both the dry and wet respiration conditions (Appendix F). The long-term operational bioventing flow rate is based on the oxygen demand air flow rate times a safety factor (in this case, four times the oxygen demand air flow rate [Section 5.5.2]).

4.4.4 Radius of Influence

The ROI was designed to use two methods: physical (or pressure) response and oxygen response for estimation. During the respiration testing physical pressure monitoring was performed during the ambient air injections (Table 4-30). However, due to low injection flow rates and low injection pressures that could not overcome the variability in barometric pressure, a reliable pressure ROI was not obtained. As a result, the oxygen utilization rates and injection flowrates were used to estimate the ROI. The equation below utilizes the oxygen utilization rate to estimate the ROI and assumes that the ROI is much greater than the well radius (Leeson and Hinchee, 1996).

$$R_I = \sqrt{\frac{Q(20.9\% - 5\%)}{\pi h k_o \theta_a}}$$

Where:

- R_I = Radius of influence (ft)
- Q = Flowrate (ft³/day)
- k_o = Oxygen utilization rate (%/day)
- θ_a = Gas-filled pore space (cm³_{air}/cm³_{soil}, ~ 0.2 or 0.3)
- h = Aerated thickness (ft)

During the long-term bioventing pilot test, physical pressure monitoring was performed on the observation wells as part of the respiration monitoring (Table 4-30). However, the injection flow rates and pressures were not strong enough to overcome barometric pressure swings. Hence, a reliable pressure ROI could not be obtained. As a result, the oxygen ROI was calculated using the oxygen utilization rates and long-term bioventing operation flow rates.

4.5 LONG-TERM BIOVENTING PILOT TEST

The long-term bioventing pilot test was initiated on October 7, 2019. Performance monitoring of the long-term bioventing pilot test was conducted in accordance with the Work Plan (Kirtland AFB, 2017a). Air injection wells consist of SVMW-10, SVMW-11, SVEW-01, SVE-02/03, and SVEW-04/05 while observation wells consist of KAFB-106V1 and KAFB-106V2 (Table 4-2). Air injection was performed continuously, except for approximately one week per quarter, to collect respiration monitoring data. Note that operational comments (Comment number 3, 11, 21, 29, and 34) from the NOD (NMED, 2020) were not incorporated due to the timing of the Pilot Test termination.

4.5.1 Air Injection

The long-term bioventing pilot test was initiated on October 7, 2019. Air injection was performed at wells SVMW-10, SVMW-11, SVEW-01, SVEW-02/03, and SVEW-04/05 at a flow rate of approximately four times the oxygen demand air flowrate calculated during the respiration testing. Air injection was performed continuously except during quarterly respiration monitoring events during which the air injection blowers were shut down for approximately seven days. Flow measurements were collected at the wellhead daily for the first three days, weekly for the first month, and then monthly through the duration of the long-term bioventing pilot test. Wellhead flow rates as well as a cumulative injection volume of air are provided in Tables 4-26 through 4-28. Air injection was performed continuously except during quarterly respiration monitoring events when they were shut down for approximately seven days while respiration monitoring was performed.

4.5.2 Water Injection

Water injection events were performed to evaluate the effects of moisture addition on the oxygen utilization rate. Water injection events were performed on April 7, 2020, July 1, 2020, and September 30, 2020, after the completion of the respiration monitoring events. Approximately 100 gallons of treated GWTS effluent water was gravity fed into wells SVMW-10-100, SVMW-10-150, SVMW-10-250, SVMW-11-100, SVMW-11-250, and SVMW-11-260. The bioventing blowers were restarted immediately after the addition of the injection water.

4.5.3 Respiration Monitoring

Respirometry readings were collected daily for the first three days, weekly for the first month, and monthly thereafter (starting in January 2020) through the duration of the long-term bioventing pilot test. Additionally, quarterly respiration monitoring was performed during which the air injection blowers were shut down and subsurface gas concentrations were monitored over the course of seven days to assess the bioventing parameters. Respiration monitoring was performed in the same manner as outlined in Section 4.3.1. and data is provided in Tables 4-13 through 4-24.

Daily and weekly readings during the early portion of the pilot testing indicated that oxygen was being delivered through the subsurface as the oxygen concentration began to rise within observation wells KAFB-106V1 and KAFB-106V2. Within the month of long-term bioventing, subsurface oxygen concentrations were greater than 17% in all monitoring points except KAFB-106V2-117, which was at 14.21%. Subsurface oxygen concentrations were greater than 18% within each monitoring point during the first respiration monitoring event in January 2020.

During the quarterly monitoring events, respirometry readings were collected immediately after shutting down the blowers, then daily for the next four days, and again on day seven. The quarterly respiration monitoring events were performed on the following dates:

- January 6 through January 13, 2020
- March 30 through April 6, 2020
- June 22 through June 30, 2020
- September 21 through September 29, 2020

For each quarterly respiration monitoring event, the oxygen concentration within the subsurface was plotted against time for each well location and a linear regression was applied to assess the oxygen utilization rate.

Air injection and respiration readings continued until November 23, 2020, at which point the bioventing blowers were shut down due to low oxygen utilization and biodegradation rates as well as operational concerns. No additional respiration monitoring events or assessment of the bioventing parameters were conducted.

4.5.4 Soil Vapor Sampling

Soil vapor sampling was performed weekly for the first month and quarterly for the remainder of the long-term bioventing pilot test. Samples were collected from each monitoring point within KAFB-106V1 and KAFB-106V2. The weekly samples were collected immediately after collecting respiration data during active air injection. Quarterly sampling was performed upon completion of the quarterly respiration monitoring. Soil vapor samples were collected using six-liter SummaTM canisters and were

analyzed for BTEX/TPH-GRO by EPA Method TO-3, VOCs by EPA Method TO-15 SIM, and fixed gases/C1-C5 hydrocarbon compounds by ASTM International D1945. Samples were shipped to Eurofins Air Toxics under chain-of-custody documentation. Analytical results are discussed and presented in Section 6.2.

4.6 DEVIATIONS FROM WORK PLAN

Deviations from the approved Work Plan (Kirtland AFB, 2017a) are discussed below.

4.6.1 Soil Vapor Monitoring Wells

SVMWs KAFB-106V1 and KAFB-106V2 were constructed with 2-ft screened intervals (standard available length) in place of the 2.5-ft intervals as described in the Work Plan (Kirtland AFB, 2017b). The difference in screen length does not impact vapor sampling. Final placement of each screen within the nested well was determined in the field based on lithology. The screen depths are provided in Table 4-2 and are recorded on the well construction diagrams provided in Appendix C.

4.6.2 Bioventing Blowers

The 1.5-horsepower regenerative blower could not be used to provide injection air to SVMW-10 and SVMW-11 due to the head loss associated with air flow through the 0.5-inch diameter wells. Using a flow rate of 4.0 standard cubic feet per minute (scfm) (SVMW-11-250 design flow rate from the testing procedure [Kirtland AFB, 2018]) and supply pressure of 1.6 psi (maximum blower pressure), a total head loss of 1.39 psi/100 ft of pipe was determined. Over the total length of the injection well, this head loss is greater than the maximum applied pressure provided by the blower; thus, it was determined that the blower is not sufficient for air injection into the SVMWs. As a result, a dedicated rotary vane pump capable of producing 12.5 scfm at 10 psi was placed at each SVMW. The vane pumps produced sufficient pressure to overcome head losses while maintaining the needed flow rate. Head loss calculations for air flow through a 0.5-inch pipe are provided in Appendix D-1.

4.6.3 Air Injection Timeframe During Short-term Respirometry Testing

Clean air injection for both the dry and the moist respirometry tests occurred over a time period of approximately seven days instead of the proposed three days. The injection timeframe was increased to ensure the full volume of air, as specified in the approved Work Plan (Kirtland AFB, 2017b) and testing procedure (Kirtland AFB, 2018), was delivered to the subsurface. The total volume of air injected into each location is provided in Tables 4-26 through 4-28. This extended injection timeframe was used due to the limitations of injecting high volumes of air through the 0.5-inch SVMWs as discussed in Section 4.6.2 above.

4.6.4 Intrinsic Permeability Calculation

Intrinsic permeability could not be calculated as specified in the Work Plan (Kirtland AFB, 2017b) due to the lack of measurable pressure response. An attempt to determine the intrinsic permeability using well capacity was performed, however no measurable pressure changes were noted. The pressure changes that were observed were small and just background variability, not test-related. For example, wellhead pressures were observed under vacuum (most likely due to barometric pressure swings) while injection was ongoing. Due to the lack of wellhead pressure observed during injection (provided on field forms in Appendix B), the well capacity and resulting intrinsic permeability could not be determined. As a result, discussion of the intrinsic permeability is not included in this report. This does not affect the overall

usability of the bioventing pilot test data since oxygen utilization and biodegradation parameters can still be calculated and used to assess the viability of bioventing as a corrective remedy.

4.6.5 Vapor Sample Containers

During the bioventing pilot test, 6-liter Summa™ canisters were used in place of the 1-liter Summa™ canisters to provide sufficient volume to analyze the Work Plan (Kirtland AFB, 2017b) specified laboratory analytical constituents. Documentation of laboratory confirmation of the required sample canister size is provided in Appendix D-2.

4.6.6 Long-Term Bioventing Monitoring

Additional air injection and respirometry data were collected on a monthly basis beginning in January 2020, throughout the duration of the long-term pilot test. The additional monitoring data was not required in the approved Work Plan (Kirtland AFB, 2017b) but provided more data for the assessment of bioventing.

4.6.7 Termination of the Bioventing Pilot Test

Sufficient data had been collected to suggest that the oxygen utilization and biodegradation rates observed during the pilot test were representative of what can be achieved with bioventing under the current site conditions. These data indicate that while biodegradation maybe occurring, it is not doing so at a rate that would likely result in remediation of hydrocarbons in a timely manner. Currently there is enough data collected from this pilot test to inform CME on the feasibility of this technology. As a result, continued air injection creates a risk of vapor migration as the soil vapor is not being degraded as it is displaced by the injection air. Due to the potential of soil vapor migration resulting from continuous bioventing operations, the bioventing system was shut down on November 23, 2020, prior to completion of the two-year testing period. A Technical Memorandum was submitted to NMED on January 13, 2021, detailing the operational concerns, notifying NMED that the bioventing system was temporarily shut down, and requesting that the bioventing pilot test be terminated. Official correspondence from NMED was received on February 11, 2021, concurring with the decision to terminate the bioventing pilot test.

5. FIELD INVESTIGATION RESULTS

Analysis of collected data and the calculation of the long-term bioventing operational parameters are discussed below.

5.1 Surface Conditions

The bioventing pilot test was performed within the release area of the BFF (Figure 1-2). The testing area consisted of an unpaved lot with paved roadways located adjacent to the test area to allow traffic access to existing fuel pumping areas. The bioventing testing equipment and associated monitoring wells were enclosed in temporary chain link fence for the duration of the pilot test.

5.2 Subsurface Conditions

Lithologic information obtained from air rotary casing hammer and sonic drilling associated with the Vadose Zone Coring project (Kirtland AFB, 2017b) was used to create boring logs (Appendix C). Lower permeability units (silt and clay) were found interbedded with higher permeability units (sand) to a depth of approximately 145 ft bgs. Below 145 ft bgs, fine to coarse gravelly sand dominated to a depth of approximately 269 ft bgs. A lens of low permeability silt and clay was present between 269 and 280 ft bgs. This unit was classified in the field as very stiff to hard and contained up to 40% silt (Appendix C). Approximate 1-ft thick silt lenses were observed within the clay unit at KAFB-106V1.

5.3 Soil Vapor Monitoring Well Construction

SVMWs KAFB-106V1 and KAFB-106V2 were cored via the sonic drilling method. Coring data were used to provide a more detailed log of the subsurface lithology. Upon completion of coring, the boreholes for these SVMWs were over-drilled using air rotary casing hammer methodology to allow for well installation. An 11.75-inch outside diameter drive casing was installed following coring from ground surface to the total depth of each SVMW to facilitate well construction.

Each SVMW is comprised of six 0.75-inch outside diameter nested vapor probes. Each vapor probe was constructed with schedule 80 polyvinyl chloride and consists of a two-ft of screen targeting different depths of the vadose zone to a total depth of approximately 270 ft bgs. Well screens are 0.010-inch slot screen size. Following placement of each well screen, a 10/20 silica sand filter pack was placed in the borehole annulus from approximately 1.5 ft below the bottom of the screen to approximately 1 ft above the well screen as the drill casing was retrieved. Each vapor probe is isolated from the others using a hydrated bentonite chip seal. A neat cement surface seal was installed over the grout seal and extended vertically up the well annulus to approximately 1 ft bgs. Well screen intervals for each SVMW are presented in Table 4-2 and construction details are provided in Appendix C.

The SVMWs were completed with flush-mount well vaults. The flush mount well vaults were constructed with an 18-inch diameter well vault surrounded by a 4-ft by 4-ft by 4-inch-thick concrete pad at the ground surface. The well pad was sloped to direct rainwater away from the well.

5.4 Baseline Subsurface Air and Soil Moisture

Subsurface air monitoring was performed during the bioventing pilot test in the form of respirometry monitoring. Baseline respirometry data were collected prior to the dry and wet respiration tests and are presented in Tables 4-4 through 4-24. Baseline respirometry data were used for comparison purposes

during air injection to determine if sufficient oxygen concentrations were being delivered to the subsurface.

Baseline respirometry readings were performed on pilot testing wells on April 10 and April 11, 2019. Oxygen concentrations ranged from 0.08% in well SVMW-11-250 to 14.43% in well SVEW-04/05-313. Carbon dioxide concentrations ranged from 2.70% in well SVEW-04/05-313 to 13.20% in well SVMW-11-260. Hydrocarbon concentrations ranged between 1,757 parts per million by volume (ppm_v) in well SVEW-04/05-313 to 30,900 ppm_v in well SVMW-11-100. Measured relative humidity ranged from 33.1% in well SVEW-04/05 to 80.2% in well SVMW-10-250.

Vadose zone moisture content data were collected during the installation of observation wells KAFB-106V1 and KAFB-106V2. Soil samples were collected using the sonic drilling method from various depths bgs. The soil moisture content ranged between 3.3 weight percent (wt. %) and 31.1 wt. % for well KAFB-106V1 and between 2.9 wt. % and 28.8 wt. % for well KAFB-1062. The results of the soil moisture content analyses are provided in Table 5-1.

5.5 Pilot Testing Results

The bioventing pilot test consisted of two short-term respiration tests performed in both the natural state (dry) and moisture added (wet) conditions as well as a long-term bioventing pilot test that was performed over the course of approximately one year. Data collected from the short-term respiration tests were used to calculate operational parameters for the long-term bioventing pilot test. Results of the short-term respiration tests and the long-term bioventing pilot test are presented below.

5.5.1 Short-Term Respiration Testing Results

Analysis of the dry and wet respiration tests was performed in the Bioventing Construction and Initiation Report – Revision 1 (Kirtland AFB, 2021b), submitted to the NMED in April 2021. The long-term bioventing operational parameters calculated during the respiration test analysis are provided in Table 5-2 and are discussed below.

5.5.1.1 *Oxygen Utilization Rate and Biodegradation Rate*

Oxygen utilization rates for the dry respiration test ranged between 0.16% and 0.64% per day and averaged 0.41% per day. Oxygen utilization rates for the wet respiration test ranged between 0.02% and 0.63% per day and averaged 0.32% per day. The corresponding biodegradation rates ranged between 0.10 mg/kg-day and 0.38 mg/kg-day for the dry respiration test and between 0.01 mg/kg-day and 0.37 mg/kg-day for the wet respiration test. The oxygen utilization rates obtained from the respiration tests do not account for additional factors that would result in the decrease of oxygen concentrations. These factors include influx of ambient soil vapor into the test cell, diffusion of oxygen into the surrounding soil vapor, and high-volume movement of soil vapor as a result of barometric pressure influences.

5.5.1.2 *Oxygen Demand Air Flow Rate and Oxygen Radius of Influence*

The oxygen utilization rates were in turn used to calculate the oxygen demand flow rate for each injection well. Oxygen demand flow rates for the dry respiration test ranged between 0.49 scfm and 0.79 scfm for the SVMWs and between 2.50 scfm and 3.74 scfm for the SVEWs. Oxygen demand flow rates for the wet respiration test ranged between 0.42 scfm and 0.86 scfm for the SVMWs and between 0.11 scfm and 3.66 scfm for the SVEWs.

As stated in Section 4.4.4., a reliable pressure ROI could not be obtained. As a result, the oxygen ROI was calculated using the oxygen utilization rates and long-term bioventing operation flow rates as described in Section 4.4.4. and in accordance with the Work Plan (Kirtland AFB, 2017a). The oxygen ROI ranged between 138 ft and 143 ft for the dry respiration test and between 140 ft and 152 ft for the wet respiration test.

5.5.2 Short-Term Respiration Testing Data Analysis

During the dry and wet respiration testing, day to day variations in oxygen and carbon dioxide concentrations were observed while collecting field parameters (Tables 4-4 through 4-12). These variations in the oxygen and carbon dioxide concentrations were not due to instrumentation malfunction or sampling error. The Horiba unit was field checked against atmospheric oxygen and carbon dioxide conditions any time a large change in the concentration of oxygen or carbon dioxide occurred to check that the instrument was functioning properly. To perform this check, the instrument was disconnected from the sample train and a fresh air sample was analyzed. If the oxygen and carbon dioxide readings were at atmospheric conditions of 20.9% and 0.0%, respectively, then the field readings were accepted as correct. While diffusion of soil vapor is a possibility for the variation in oxygen and carbon dioxide readings, a volume of air equivalent to four times the test cell volume was injected into each point to safeguard against diffusion as stated in the approved Work Plan (Kirtland AFB, 2017a). Volumes of injected air are provided in Tables 4-26 through 4-28. In addition, if diffusion was the primary reason for variation, increases in the oxygen concentration likely would have been less than observed since the ambient soil vapor that is diffusing into the test cell is very low in oxygen.

Soil vapor variability of this kind is not unusual and can have a variety of causes including barometric pressure driven subsurface soil vapor flow, temperature, and precipitation (e.g., Pitchford et al., 1989; Contaminated Land: Applications in Real Environments, 2011; Hartman, 2002). While variability of oxygen/carbon dioxide was observed in many of the wells during the respiration testing, the changes were more prevalent within the SVEWs. The subsurface is a porous media and thus subject to barometric pumping. Barometric pumping is more likely to be observed in longer screened wells (the SVEWs). As the length of the screen interval increases, there is a greater likelihood that permeable zones located within the screened interval will respond more rapidly to barometric pressure changes. If the well screen is subject to a permeable zone, it is likely that injection air or ambient soil vapor is pushed in and out of the test cell when barometric pressure swings occur.

While increases and decreases in barometric pressure may influence subsurface pumping, they do not account for all the variability observed; other factors, discussed above, likely also influenced the data. However, oxygen concentrations overall appear to decline during the respiration testing indicating oxygen utilization and hydrocarbon biodegradation. These data collected during the respiration pilot tests were utilized to calculate oxygen utilization rates and corresponding biodegradation rates.

5.5.3 Long-Term Bioventilation

5.5.3.1 Oxygen Utilization Rate

The long-term bioventing pilot test lasted approximately one year during which ambient air was injected continuously except during quarterly respiration monitoring events. During these quarterly respiration monitoring events, the injection blowers were shut down and soil gas concentrations were measured over a seven day period. Data collected during these respiration monitoring events were used to determine the bioventing operational parameters for each quarter through the long-term bioventing pilot test.

Oxygen data collected over these seven day periods were plotted versus time (Figures 5-1 through 5-12) and used to determine the oxygen utilization rate as specified in Section 4.4.1. Oxygen utilization rates for each respiration monitoring event are provided in Table 5-3 and summarized below:

- During the January 2020 respiration monitoring event, oxygen utilization rates ranged between 0.03 %/day (KAFB-106V1-102) and 0.81%/day (KAFB-106V2-117) and averaged 0.18%/day.
- During the March/April 2020 respiration monitoring event, oxygen utilization rates ranged between 0.08 %/day (KAFB-106V2-252) and 0.31%/day (KAFB-106V1-217) and averaged 0.12%/day.
- During the June 2020 respiration monitoring event, oxygen utilization rates ranged between 0.05 %/day (KAFB-106V1-102 and KAFB-106V2-102) and 0.15%/day (KAFB-106V2-117) and averaged 0.08%/day.
- During the September 2020 respiration monitoring event, oxygen utilization rates ranged between 0.01 %/day (KAFB-106V1-102) and 0.14%/day (KAFB-106V1-217) and averaged 0.06%/day.

During the September 2020 monitoring event, data collected from well KAFB-106V2-117 appeared to show an oxygen increase over the course of the seven day monitoring period. The field instrumentation was calibration tested against ambient air, as specified in Section 5.5.1, and did not appear to be malfunctioning. Additionally, the wellhead sampling cap was inspected and appeared to be properly sealed. It is suspected that as the well was purged, subsurface soil vapor with a higher oxygen content was pulled into the well screen. The suspect data was flagged and was not used for calculation purposes.

5.5.3.2 Biodegradation Rate

The oxygen utilization rates were used to calculate the biodegradation rates as described above in Section 4.4.2. Calculations are provided in Appendix F. Biodegradation rates for each respiration monitoring event are provided in Table 5-3 and are summarized below:

- During the January 2020 respiration monitoring event, biodegradation rates ranged between 0.02 mg/kg-day (KAFB-106V1-102) and 0.48 mg/kg-day (KAFB-106V2-117) and averaged 0.11 mg/kg-day.
- During the March/April 2020 respiration monitoring event, biodegradation rates ranged between 0.05 mg/kg-day (KAFB-106V2-252) and 0.18 mg/kg-day (KAFB-106V1-217) and averaged 0.07 mg/kg-day.
- During the June 2020 respiration monitoring event, biodegradation rates ranged between 0.03 mg/kg-day (KAFB-106V1-102 and KAFB-106V2-102) and 0.09 mg/kg-day (KAFB-106V2-117) and averaged 0.05 mg/kg-day.
- During the September 2020 respiration monitoring event, biodegradation rates ranged between 0.01 mg/kg-day (KAFB-106V1-102, KAFB-106V1-263, and KAFB-106V2-102) and 0.08 mg/kg-day (KAFB-106V2-117) and averaged 0.04 mg/kg-day.

5.5.3.3 Oxygen Demand Air Flow Rate and Oxygen Radius of Influence

The average oxygen utilization rate was in turn used to calculate the oxygen demand air flow rate and oxygen ROI for the air injection wells. Both the oxygen demand flow rate and the oxygen ROI were calculated as described above in Sections 4.4.3 and 4.4.4 respectively. Calculations are provided in Appendix F. Oxygen demand air flow rates and oxygen ROIs for each respiration monitoring event are provided in Table 5-4 and are summarized below:

- During the January 2020 respiration monitoring event, oxygen demand air flow rates ranged between 0.27 scfm (SVMW-11-250) and 1.05 scfm (SVEW-02/03-160) while the oxygen ROI ranged between 134 ft (SVMW-11-250) and 264 ft (SVEW-02/03-160).
- During the March/April 2020 respiration monitoring event, oxygen demand air flow rates ranged between 0.18 scfm (SVMW-11-250) and 0.70 scfm (SVEW-02/03-160) while the oxygen ROI ranged between 164 ft (SVMW-11-250) and 324 ft (SVEW-02/03-160).
- During the June 2020 respiration monitoring event, Oxygen demand air flow rates ranged between 0.12 scfm (SVMW-11-250) and 0.47 scfm (SVEW-02/03-160) while the oxygen ROI ranged between 201 ft (SVMW-11-250) and 396 ft (SVEW-02/03-160).
- During the September 2020 respiration monitoring event, oxygen demand air flow rates ranged between 0.09 scfm (SVMW-11-250) and 0.35 scfm (SVEW-02/03-160); while the oxygen ROI ranged between 232 ft (SVMW-11-250) and 458 ft (SVEW-02/03-160).

5.5.4 Long-Term Bioventing pilot Test Performance Assessment

The long-term bioventing pilot test was operational for more than one year. Assessment of the long-term bioventing parameters was performed through quarterly respiration monitoring events as specified in Section 4.5.3. The site-wide average oxygen utilization rates decreased over the course of the long-term bioventing pilot test from 0.18%/day in January 2020 to 0.06%/day in September 2020 (Table 5-3). The corresponding biodegradation rates also generally decreased throughout the long-term bioventing pilot test with the site-wide average decreasing from 0.11 mg/kg-day in January 2020 to 0.04 mg/kg-day in September 2020 (Table 5-3).

Both the oxygen utilization rates and biodegradation rates calculated for the long-term bioventing pilot test were lower than those calculated during the dry and wet respiration tests. This is likely due to the duration and nature of each test. The respiration tests were performed over a shorter period of time (approximately 10 days) with a limited volume of injection air while the long-term test was performed for over one year with a continuous supply of air. The extended duration of the long-term pilot test reduces the possibilities of barometric pumping and or diffusion of soil vapor affecting the oxygen utilization. The oxygen utilization rates stabilized during the final three quarters of monitoring, averaging 0.09%/day. This indicates that the observed oxygen utilization rates are representative of what can be achieved with bioventing under the current site conditions.

The observed oxygen utilization rate is approximately one order of magnitude below the 1% per day utilization rate that indicates that bioventing may be feasible (Leeson and Hinchee, 1996); even the highest rates measured during the short-term test fall below the 1% per day level. The data show that while biodegradation is likely occurring, it is not doing so at a rate that would likely result in remediation

of hydrocarbons in a timely manner. Currently there is enough data collected from this pilot test to inform the CME on the feasibility of this technology.

6. SITE CONTAMINATION

6.1 Field Screening Results

Field screening of soil vapor HC concentrations was performed as part of the respiration testing. During the collection of baseline respirometry data, elevated levels of HC concentration were observed throughout the subsurface. Concentrations within the injection wells ranged between 1,757 ppm_v within SVEW-04/05-160 and 30,900 ppm_v within SVMW-11-100. Concentrations within the observation wells ranged between 9,060 ppm_v within KAFB-106V2-160 and 26,840 ppm_v within KAFB-106V2-117.

During the dry respiration testing, air injection temporarily diluted the HC concentrations (less than 254 ppm_v) within the injection wells. The HC concentrations gradually increased throughout the respiration testing as volatilization and equilibration took place (Tables 4-4 through 4-12). Since the dry respiration test was conducted as single wells tests, the HC concentrations within the observation wells remained relatively unchanged (Tables 4-13 through 4-24).

Prior to the wet respiration testing, additional respirometry data was collected from the injection and observation wells. Concentrations within the injection wells ranged between 1,311 ppm_v within SVEW-04/05-160 and 21,650 ppm_v within SVMW-11-100. Concentrations within the observation wells ranged between 10,120 ppm_v within KAFB-106V2-160 and 30,890 ppm_v within KAFB-106V2-117. During the wet respiration testing, air injection temporarily diluted the HC concentrations (less than 855 ppm_v) within the injection wells. The HC concentrations gradually increased throughout the respiration testing as volatilization and equilibration took place (Tables 4-4 through 4-12). Since the wet respiration test was conducted as single wells tests, the HC concentrations within the observation wells remained relatively unchanged (Tables 4-13 through 4-24).

During the long-term bioventing pilot test wells SVEW-10, SVMW-11, SVEW-01, SVEW-02/03, and SVEW-04/05 were used for air injection only. Therefore, only observation wells KAFB-106V1 and KAFB-106V2 were used to monitoring subsurface HC concentrations. Gradual decreases in HC concentrations were observed throughout the subsurface over the course of the long-term bioventing pilot test (Table 4-13 through 4-24). Observation well KAFB-106V2-160 decreased from 11,150 ppm_v to 2,400 ppm_v within the first month of long-term bioventing while KAFB-106V2-270 gradually decreased from 19,600 ppm_v to 2,700 ppm_v during the long-term bioventing time period. Additionally, HC concentrations did not appear to rebound during the respiration monitoring events as they did during the dry and wet respiration testing. This suggests that the decrease in HC concentrations is primarily due to dilution from the bioventing blowers, or simply background variability, and not related to biodegradation.

6.2 Soil Vapor Analytical Results

Laboratory analytical samples were collected from each of the screened intervals in SVMWs KAFB-106V1 and KAFB-106V2 to evaluate the contaminant destruction rate and the degradation of BTEX, ethylene dibromide (EDB), and TPH-GRO.

Analytical samples were collected prior to the air injection for the respiration testing, after each respiration test, and throughout the long-term bioventing pilot test in accordance with the approved Work Plan (Kirtland AFB, 2017a). Soil vapor analytical data and the analytical laboratory reports are provided in Appendix E-2. TPH-GRO, BTEX, and EDB concentrations were collected and are provided in Table 6-1. A summary of soil vapor analytical data is provided in Appendix E-3. A data quality evaluation report is provided in Appendix E-4.

6.2.1 Respiration Testing

6.2.1.1 Baseline Respiration Sampling

Baseline laboratory analytical samples were collected in April 2019 prior to the dry respiration testing. Concentrations of TPH-GRO ranged from 43,000,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) (KAFB-106V2-160) to 370,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-102). The sum of BTEX constituents ranged from 2,400,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 9,130,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-102). Concentrations of EDB ranged from 2,500 J (estimated value based on data validation) $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 23,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263).

6.2.1.2 Post-Dry Respiration Sampling

Laboratory analytical samples were collected in May 2019 after the completion of the dry respiration testing. Concentrations of TPH-GRO ranged from 52,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 210,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-102 and KAFB-106V2-117). The sum of BTEX constituents ranged from 2,820,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 7,950,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). These sums include a mixture of non-qualified and J-qualified results. Concentrations of EDB ranged from 1,900 J $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 15,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263).

6.2.1.3 Post-Wet Respiration Sampling

Laboratory analytical samples were collected in July 2019 after completion of the wet respiration testing. Concentrations of TPH-GRO ranged from 76,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 220,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The sum of BTEX constituents ranged from 2,270,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 9,530,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The results for each of the analytes included in the sum were J-qualified. Concentrations of EDB ranged from 1,600 J $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 24,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263 and KAFB-106V2-102).

Contaminant concentrations remained high throughout the respiration testing. Some dilution was observed in the observation well screen KAFB-106V1-113 after the dry respiration test (Table 6-1). However, the concentrations rebounded to near baseline concentration levels by the completion of the wet respiration testing. Significant changes in contaminant concentration due to biodegradation were not expected to be observed during the respiration pilot testing due to the limited injection periods.

6.2.2 Long-Term Bioventing pilot Test

Laboratory analytical samples were collected weekly for the first month of operation and quarterly thereafter. Laboratory analytical samples were collected from each of the screened intervals in SVMWs KAFB-106V1 and KAFB-106V2 to assess the changes in concentration of BTEX, EDB, and TPH-GRO. Soil vapor analytical data is presented in Table 6-1, and the analytical laboratory reports are provided in Appendix E-2. A summary of concentrations for each monitoring event is provided below.

6.2.2.1 October and November 2019

Laboratory analytical samples were collected throughout the first month of the long-term bioventing pilot test on October 15, October 22, October 31, and November 5, 2019. Concentrations of TPH-GRO ranged from 19,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 250,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The sum of BTEX constituents ranged from 755,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 16,530,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263). The results for each of the analytes included in the sum were J-qualified. Concentrations of

EDB ranged from 330 J $\mu\text{g}/\text{m}^3$ (KAFB-106V1-217) to 39,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263 and KAFB-106V1-263).

Laboratory results for vapor samples from observation well screens KAFB-106V1-102, KAFB-106V1-113, KAFB-106V1-160, and KAFB-106V1-217 collected on October 22, 2019, appear to have been diluted with atmospheric air during the sample collection process. The TPH-GRO and related VOC concentrations were reported to be significantly lower than the concentrations reported for the same samples collected on October 15 and 31, 2019 (Table 6-1). Laboratory receipt vacuums indicate that a leak in transit did not occur. In addition, a leak in the sample train is unlikely as the field parameters are collected from the same sample train and a significant decrease in field screening HC concentrations was not observed. It is believed that the leak occurred during sampling within the canister fittings and connections to the sample trains. Based on the data usability and comparability assessment by the project team, the VOC, TPH-GRO, and fixed gases/hydrocarbon sample data have been qualified “R,” signifying rejected data in the project database for the four samples collected on October 22, 2019. No additional suspect data was identified for the remainder of the bioventing pilot test.

6.2.2.2 January 2020

Laboratory analytical samples were collected in January 2020 and represent subsurface hydrocarbon concentrations after approximately one quarter of long-term bioventing. Concentrations of TPH-GRO ranged from 14,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 240,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The sum of BTEX constituents ranged from 369,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 8,150,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263). Concentrations of EDB ranged from 300 J $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 20,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-26).

Contaminant concentrations remained high through the first full quarter of bioventing. Concentrations generally remained steady without any significant decreasing trends being observed. Concentration fluctuation was observed in multiple wells such as KAFB-106V2-102 and KAFB-106V2-270 and were likely related to the bioventing blowers moving soil vapor in the subsurface.

6.2.2.3 April 2020

Laboratory analytical samples were collected in April 2020 and represent hydrocarbon concentrations after approximately two quarters of long-term bioventing. Concentrations of TPH-GRO ranged from 6,900,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 230,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The sum of BTEX constituents ranged from 451,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 16,540,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). Concentrations of EDB ranged from 270 J $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 29,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-102).

Contaminant concentrations remained high through the second full quarter of bioventing. Concentrations generally remained steady throughout the majority of the monitoring points with fluctuations in the contaminant concentrations continuing. A decreasing concentration trend was observed in wells KAFB-106V1-160, KAFB-106V2-160, KAFB-106V2-252, and KAFB-106V2-270 where TPH-GRO concentrations have continued to decline since November 2019 (Table 6-1).

6.2.2.4 June 2020

Laboratory analytical samples were collected in June 2020 and represent hydrocarbon concentrations after approximately three quarters of long-term bioventing. Concentrations of TPH-GRO ranged from 6,700,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 240,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The sum of BTEX

constituents ranged from 427,200 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 13,100,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). Concentrations of EDB ranged from 1,700 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-160) to 26,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263).

Contaminant concentrations remained high through the third full quarter of bioventing. Concentrations generally remained steady throughout the majority of the monitoring points with fluctuations in the contaminant concentrations continuing. The decreasing trends continued in wells KAFB-106V1-160, KAFB-106V2-160, KAFB-106V2-252, and KAFB-106V2-270 where TPH-GRO concentrations have continued to decline since November 2019 (Table 6-1). However, concentrations of BTEX have been fluctuating in wells KAFB-106V2-252 and KAFB-106V2-270 over the same time period.

6.2.2.5 September 2020

Laboratory analytical samples were collected in September 2020 and represent hydrocarbon concentrations after approximately one year of long-term bioventing. Concentrations of TPH-GRO ranged from 5,300,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 270,000,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). The sum of BTEX constituents ranged from 323,700 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 14,300,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-117). Concentrations of EDB ranged from 230 $\mu\text{g}/\text{m}^3$ (KAFB-106V2-160) to 25,000 $\mu\text{g}/\text{m}^3$ (KAFB-106V1-263).

Contaminant concentrations remained high through the first year of bioventing. Since April 2020, a slight decreasing trend was observed in TPH-GRO concentrations in each observation well screen except KAFB-106V1-263, KAFB-106V2-117, and KAFB-106V2-217, which saw an increase or remained steady. Concentrations of BTEX generally fluctuated during this time period, and a consistent trend was not observed.

While a decreasing trend was observed for TPH-GRO in the majority of the observation well screens throughout the long-term testing, BTEX constituents did not experience the same decreasing trend. Additionally, the low oxygen utilization and biodegradation rates do not support the decreasing TPH-GRO trend. This indicates that the trend is likely due to dilution of the soil vapor from the bioventing blowers and not a result of biodegradation.

6.2.2.6 Soil Vapor Monitoring Anomalies

Soil vapor concentration anomalies were observed in Q2 2020 and Q4 2020 in the immediate vicinity of the bioventing pilot testing area. Anomalies were observed within 16 soil vapor monitoring points, all located on base and in close proximity to the bioventing testing area (Figure 6-1). The anomalies included benzene and EDB soil vapor concentrations that were elevated as compared to historical values (Table 6-2).

The anomalies occurred at depths of 50 ft bgs or deeper (except for the one anomaly observed at KAFB-106118-025) and were generally observed at depths closely associated with the injection intervals. Based on the depth of the observed anomalies, there does not appear to be a vapor migration risk for on- or off-Base receptors.

This advection of soil vapor, coupled with low oxygen utilization/biodegradation and the observed anomalies, suggests that migration and not degradation of the soil vapor concentrations may have occurred. Due to potential soil vapor migration concerns, the bioventing system was shut down on November 23, 2020. However as discussed below in Section 7, there is sufficient data to inform the CME on the feasibility of this technology.

7. CONCLUSIONS AND RECOMMENDATIONS

The bioventing pilot test was performed to evaluate the effectiveness of this technology to remediate petroleum hydrocarbon concentrations on a small pilot test scale and to provide sufficient data to inform the CME on the feasibility of this technology. The assessment of the effectiveness of bioventing was performed by measuring the microbial oxygen utilization rate in the subsurface. The rate of oxygen utilization is directly proportional to the aerobic biodegradation rate of fuel hydrocarbons in the subsurface and is therefore an indication of effectiveness of bioventing to remediate hydrocarbons in a timely manner.

Data collected throughout the first year of bioventing indicated that low oxygen utilization rates observed during the pilot test are representative of what can be achieved with bioventing under the current site conditions. Operational concerns were identified during the long-term bioventing pilot test as the low oxygen utilization coupled with the continuous air injection created observed anomalies and was shut down to eliminate the possibility of vapor migration away from the source are. Due to these concerns, the bioventing pilot test was concluded on November 23, 2020. A Technical Memorandum was submitted to NMED on January 13, 2021, detailing the operational concerns, notifying NMED that the bioventing system was temporarily shut down, and requesting that the bioventing pilot test be terminated. Official correspondence from NMED was received on February 11, 2021, concurring with the decision to terminate the bioventing pilot test.

Based on the low oxygen utilization rates, it is likely that this technology will not meet the remedy threshold criteria in the RCRA Permit Part 6.2.2.2.5.1. Although the data do not indicate that bioventing is a viable technology to remediate hydrocarbons under the current site conditions, these data will be included to inform the Corrective Measure Evaluation Report. The data will be useful to assess if this technology may be viable at lower vadose zone concentrations that may be present in the future.

8. REFERENCES

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19-MISC.

NMED. 2018b. February 23, 2018 correspondence from Mr. Juan Carlos Borrego, Deputy Secretary to Colonel Richard W. Gibbs, Base Commander, 377 AB/CC, Kirtland AFB, NM and Mr. Chris Segura, Chief, Installation Support Section, AFCEC/CZOW, Kirtland AFB, NM, *re: Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling, Revision 2, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-11, Kirtland Air Force Base, EPA ID# NM9570024423, HWB-KAFB-19-MISC.*

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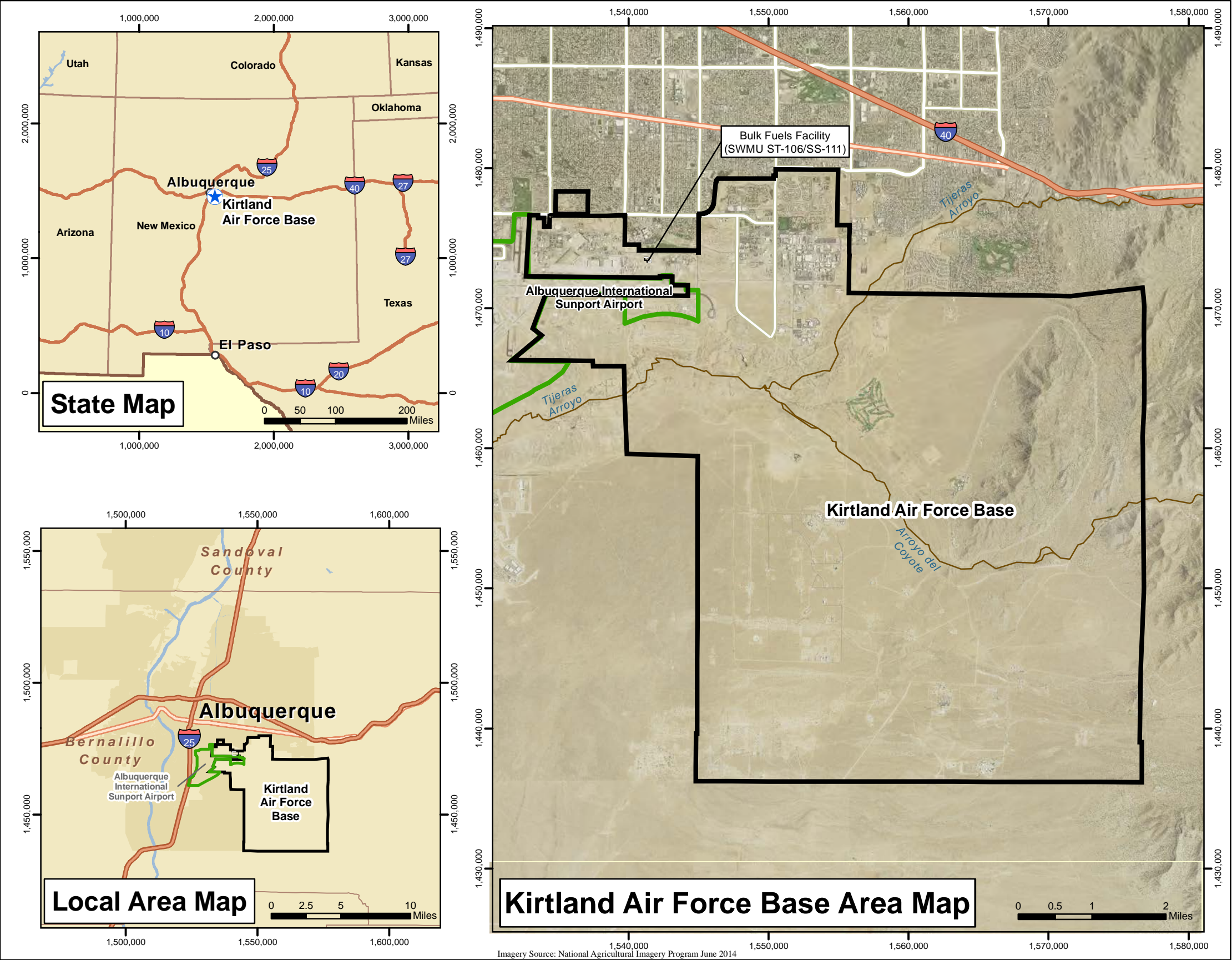
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NMED. 2021. February 11, 2021 correspondence from Mr. John Keiling, Bureau Chief to Colonel Richard W. Gibbs, Base Commander, 377 AB/CC, Kirtland AFB, NM and Mr. Chris Segura, Chief, Installation Support Section, AFCEC/CZOW, Kirtland AFB, NM, *re: Technical Memo: Bioventilation Pilot Test November 23rd 2020 Shutdown, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-11, Kirtland Air Force Base, EPA ID# NM6213820974, HWB-KAFB-20-001.*

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FIGURES



Legend

- Kirtland Air Force Base Installation Boundary
- Albuquerque International Sunport Airport
- Major Highways
- Highways
- Major Roads
- Arroyos
- Rivers

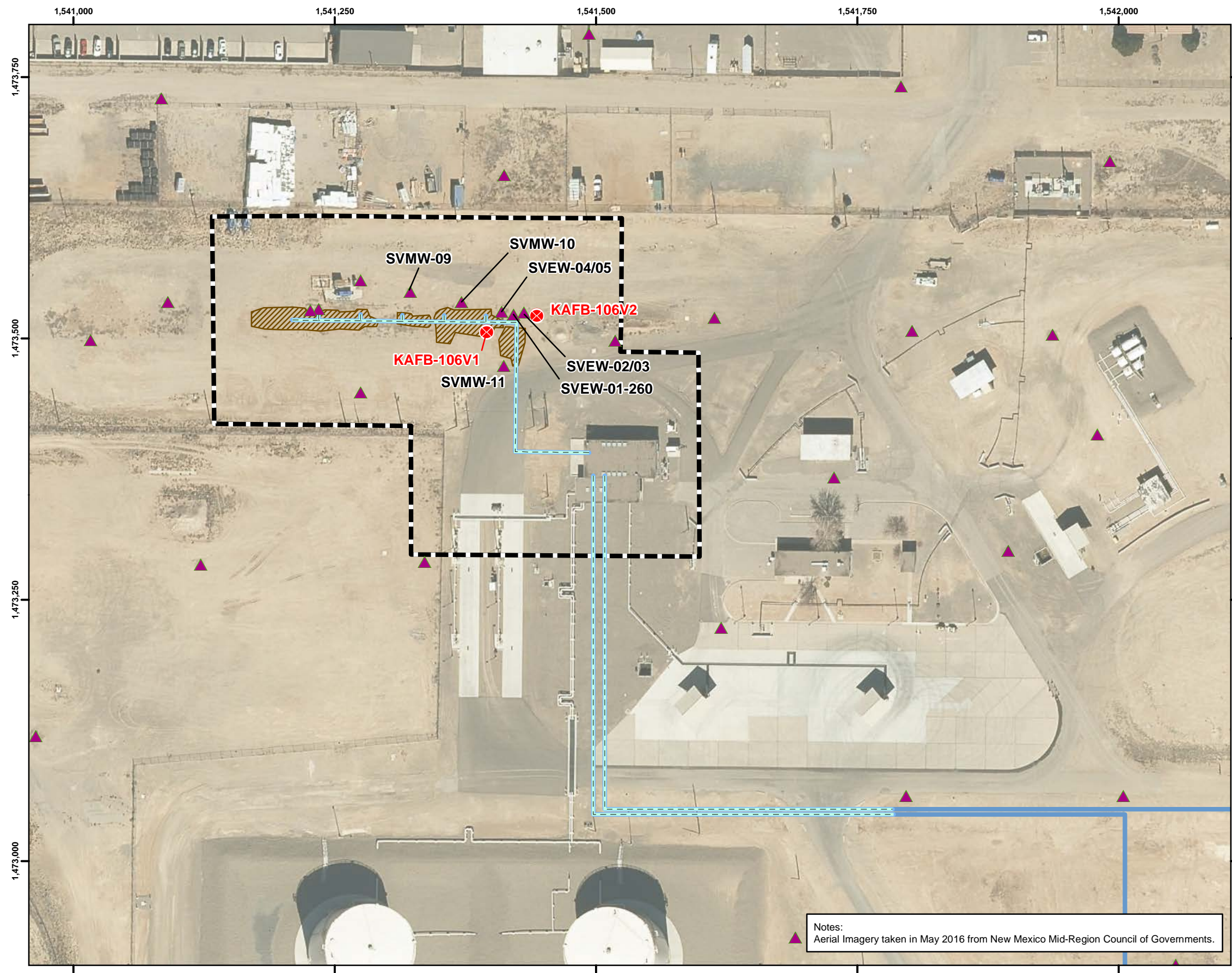


Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

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BULK FUELS FACILITY
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE, NEW MEXICO

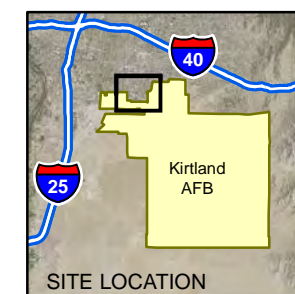
FIGURE 1-1

SITE LOCATION MAP



Legend

- ▲ Existing Soil Vapor Well
- ⊗ Bioventing Observation Well
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- ▨ Final Excavation Boundary
- ▭ Source Area



0 50 100 200
Feet

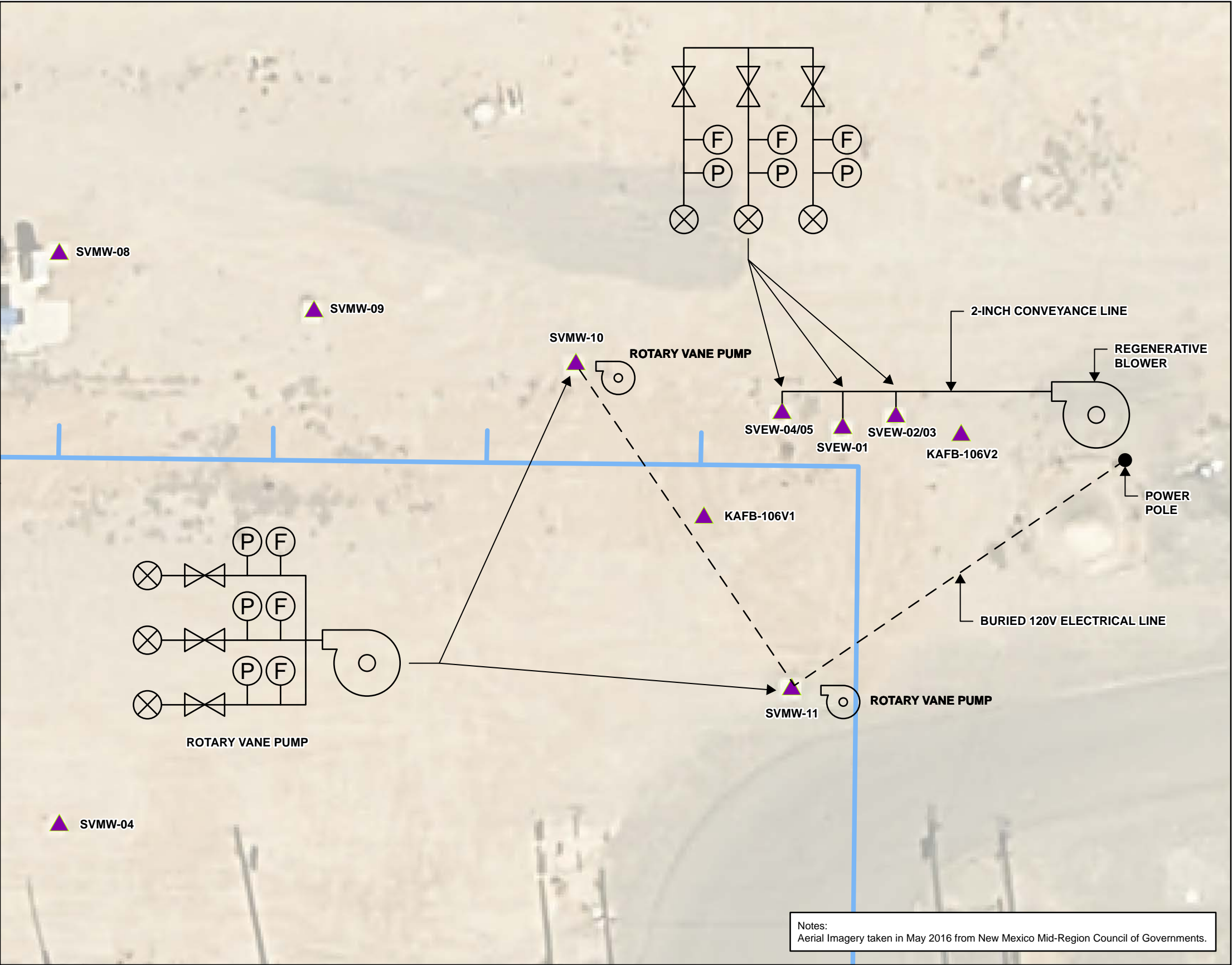
1 inch = 100 feet

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

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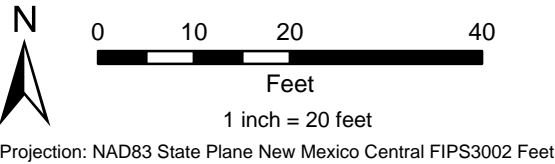
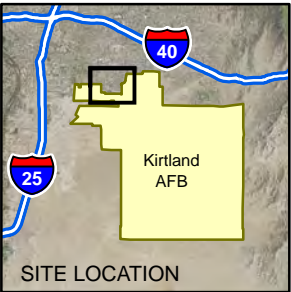
FIGURE 1-2

BIOVENTING PILOT TEST AREA



Legend

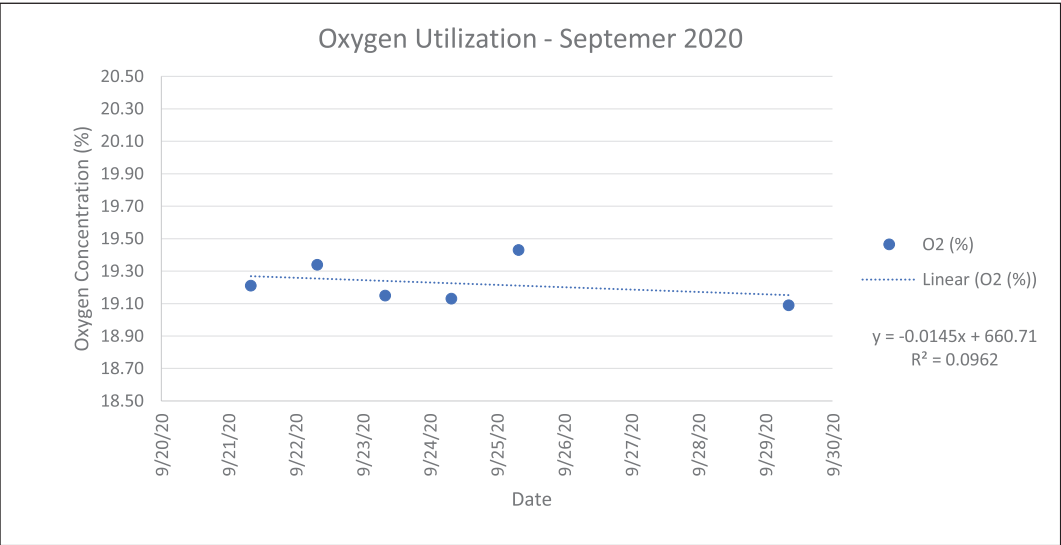
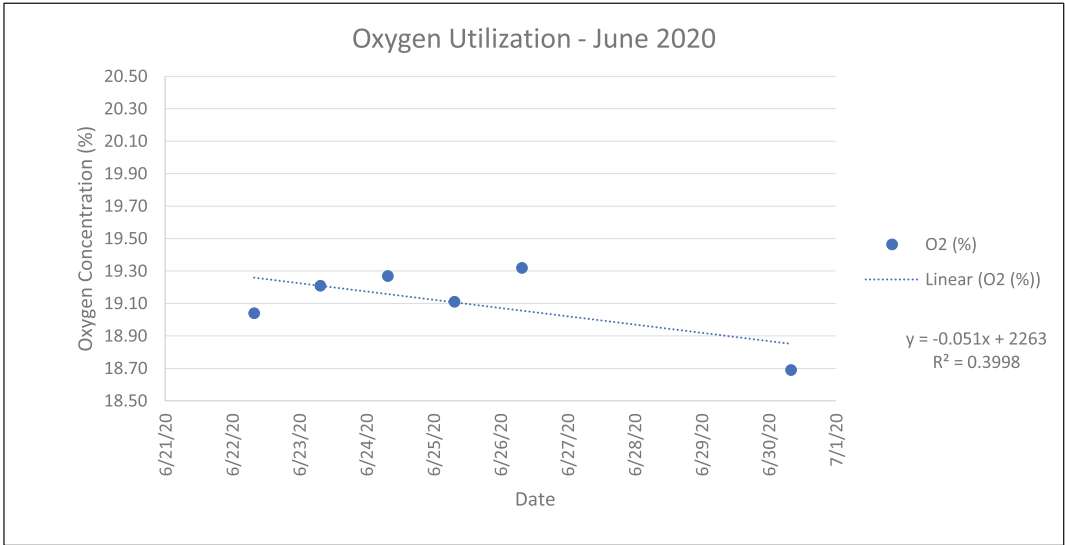
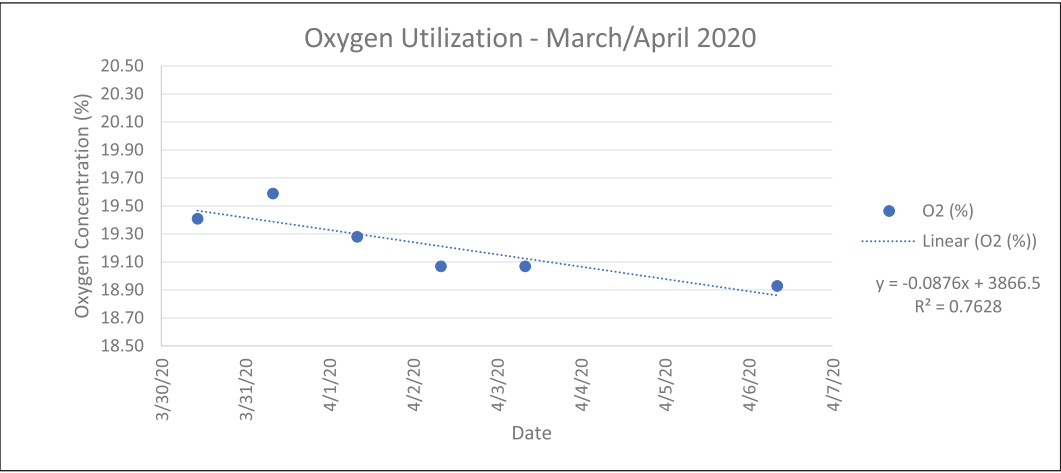
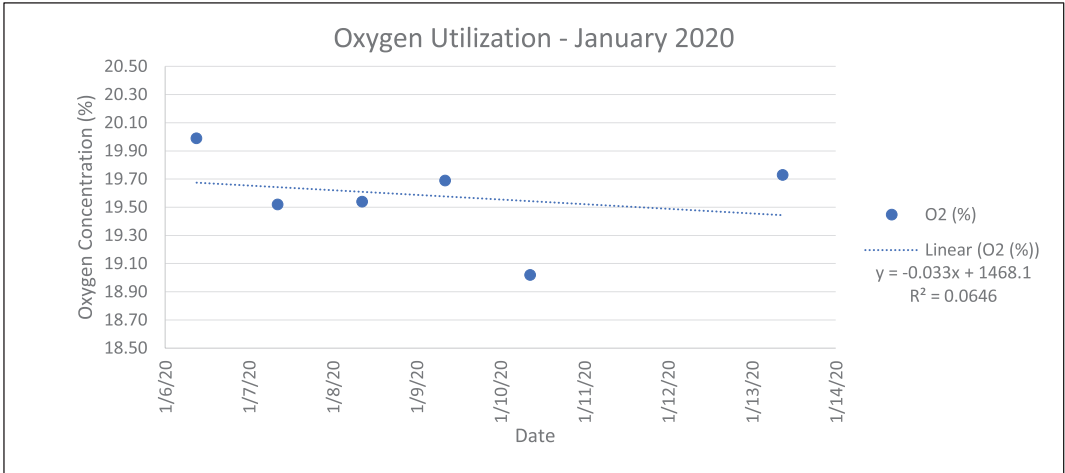
- Soil Vapor Well
- Former Buried Fuel Transfer Line
- Flow Meter
- Pressure Port
- Control Valve
- Blower



BIOVENTING PILOT TESTING REPORT
BULK FUELS FACILITY
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
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FIGURE 4-1

BIOVENTING SYSTEM LAYOUT



Notes:

The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

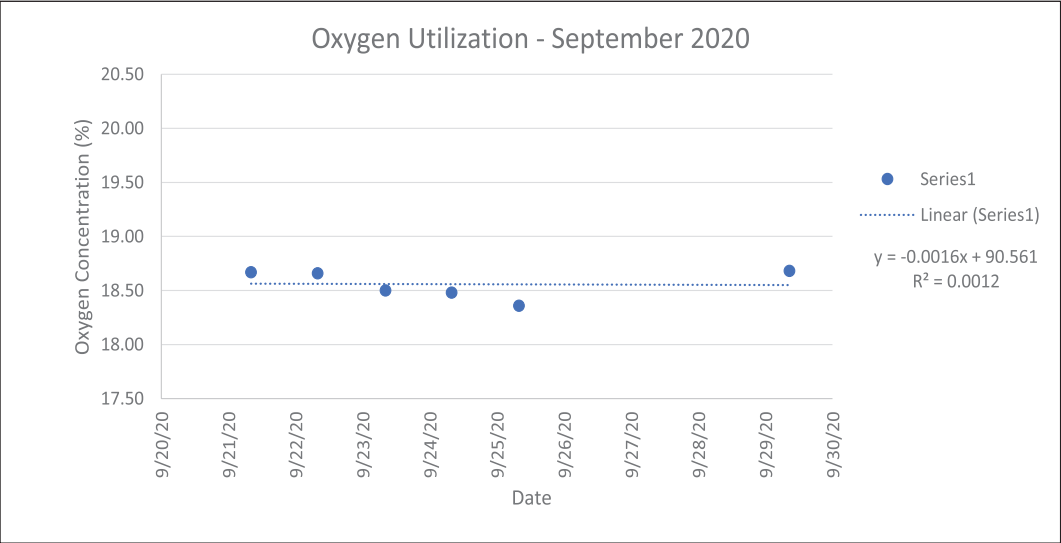
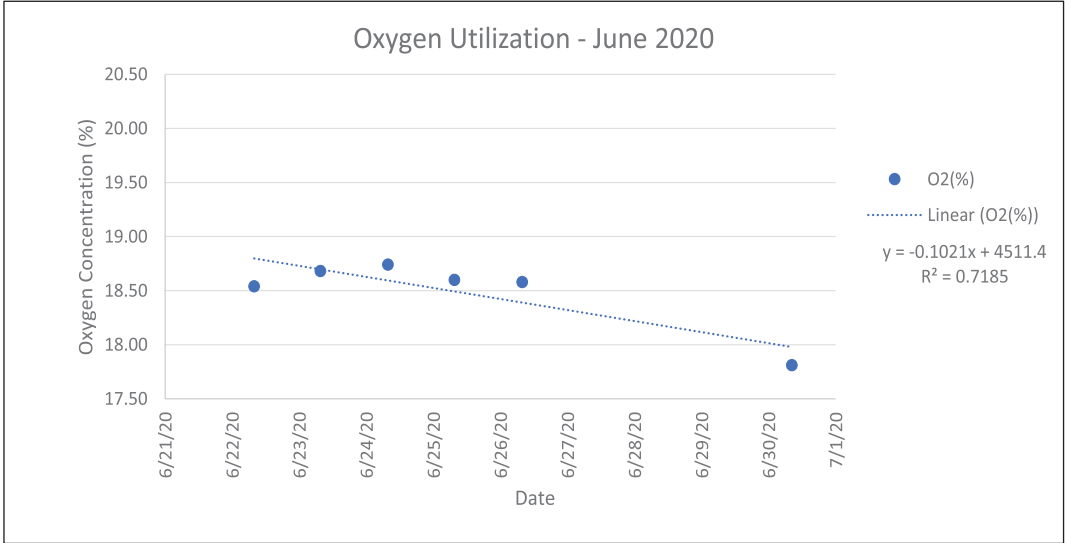
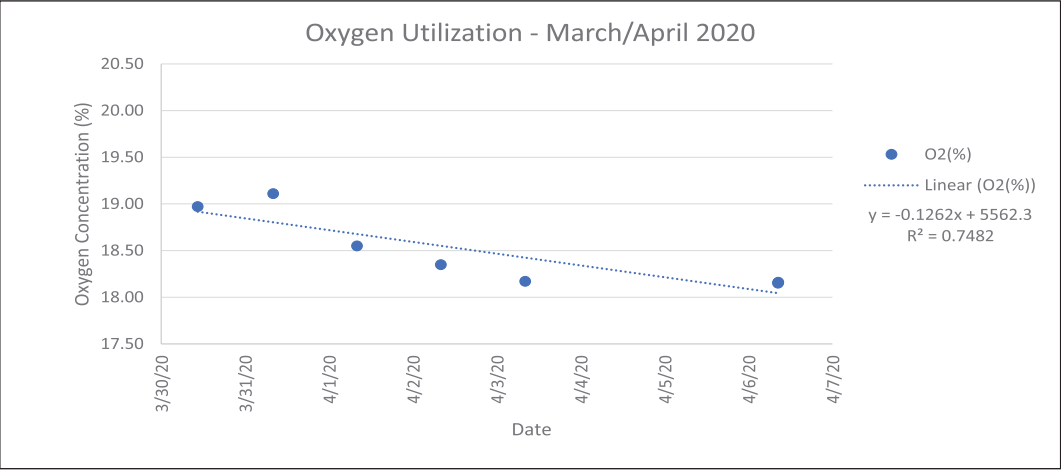
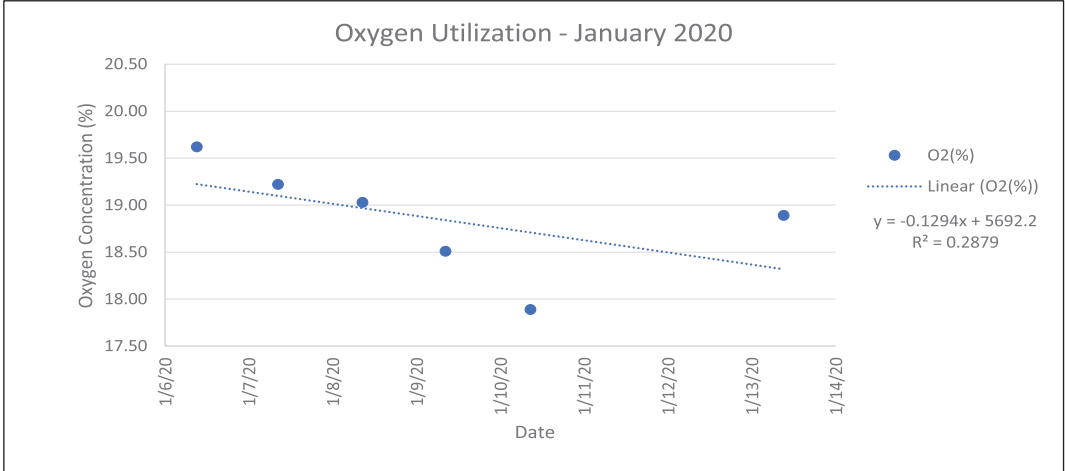
Air injection blowers were shut down during all respiration monitoring events.

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-1

KAFB-106V1-102
LONG-TERM BIOVENTING
OXYGEN UTILIZATION

APPENDICES



Notes:

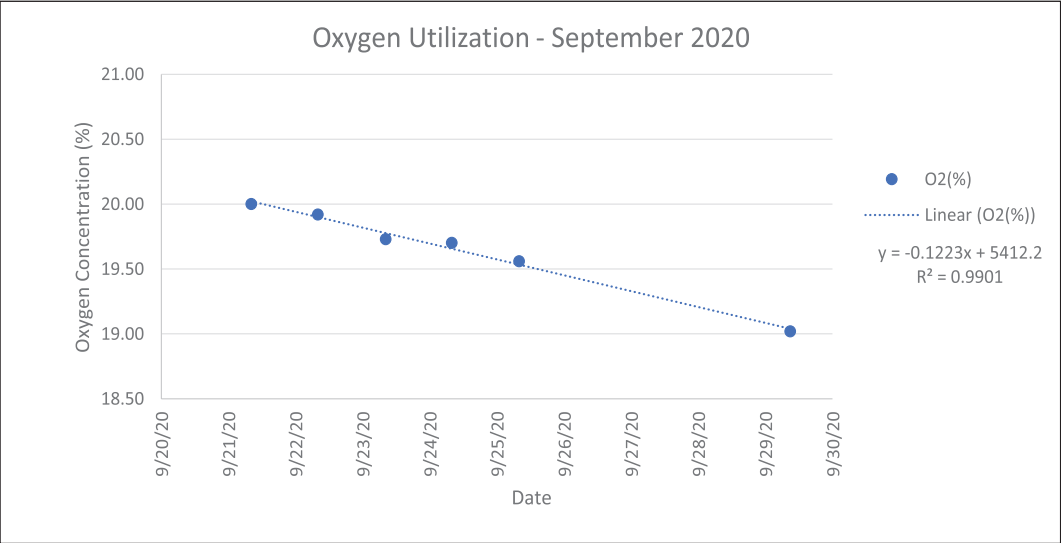
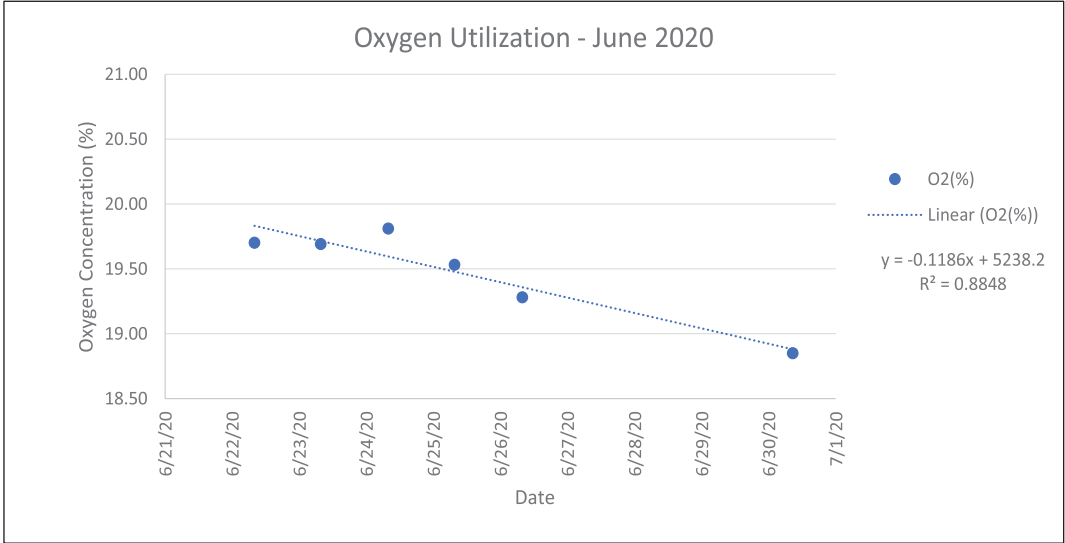
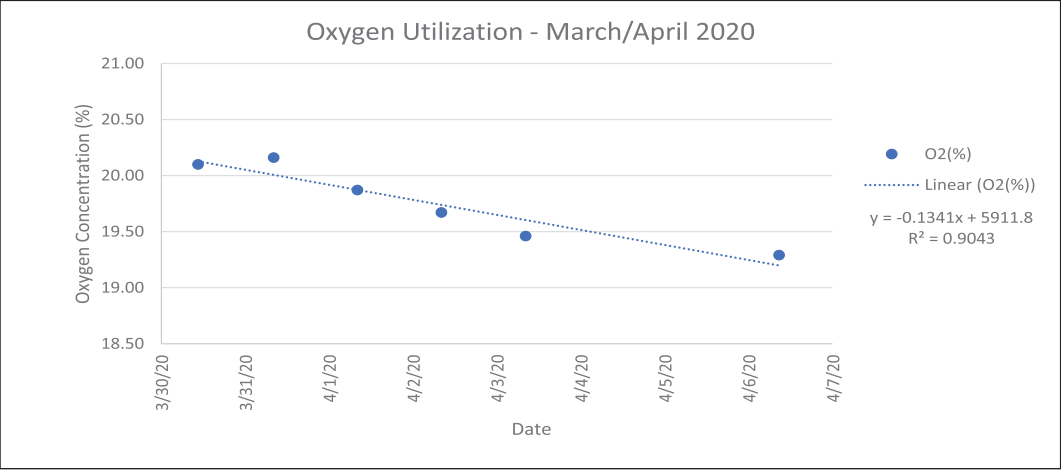
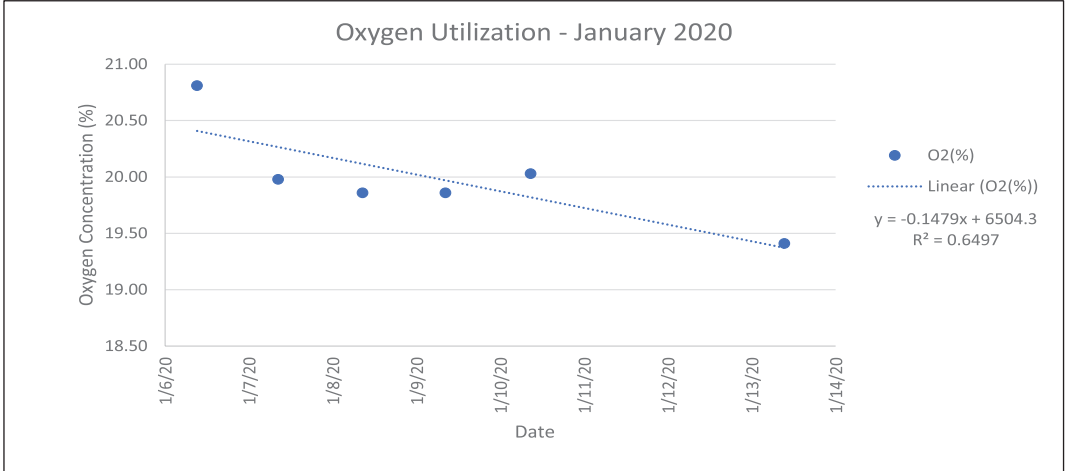
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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FIGURE 5-2

KAFB-106V1-113
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

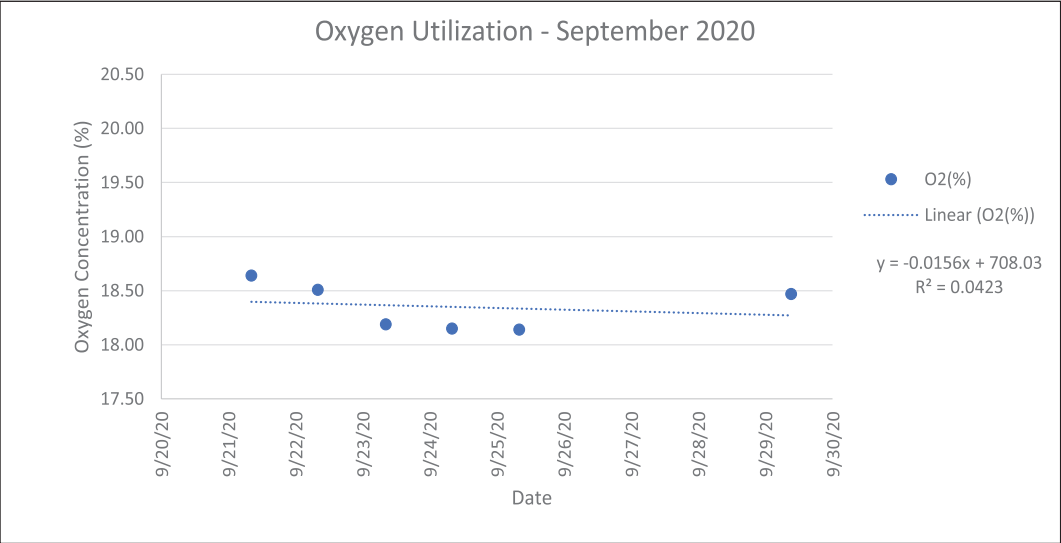
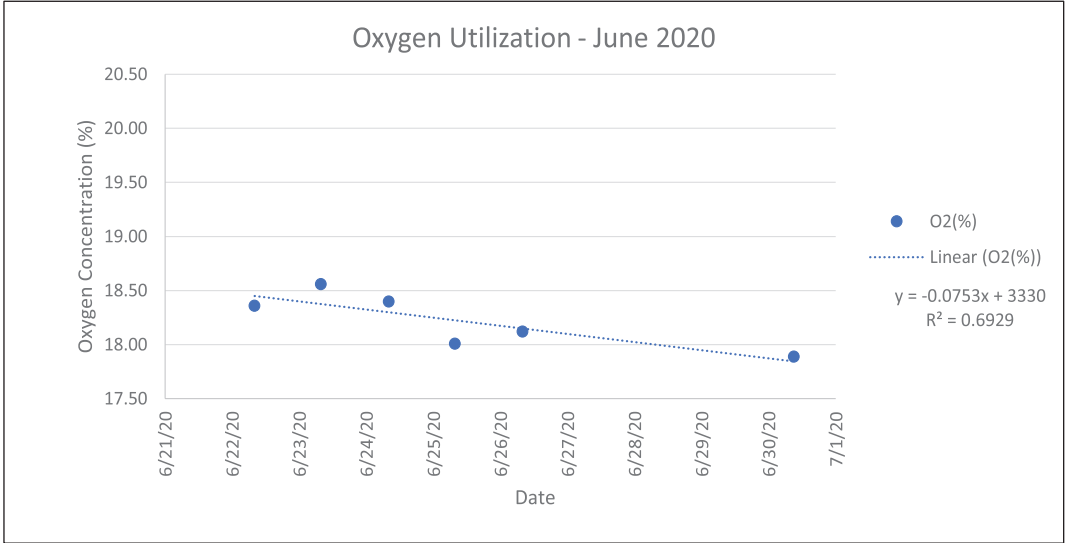
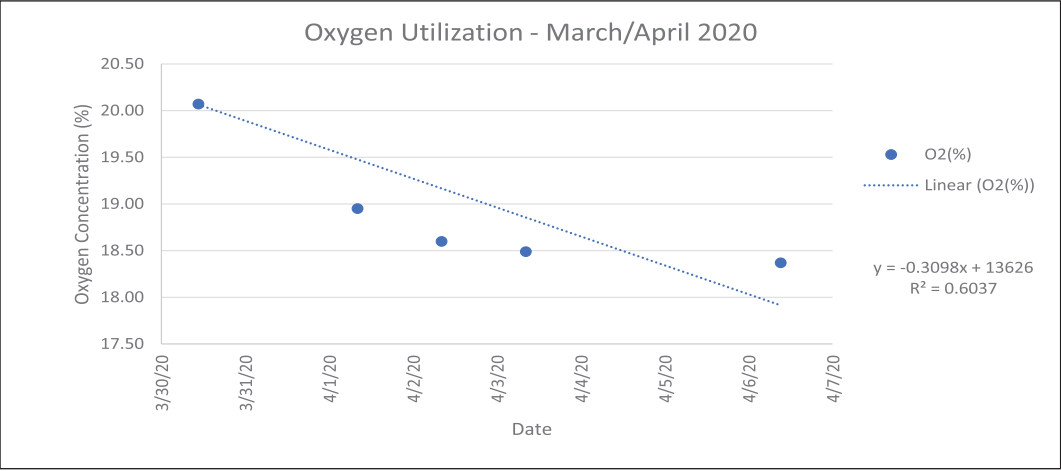
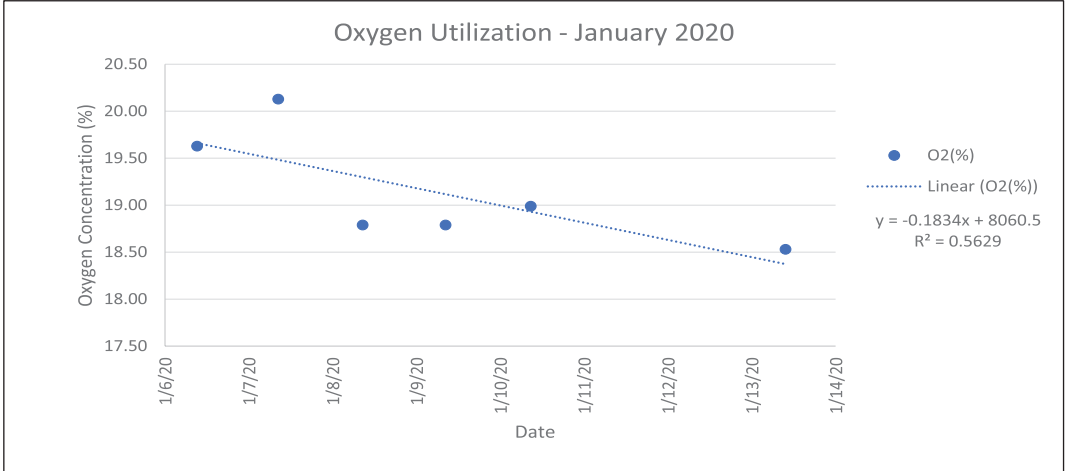
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-3

KAFB-106V1-160
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

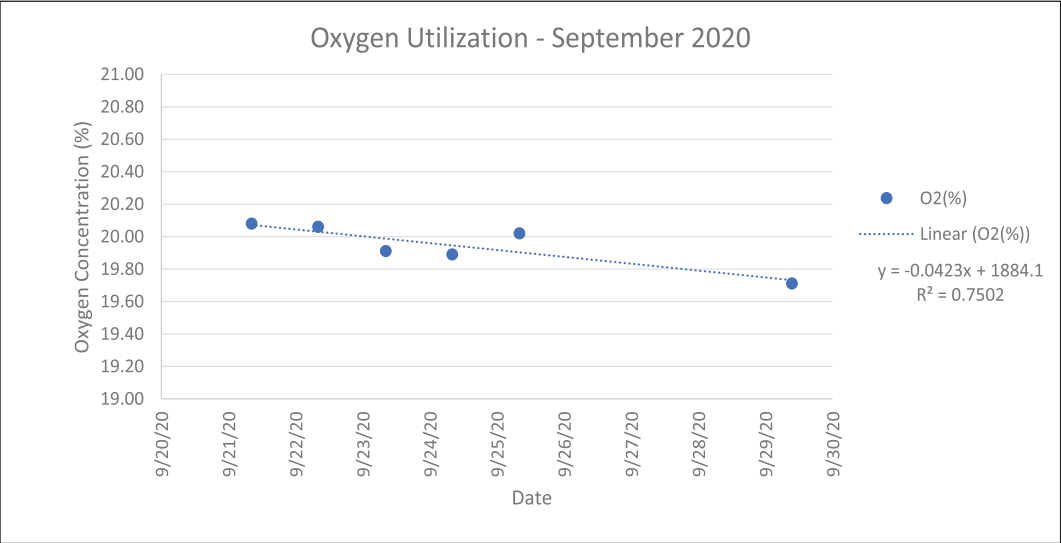
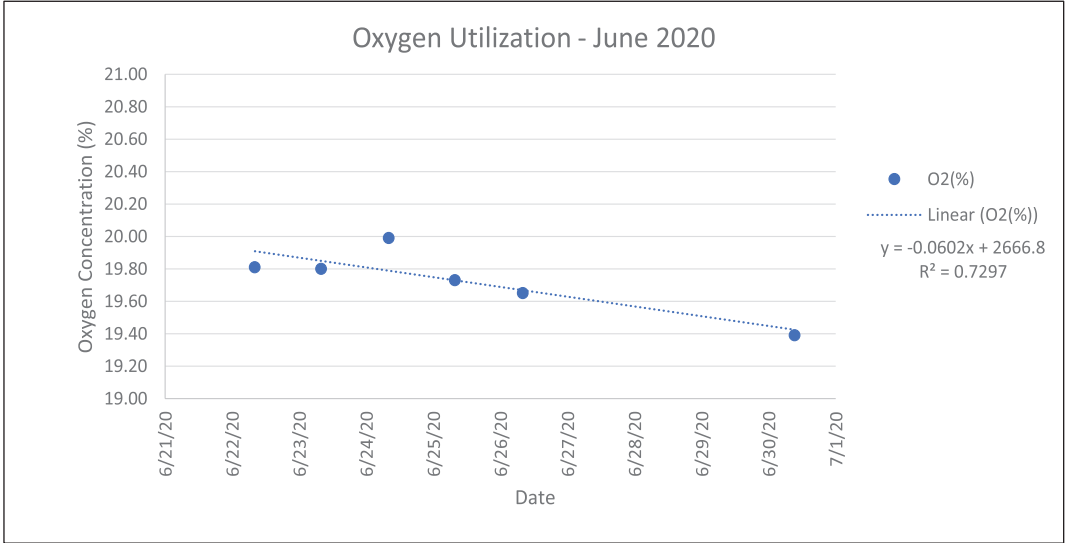
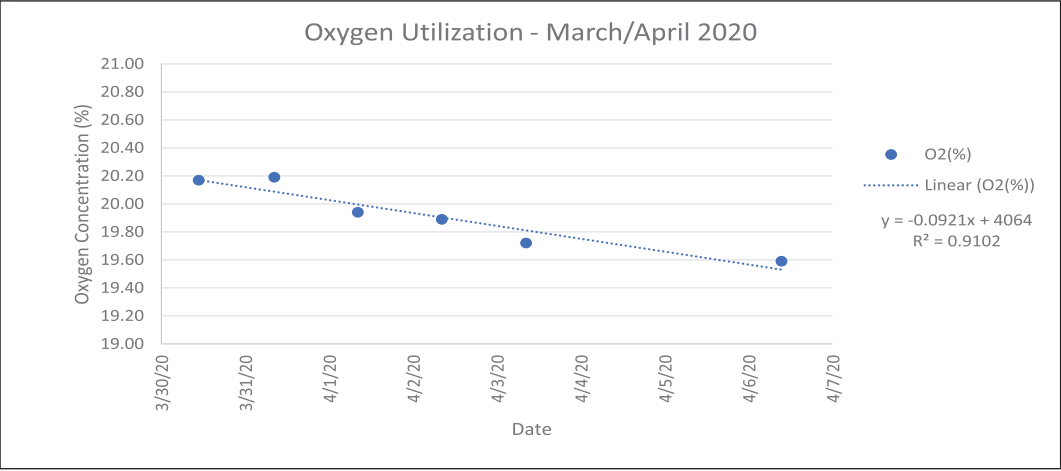
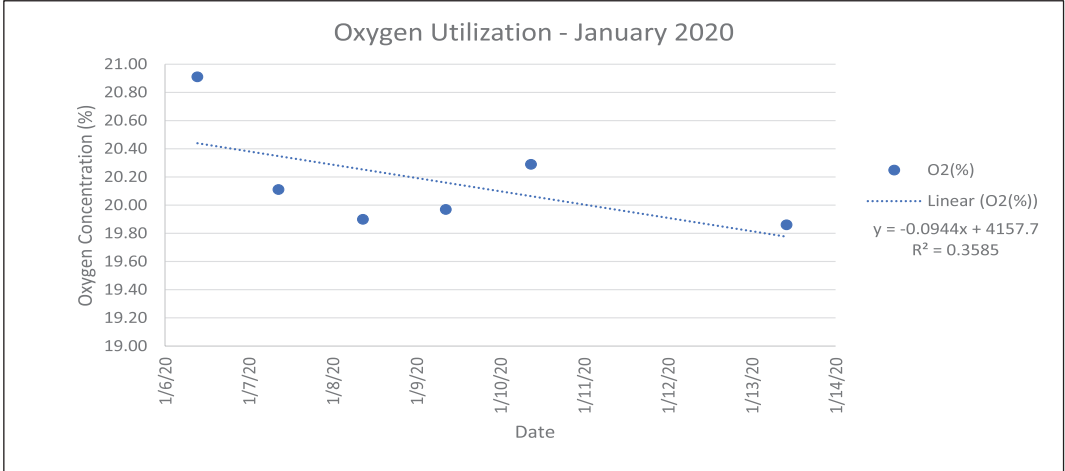
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 5-4

KAFB-106V1-217
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

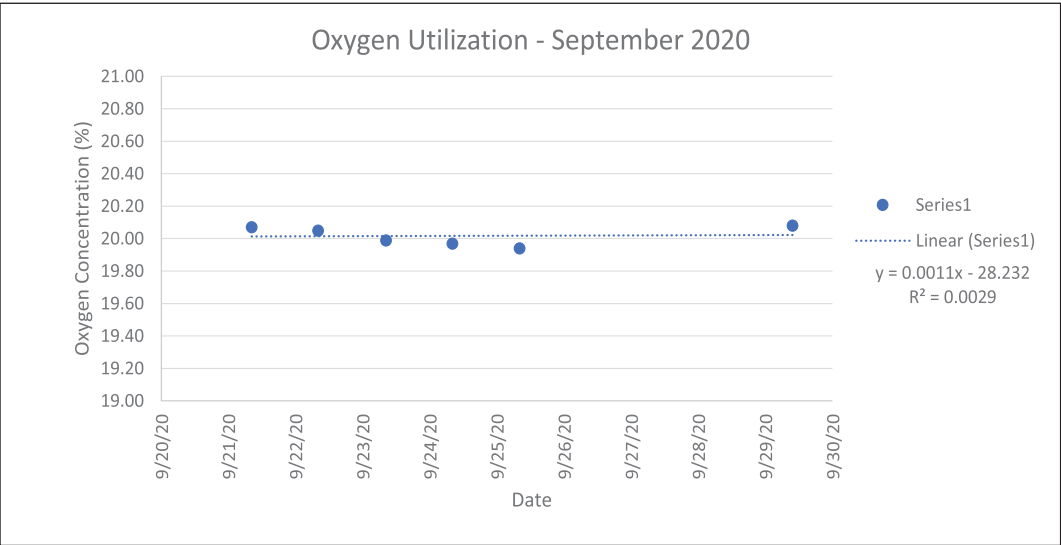
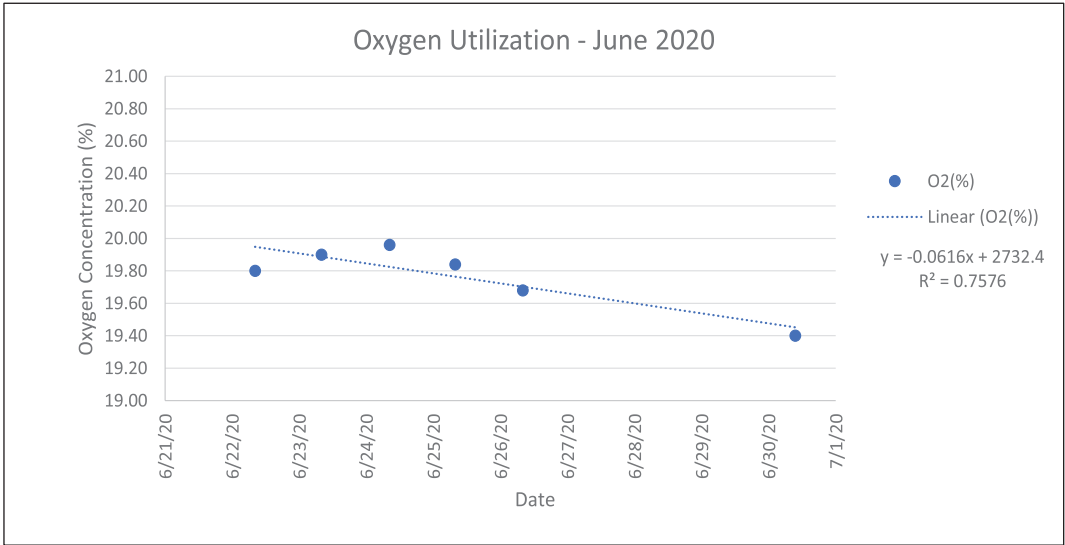
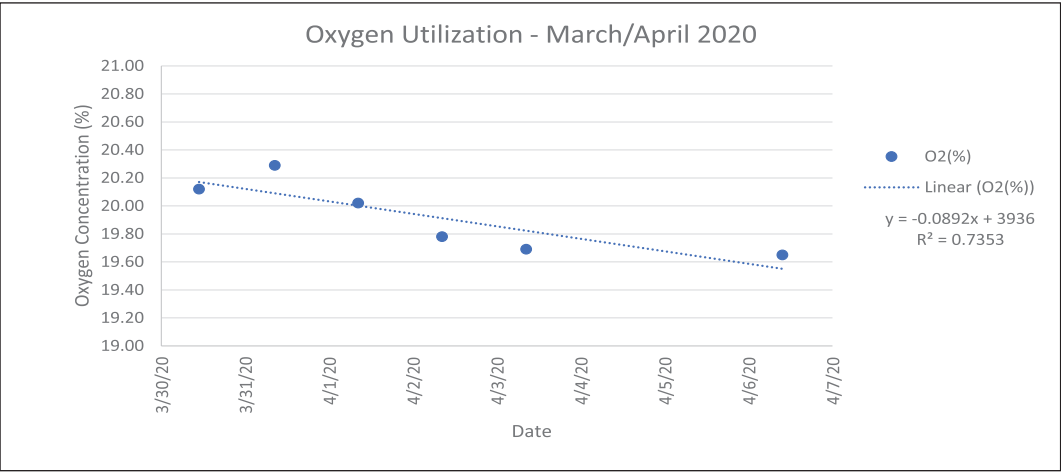
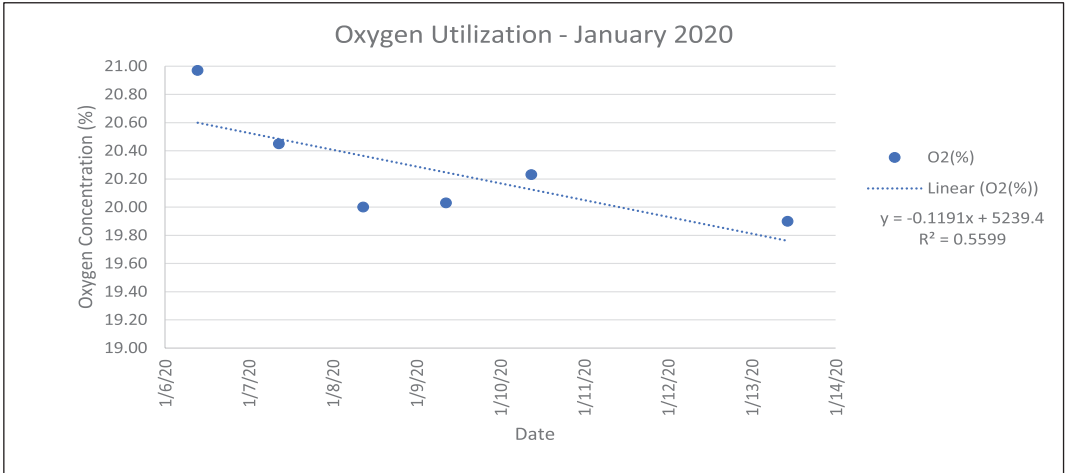
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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FIGURE 5-5

KAFB-106V1-252
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

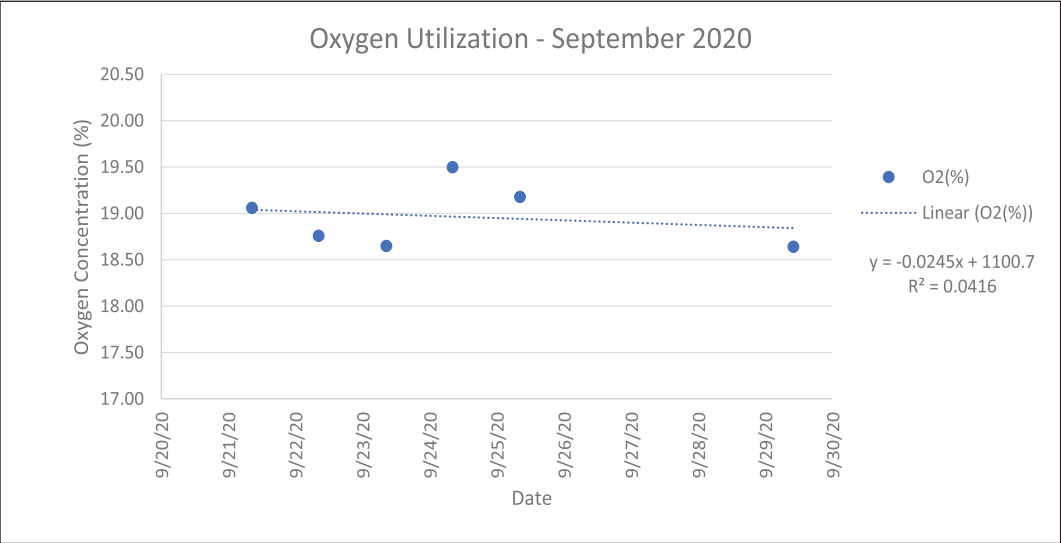
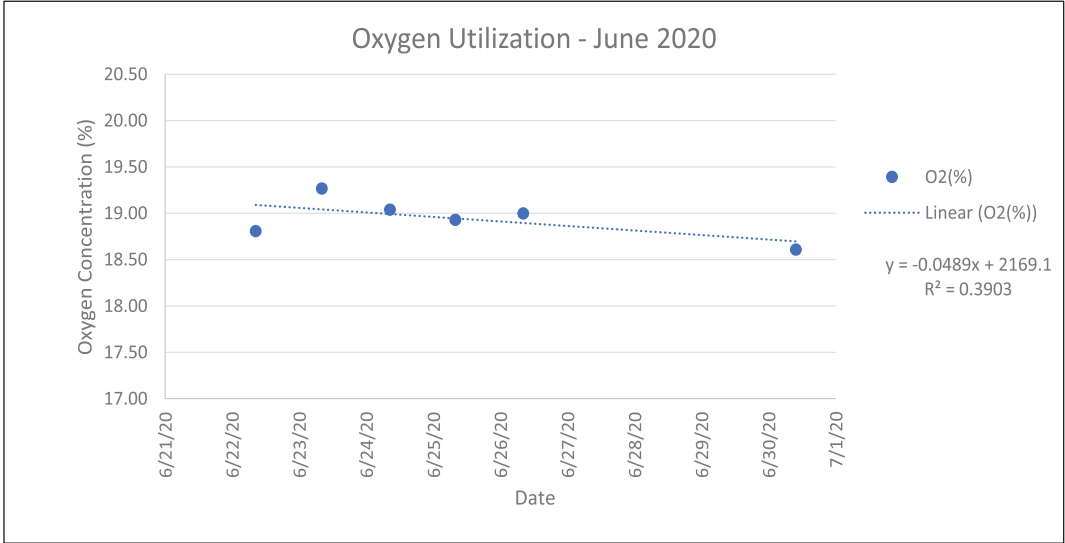
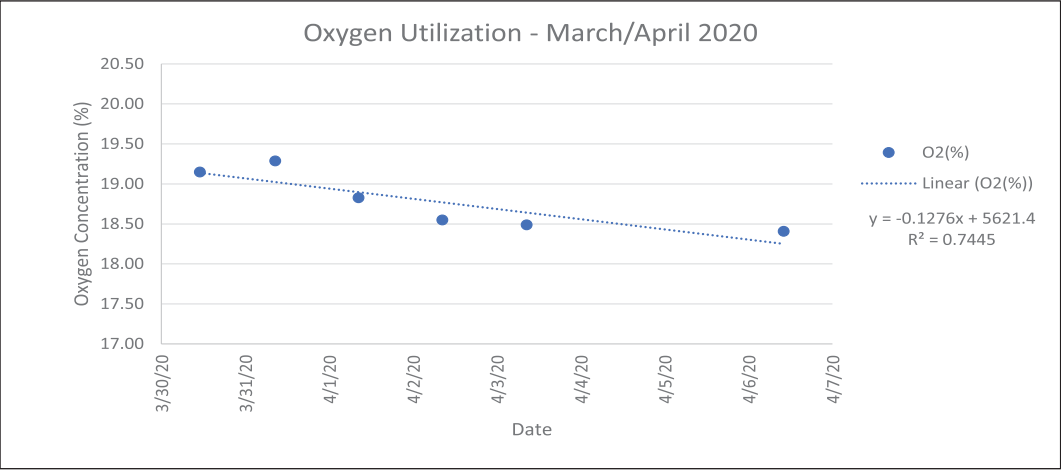
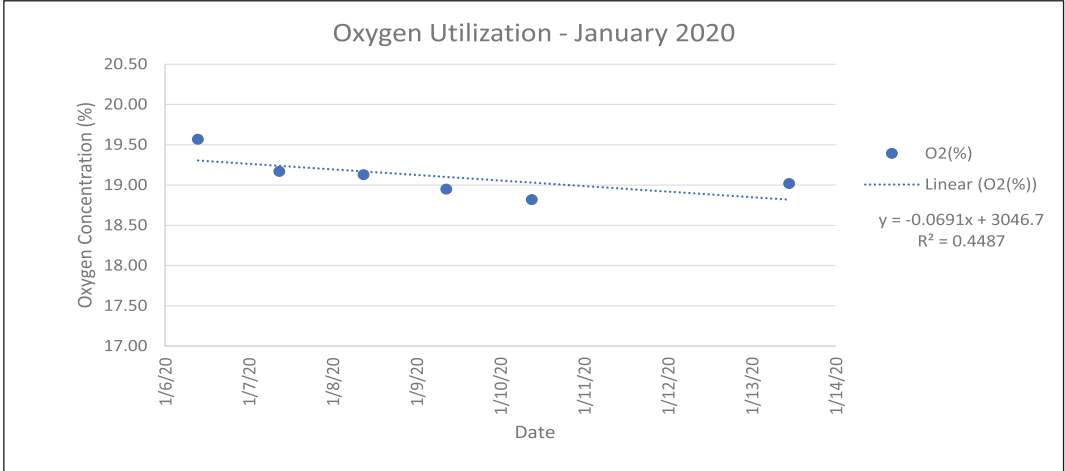
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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FIGURE 5-6

KAFB-106V1-263
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

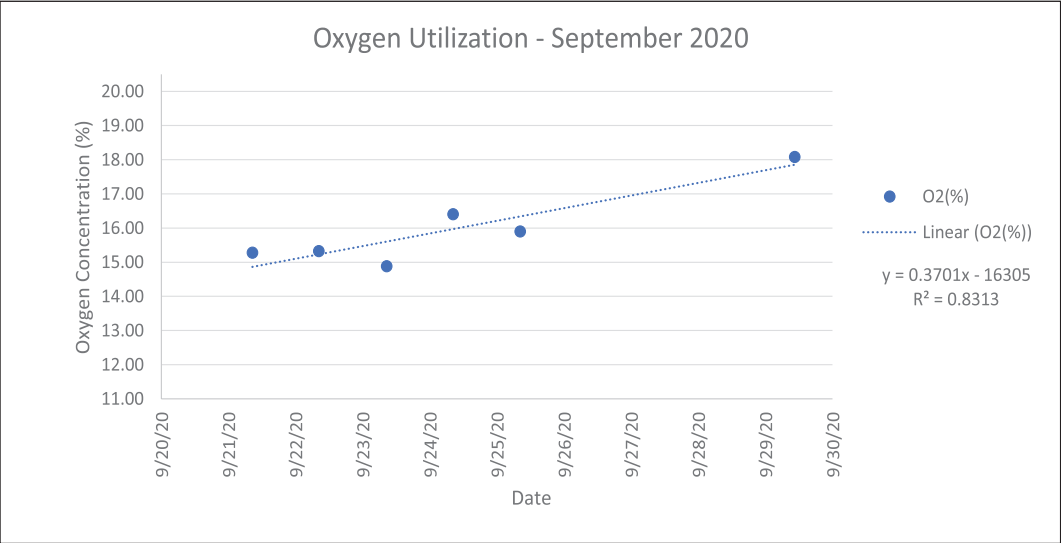
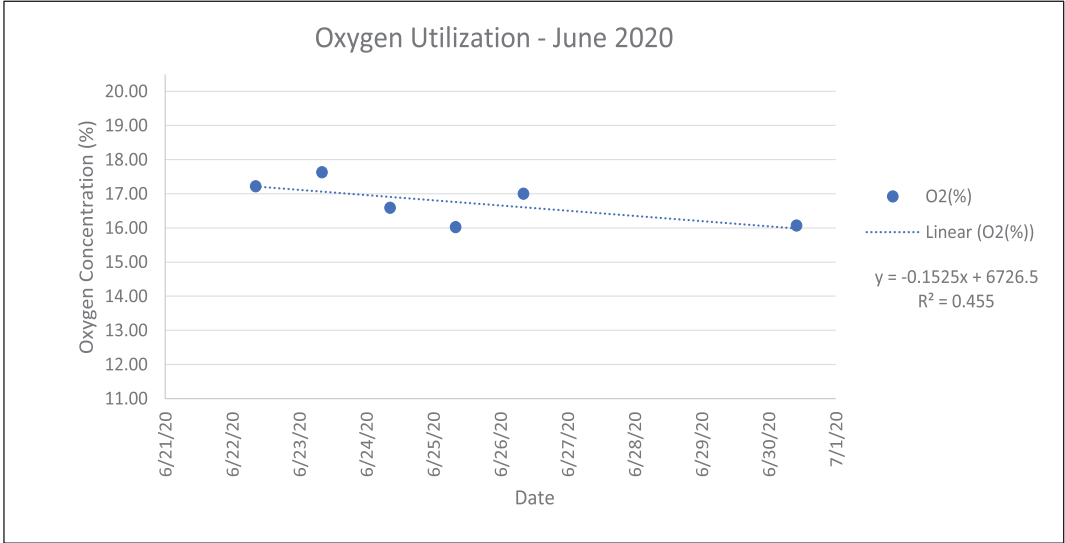
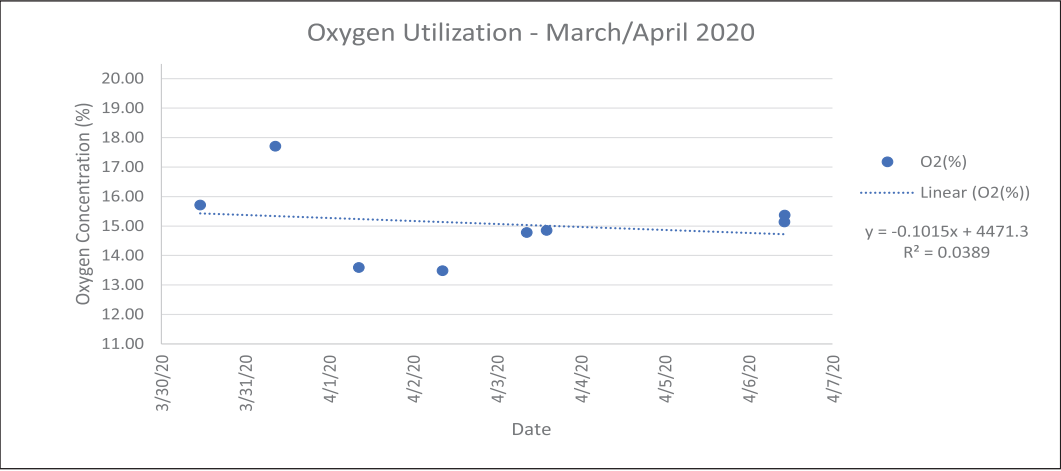
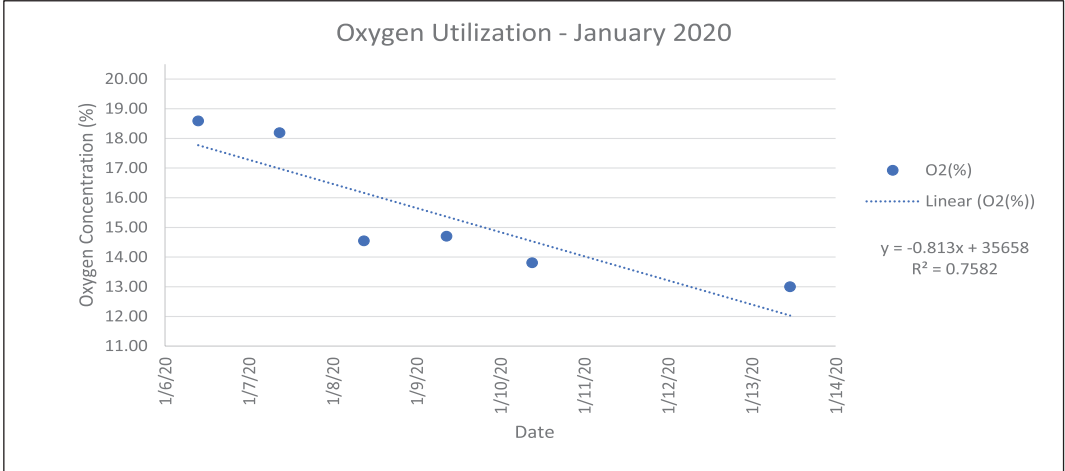
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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FIGURE 5-7

KAFB-106V2-102
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

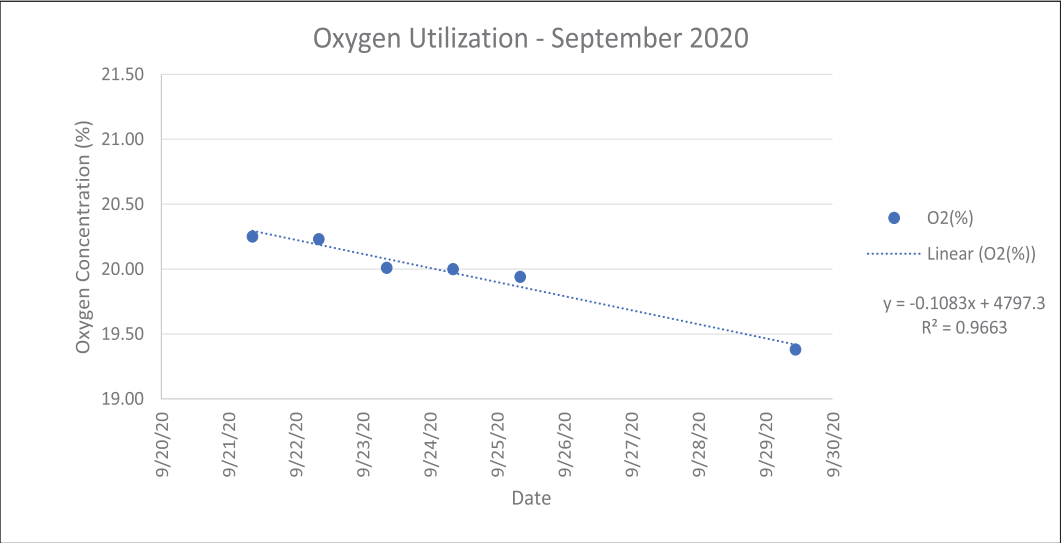
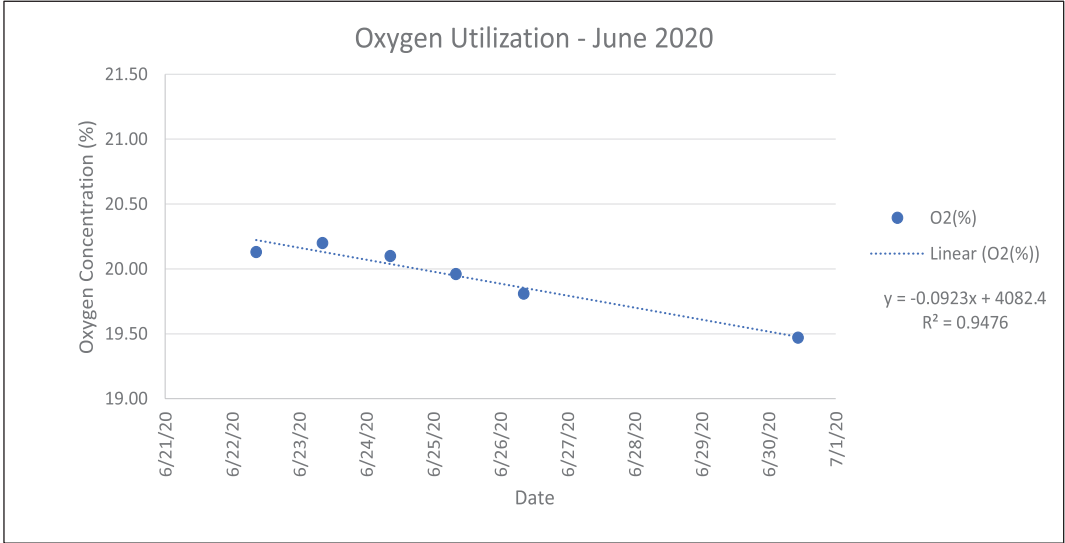
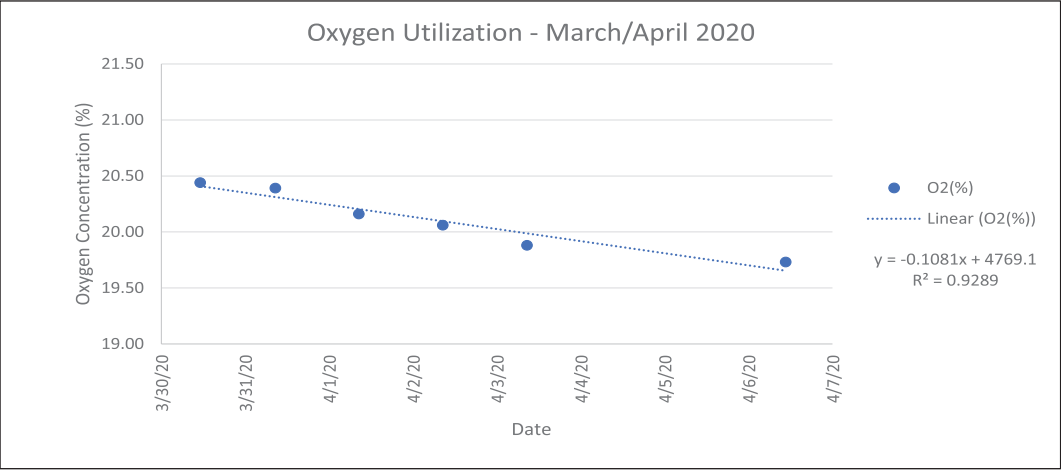
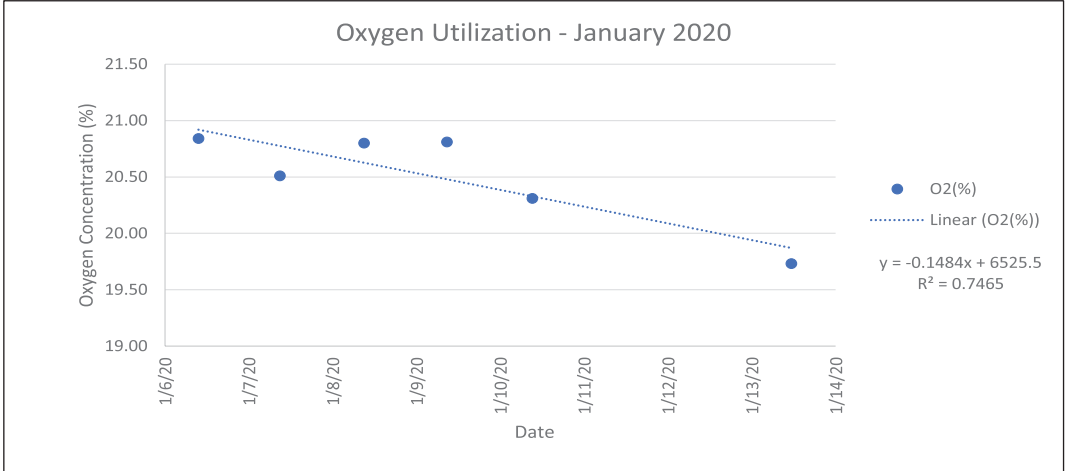
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

FINAL BIOVENTILATION PILOT TEST REPORT
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FIGURE 5-8

KAFB-106V2-117
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

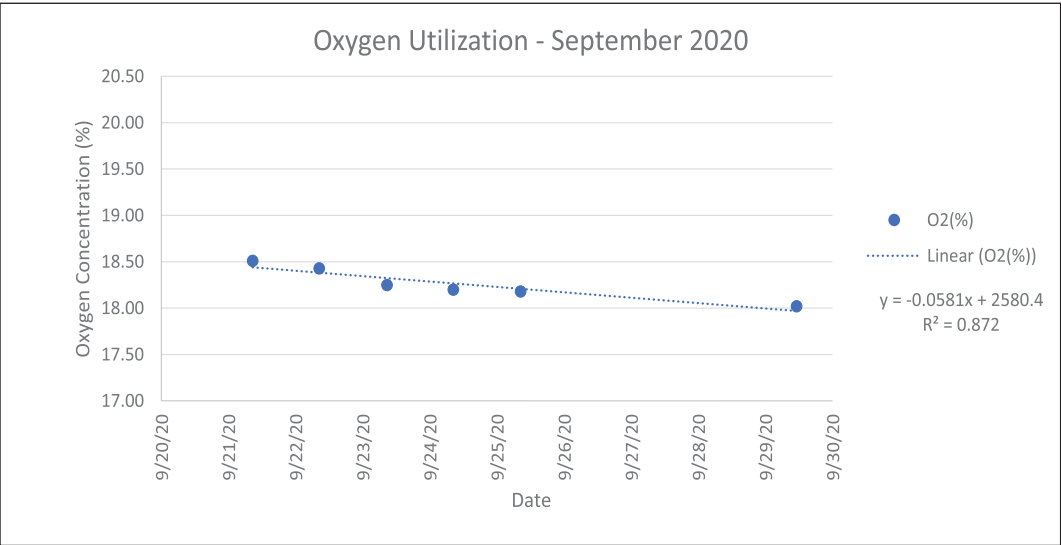
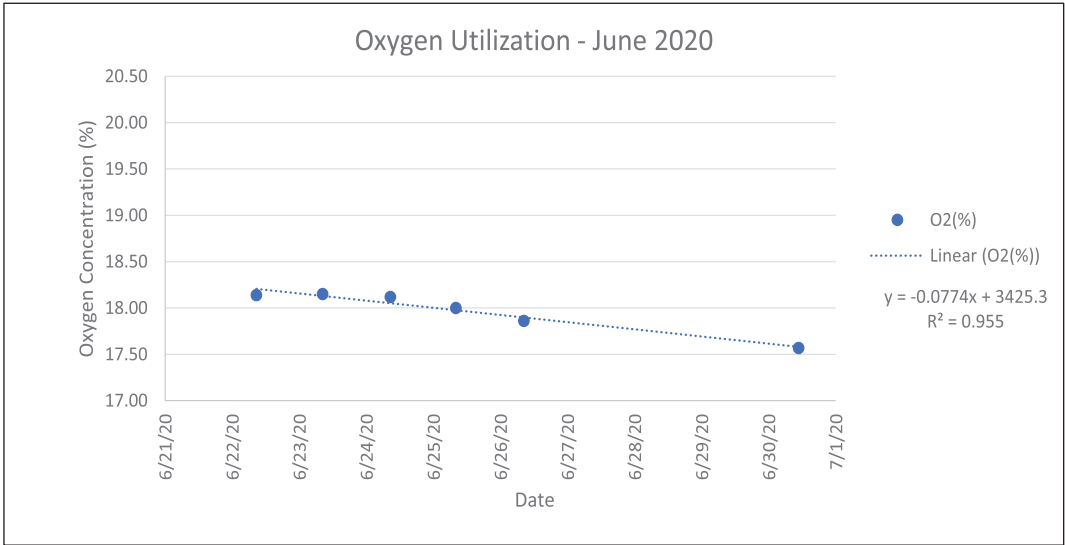
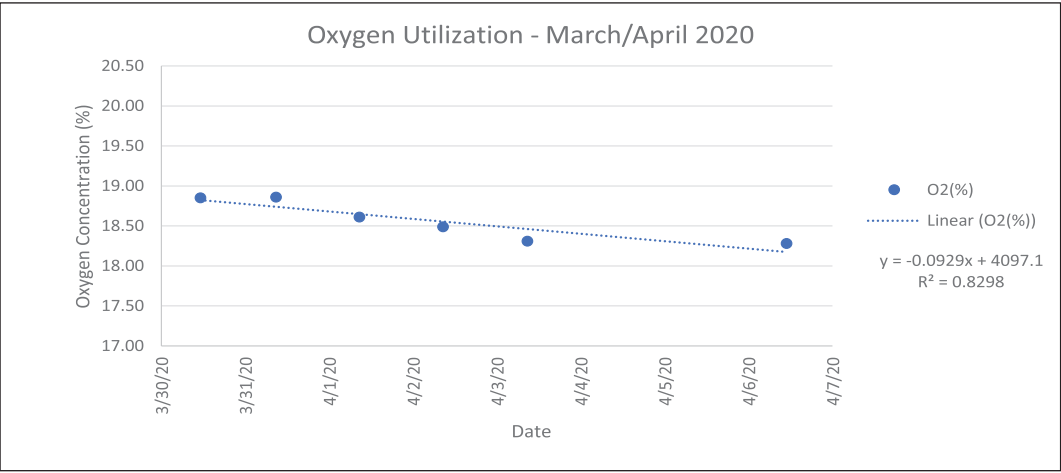
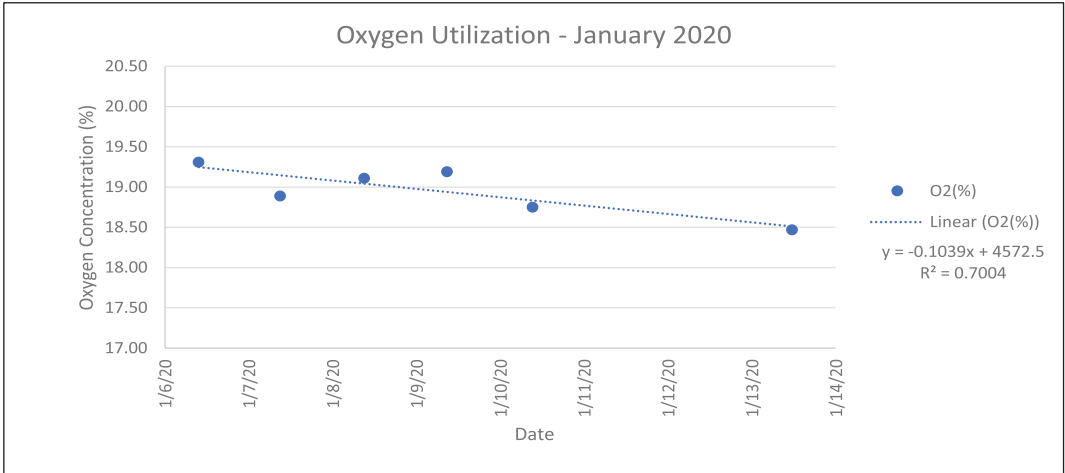
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

FINAL BIOVENTILATION PILOT TEST REPORT
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FIGURE 5-9

KAFB-106V2-160
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

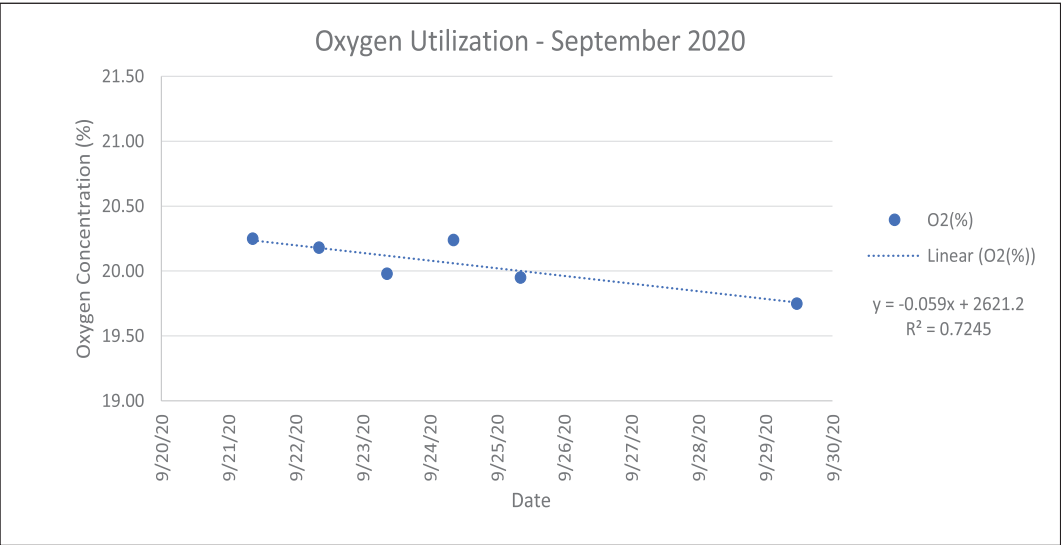
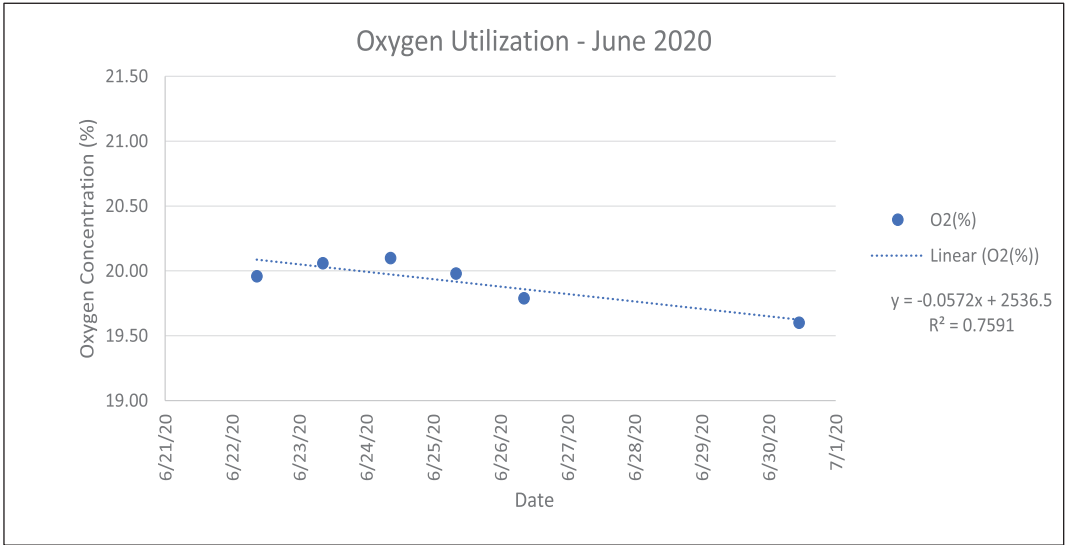
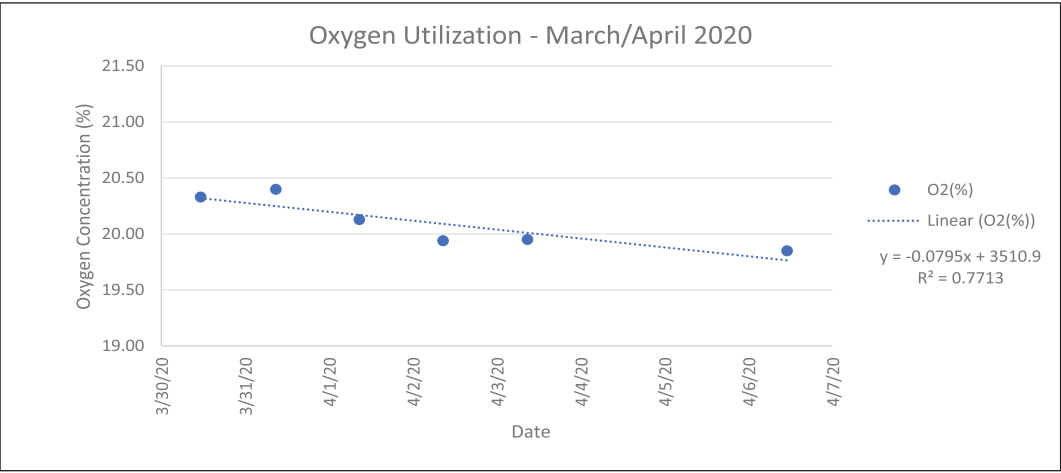
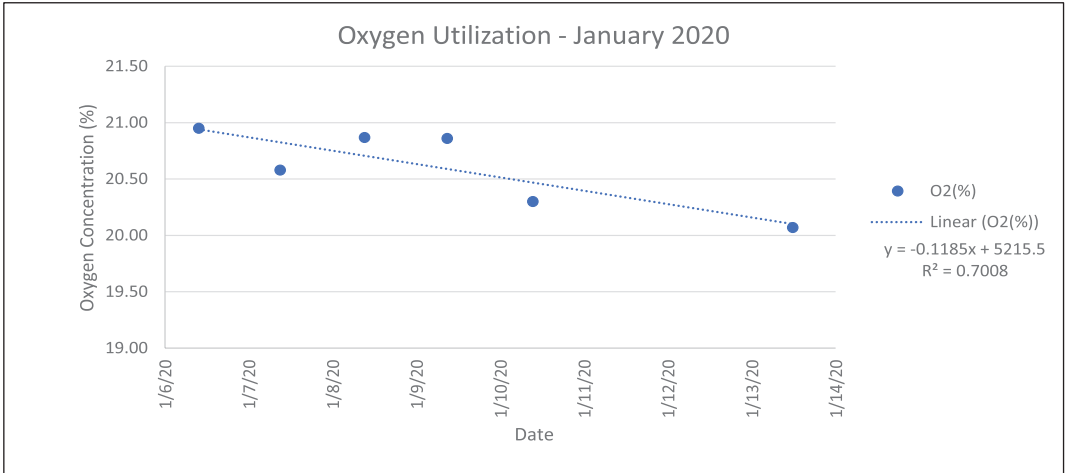
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

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FIGURE 5-10

KAFB-106V2-217
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

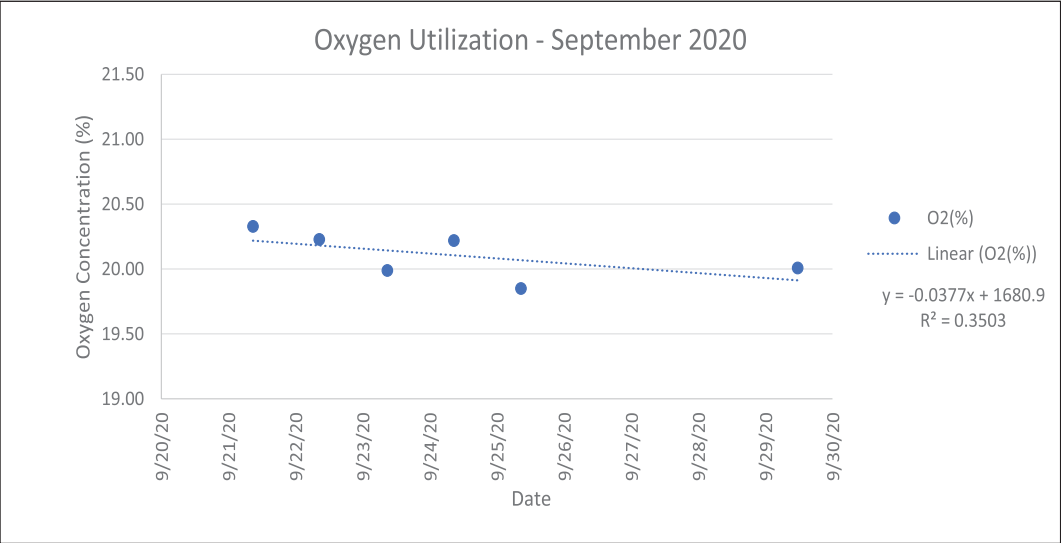
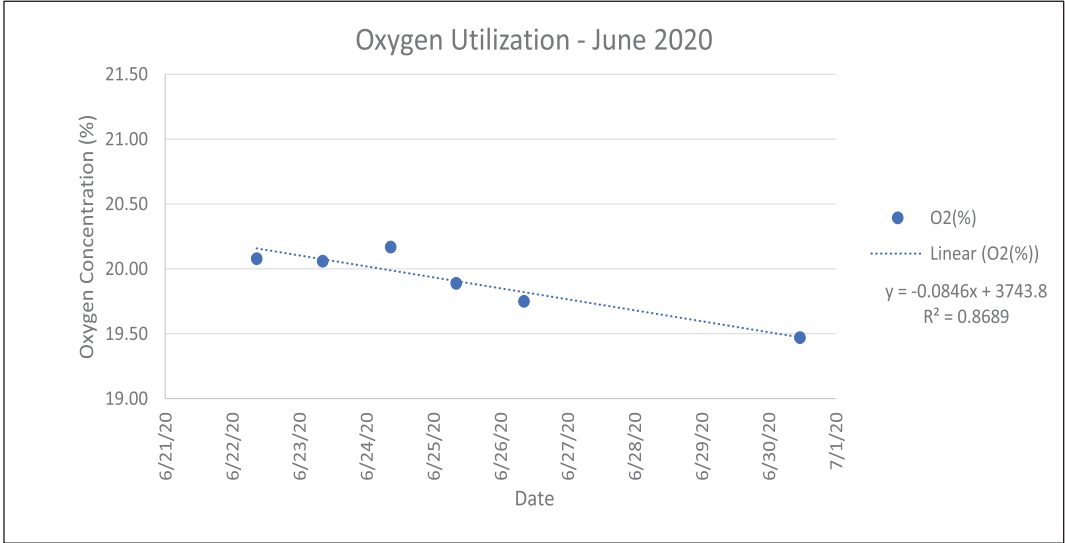
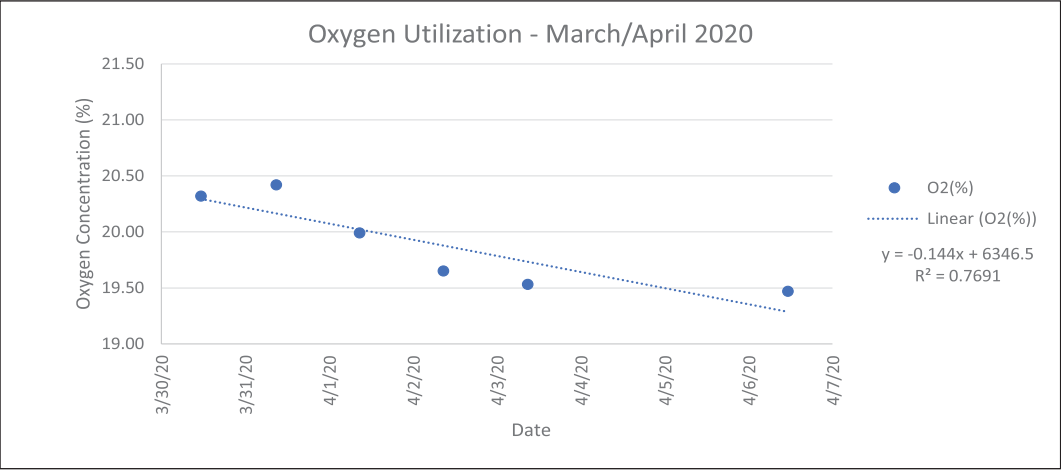
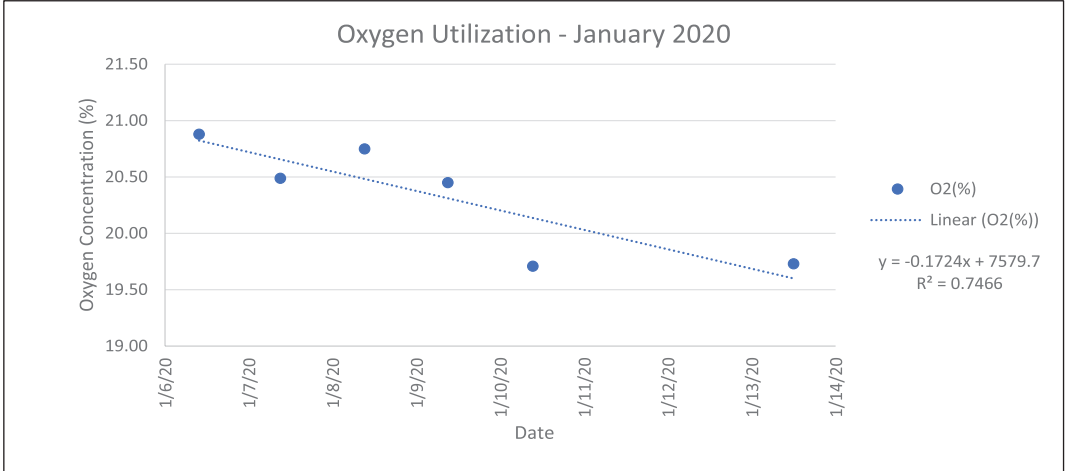
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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FIGURE 5-11

KAFB-106V2-252
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Notes:

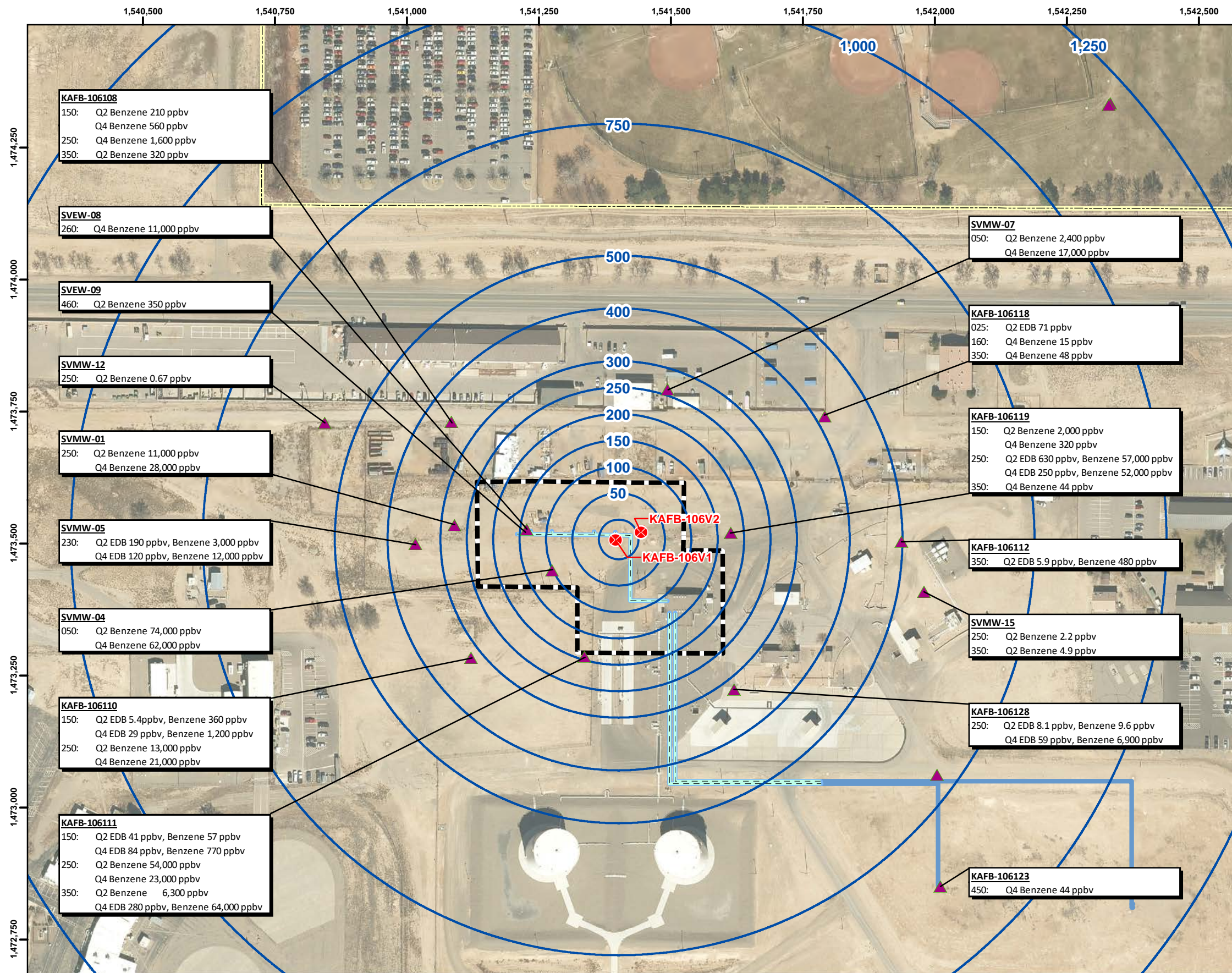
The oxygen utilization rate is determined from the respiration monitoring data by plotting oxygen content in soil gas versus time. The roughly linear slope during early oxygen depletion yields the oxygen utilization rate.

Air injection blowers were shut down during all respiration monitoring events.

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FIGURE 5-12

KAFB-106V2-270
LONG-TERM BIOVENTING
OXYGEN UTILIZATION



Legend

- ▲ Soil Vapor Monitoring Well
- ⊗ Bioventing Observation Well
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- ▭ Source Area
- Radius (ft)

Well Identification
Depth(s): Quarter, Analyte, Result ppbv

Notes:

Aerial Imagery taken in May 2016 from New Mexico Mid-Region Council of Governments.

EDB = ethylene dibromide

ppbv = parts per billion by volume

Q2 = 2020 calendar quarter 2 monitoring period

Q4 = 2020 calendar quarter 4 monitoring period

SITE LOCATION

0 100 200 400

Feet

1 inch = 200 feet

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

BIOVENTILATION PILOT TESTING REPORT

BULK FUELS FACILITY

SOLID WASTE MANAGEMENT UNIT ST-106/SS-111

KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 6-1

SOIL VAPOR MONITORING ANOMALIES

TABLES

Table 4-1
Chronology of Events

Dates	Activity
December 11, 2018 - January 24, 2019	Installation of soil vapor monitoring wells KAFB-106V1 and KAFB-106V2.
February 25, 2019 - March 6, 2019	Installation of electrical service and air injection blowers at the bioventing pilot test area.
April 10, 2019 - April 11, 2019	Collection of baseline respirometry readings.
April 22, 2019 - April 28, 2019	Dry respirometry air injection.
April 28, 2019 - May 9, 2019	Collection of dry respirometry data.
May 23, 2019 - May 24, 2019	Injection of water for wet respiration pilot testing.
May 24, 2019 - June 20, 2019	Soil moisture acclimation period.
June 20, 2019 - June 26, 2019	Wet respirometry air injection.
June 26, 2019 - July 5, 2019	Collection of wet respirometry data.
July 6 -2019 - October 6, 2019	Obtaining validated lab data and refinement of bioventing parameters for the long-term bioventing pilot test.
October 7, 2019	Initiation of the long-term bioventing pilot test.
January 6, 2020 - January 13, 2020	First quarterly respiration monitoring event.
March 30, 2020 - April 7, 2020	Second quarterly respiration monitoring event.
June 22, 2020 - July 2, 2020	Third quarterly respiration monitoring event.
September 21,2020 - September 30, 2020	Fourth quarterly respiration monitoring event.
November 23, 2020	Termination of the bioventing pilot test

Respirometry data collected include both field data and analytical samples.
Bioventing parameter assessment was performed on a quarterly basis.

Table 4-2
Bioventing Respiration Pilot Test Well Details and Function

Well ID	Screened Interval (ft bgs)	Diameter (inches)	USCS Soil Classification of Soil Adjacent to Screen	Well Use	Applicable Tests^a	Attendant Observation Wells^b	Radial Distance between Observation and Injection Well (ft)
SVEW-01-260	245-260	4	SP	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V2-252	31
						KAFB-106V1-252	22
SVEW-02/03-160	145-160	2	SP	Air Injection	"Dry" Respiration "Moist" Respiration Long-Term Bioventing	KAFB-106V2-160	41
						KAFB-106V1-160	13
SVEW-04/05-313	298-313	2	SW	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V1-263	24
						KAFB-106V2-270	34
SVMW-10-100	100-102.5	0.5	SW	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V1-102	37
						KAFB-106V2-102	73
SVMW-10-150	150-152.5	0.5	SW	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V1-160	37
						KAFB-106V2-160	73
SVMW-10-250	250-252.5	0.5	SP	Air Injection	"Dry" Respiration "Moist" Respiration Long-Term Bioventing	KAFB-106V1-252	37
						KAFB-106V2-252	73

Table 4-2
Bioventing Respiration Pilot Test Well Details and Function

Well ID	Screened Interval (ft bgs)	Diameter (inches)	USCS Soil Classification of Soil Adjacent to Screen	Well Use	Applicable Tests^a	Attendant Observation Wells^b	Radial Distance between Observation and Injection Well (ft)
SVMW-11-100	100-102.5	0.5	SP	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V1-102	36
						KAFB-106V2-102	57
SVMW-11-250	250-252.5	0.5	SP	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V1-252	36
						KAFB-106V2-252	57
SVMW-11-260	260-262.5	0.5	SP	Air Injection	"Dry" Respiration "Wet" Respiration Long-Term Bioventing	KAFB-106V1-252	36
						KAFB-106V2-252	57
KAFB-106V1	100.1-102.1	0.75	SP	Observation	Long-Term Bioventing	NA	NA
	110.6-112.6	0.75	SW/SC			NA	NA
	157.6-159.6	0.75	SP			NA	NA
	215.1-217.1	0.75	SP/SW			NA	NA
	250.1-252.1	0.75	SP			NA	NA
	260.6-262.6	0.75	SP			NA	NA

Table 4-2
Bioventing Respiration Pilot Test Well Details and Function

Well ID	Screened Interval (ft bgs)	Diameter (inches)	USCS Soil Classification of Soil Adjacent to Screen	Well Use	Applicable Tests ^a	Attendant Observation Wells ^b	Radial Distance between Observation and Injection Well (ft)
KAFB-106V2	100.2-102.2	0.75	SP	Observation	Long-Term Bioventing	NA	NA
	115.1-117.1	0.75	ML/CL			NA	NA
	157.9-159.9	0.75	SM/SW			NA	NA
	215.1-217.1	0.75	SP			NA	NA
	250.2-252.2	0.75	SP			NA	NA
	267.55-269.55	0.75	SW/CL			NA	NA

^a Three types of treatability tests were conducted: (1) single well "push-pull" respiration **without** moisture addition, (2) single well "push-pull" respiration **with** moisture addition, and (3) long-term bioventing with multiple injection points operating in concert.

^b Observation wells were used during respiration tests for pressure measurements and physical radius of influence only. During the long-term bioventing test, observation wells were also used for respiration measurements.

bgs = below ground surface

ft = foot/feet

ID = identification

NA = not applicable

USCS = unified soil classification system

CL = Clay

ML = Silt

SC = Clayey Sand

SM = Silty Sand

SP = Poorly Graded Sand

SW = Well Graded Sand

Table 4-3
Bioventing Respiration Pilot Testing Field Measurement Equipment and Regimen

Parameter	Field Measurement	Media	Instrument	Range/ Tolerance^a	Data Use	Respiration Test Frequency^b	Long-Term Test Frequency^c
Water Activity	Relative Humidity	Soil gas	Amprobe TH-3	0-100 % \pm 3% R.H. at 23°C ^d	Determine relative humidity	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; quarterly thereafter
Pressure/ Vacuum	Injection/ Extraction Pressure	Vadose zone	Dwyer 477-A7	0.05 inches water column	Evaluate pressure	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; quarterly thereafter
Carbon Dioxide	Concentration in percent	Soil gas	Horiba	0-30% \pm 0.3% by volume	Evaluate contaminant destruction rate	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; quarterly thereafter
Oxygen	Concentration in percent	Soil gas	Horiba	0-30% \pm 0.1% by volume	Evaluate contaminant destruction rate	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; quarterly thereafter
Hydrocarbons	Concentration in parts per million	Soil gas	Horiba	0-10,000 ppmv \pm 10 ppmv	Evaluate soil vapor hydrocarbons	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; monthly thereafter
Methane	Concentration in percent	Soil gas	Landtec GEM 5000	0-5% \pm 0.3% by volume	Evaluate contaminant destruction rate	Daily for first 3 days; days 5 and 7; biweekly thereafter	NA
Flow Rate	Rotameter	Soil gas	Brooks 2520A4A37BNBN	0.3-3 scfm	Verify injection/purge rates	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; quarterly thereafter
Temperature	Temperature	Soil gas	Amprobe TH-3	-20-60°C \pm 0.8°C	Evaluate temperature	Daily for first 3 days; days 5 and 7; biweekly thereafter	Daily for first 3 days; weekly for first month; quarterly thereafter

^a This range and tolerance are based on instrument performance. Due to temperature variation and condensation, the actual field measurements were likely less accurate.

^b Schedule was adjusted based on observed oxygen utilization rates to obtain 5-10 data points in the early linear portion of the oxygen decay curve.

^c Additional respiration monitoring was performed on a quarterly basis where the air injection blowers were shut down and respirometry was measure for a seven-day period.

% = percent

° C = degree Celsius

ppmv = part per million (by volume)

R.H. = relative humidity

scfm = standard cubic feet per minute

Table 4-4
SVMW-10-100 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 13:46	1	15.1	28,990	69.5	58.1	52	317.31	0.95	11.00	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 11:59	2	65.2	10	9.2	80.5	72	334.44	20.88	0.02	0.0
4/28/2019 16:15	2	143	76	5.8	85.0	83	333.35	20.73	0.02	0.0
4/29/2019 11:56	2	58.8	355	18.4	77.3	72	334.71	20.56	0.04	0.0
4/29/2019 17:05	2	55.6	556	23.6	73.8	73	333.35	20.51	0.10	0.0
4/30/2019 15:44	2	63.1	966	27.1	73.5	72	333.76	20.23	0.24	0.0
5/1/2019 15:06	2	49.0	1,486	27.8	81.8	74	334.44	19.88	0.34	0.0
5/3/2019 13:13	2	49.1	2,190	36.8	77.4	70	335.80	19.19	0.62	0.0
5/5/2019 11:08	2	48.0	3,500	42.1	77.1	72	334.98	18.30	1.02	0.0
5/9/2019 16:30	2	61.4	5,660	48.7	70.0	64	333.89	16.29	2.04	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 9:40	2	51.7	18,530	43.1	83.5	77	335.52	6.62	7.52	0.0
Post-Injection										
6/26/2019 9:31	2	49.9	5	6.2	84.0	82	337.02	20.92	0.02	0.0
6/26/2019 15:19	2	48.0	10	5.3	89.2	92	336.34	20.88	0.02	0.0
6/27/2019 8:03	2	51.5	77	17.7	74.6	72	338.11	20.90	0.06	0.0
6/27/2019 13:46	2	50.3	121	14.8	85.7	91	337.70	20.80	0.02	0.0
6/28/2019 11:46	2	50.0	269	16.2	87.5	86	338.24	20.75	0.06	0.0
6/30/2019 12:23	2	50.1	974	18.2	93.0	90	337.56	20.26	0.20	0.0
7/2/2019 9:51	2	50.1	1,679	33.4	82.8	77	336.75	19.82	0.38	0.0
7/5/2019 11:45	2	50.0	2,400	26.6	90.4	88	337.29	18.36	0.90	0.0

% = percent
°F = degrees Fahrenheit
CH₄ = methane
CO₂ = carbon dioxide
HC = hydrocarbon
in-WC = inches of water column
O₂ = oxygen
ppmv = parts per million by volume
scfm = standard cubic feet per minute

Table 4-5
SVMW-10-150 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 14:03	1	17.0	24,460	76.4	56.5	63	330.63	3.44	8.14	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 12:05	2	52.0	11	13.6	78.5	73	334.44	21.27	0.00	0.0
4/28/2019 16:22	2	142.4	33	8.0	83.2	83	333.35	21.16	0.02	0.0
4/29/2019 12:00	2	104.4	215	13.1	76.9	72	334.71	20.73	0.06	0.0
4/29/2019 17:09	2	58.9	306	17.9	74.2	73	333.49	20.75	0.10	0.0
4/30/2019 15:52	2	61.0	519	23.3	71.5	72	333.76	20.62	0.16	0.0
5/1/2019 15:12	2	52.1	741	23.2	81.2	74	334.44	20.35	0.24	0.0
5/3/2019 13:06	2	52.0	1,413	34.6	77.7	70	335.80	19.34	0.78	0.0
5/5/2019 11:18	2	49.8	1,123	36.6	78.0	72	334.98	19.47	0.52	0.0
5/9/2019 16:34	2	72.3	1,541	44.2	69.8	64	333.89	18.20	1.06	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 9:59	2	49.1	3,880	47.3	83.0	79	335.52	7.56	6.04	0.0
Post-Injection										
6/26/2019 9:40	2	52.5	64	7.0	85.8	82	337.02	20.80	0.00	0.0
6/26/2019 15:25	2	53.1	166	5.5	89.6	92	336.34	20.78	0.00	0.0
6/27/2019 8:10	2	58.0	506	20.7	74.2	72	338.11	20.40	0.18	0.0
6/27/2019 13:50	2	53.0	462	13.3	87.3	91	337.70	20.20	0.22	0.0
6/28/2019 11:52	2	54.8	647	12.6	91.9	86	338.24	19.72	0.54	0.0
6/30/2019 12:29	2	47.9	616	15.5	95.0	90	337.56	19.57	0.70	0.0
7/2/2019 9:56	2	50.4	354	24.4	84.4	77	336.75	19.65	0.54	0.0
7/5/2019 11:49	2	51.8	835	22.8	91.0	88	337.29	18.16	1.12	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-6
SVMW-10-250 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 14:24	1	18.3	14,580	80.2	55.3	53	330.77	0.34	11.16	0.1 ^a
Dry Respirometry										
Post-Injection										
4/28/2019 12:11	2	66.4	254	16.2	78.3	73	334.44	21.24	0.00	0.0
4/28/2019 16:27	2	164	535	9.7	83.1	83	333.35	20.57	0.00	0.0
4/29/2019 12:05	2	94.2	989	25.2	76.5	72	334.71	20.48	0.08	0.0
4/29/2019 17:13	2	62.1	1,316	34.2	74.1	73	333.49	20.45	0.10	0.0
4/30/2019 16:01	2	65.3	1,904	42.5	71.2	72	333.76	20.23	0.20	0.0
5/1/2019 15:16	2	58.2	2,450	34.5	80.9	74	334.44	19.82	0.26	0.0
5/3/2019 12:59	2	57.4	3,220	40.7	77.8	70	335.80	19.32	0.48	0.0
5/5/2019 11:29	2	53.8	3,730	40.2	78.5	72	334.98	18.62	0.66	0.0
5/9/2019 16:37	2	74.6	4,550	47.0	69.6	64	333.89	16.97	1.32	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 10:05	2	51.4	7,870	40.4	82.7	77	335.52	6.59	6.84	0.0
Post-Injection										
6/26/2019 9:45	2	56.2	118	8.1	86.8	82	337.02	20.82	0.04	0.0
6/26/2019 15:30	2	58.9	309	11.2	90.3	92	336.34	20.71	0.00	0.0
6/27/2019 8:15	2	59.9	894	30.9	73.8	72	338.11	20.19	0.20	0.0
6/27/2019 13:56	2	55.5	1,039	21.1	88.2	91	337.70	20.03	0.32	0.0
6/28/2019 11:57	2	56.0	1,546	21.6	93.2	86	338.24	19.57	0.56	0.0
6/30/2019 12:33	2	53.7	1,990	22.0	96.4	90	337.56	19.28	0.62	0.0
7/2/2019 10:00	2	58.7	2,010	33.3	85.0	77	336.75	19.29	0.44	0.0
7/5/2019 11:52	2	56.2	2,700	27.7	91.7	88	335.93	17.75	0.96	0.0

^a CH₄ reading is suspect and likely the result of hydrocarbon breakthrough on the carbon filter.

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-7
SVMW-11-100 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 12:35	2	14.9	30,900	73.1	59.7	53	331.17	0.42	11.26	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 11:28	2	50.8	188	10.0	81.5	72	334.44	20.89	0.00	0.0
4/28/2019 15:47	2	68.1	1,456	7.4	86.6	83	333.49	20.77	0.00	0.0
4/29/2019 11:33	2	39.9	3,290	18.1	80.0	72	334.84	20.68	0.00	0.0
4/29/2019 16:45	2	43.9	4,530	26.2	76.2	73	333.49	20.59	0.00	0.0
4/30/2019 15:04	2	62.9	5,970	33.6	73.4	68	334.03	20.16	0.00	0.0
5/1/2019 14:46	2	50.5	6,870	29.1	85.4	74	334.44	19.81	0.02	0.0
5/3/2019 12:33	2	53.9	8,100	43.8	75.2	70	335.80	18.79	0.16	0.0
5/5/2019 10:42	2	46.2	10,160	37.5	81.9	70	334.44	17.73	0.44	0.0
5/9/2019 16:15	2	63.2	12,270	45.7	72.6	65	333.89	15.65	1.66	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 10:16	2	47.2	21,650	48.5	83.0	81	335.52	5.34	8.56	0.0
Post-Injection										
6/26/2019 9:57	2	30.3	28	5.0	87.4	82	337.02	20.88	0.00	0.0
6/26/2019 15:40	2	50.0	179	4.8	89.8	92	336.34	20.85	0.00	0.0
6/27/2019 8:25	2	49.6	651	19.8	74.0	72	338.11	20.74	0.04	0.0
6/27/2019 14:05	2	49.2	896	12.0	88.4	91	337.70	20.61	0.04	0.0
6/28/2019 12:03	2	48.1	1,525	14.2	94.0	86	338.24	20.20	0.06	0.0
6/30/2019 12:44	2	47.0	3,220	18.6	98.2	90	337.56	18.92	0.26	0.0
7/2/2019 10:08	2	51.9	5,090	32.7	84.8	77	336.75	17.85	0.56	0.0
7/5/2019 11:57	2	51.6	6,170	27.3	92.3	88	337.29	16.39	1.28	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-8
SVMW-11-250 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 13:01	1	17.2	26,320	72.2	60.6	53	331.31	0.08	11.34	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 11:42	2	108.3	240	13.6	79.4	72	334.44	21.05	0.14	0.0
4/28/2019 15:57	2	158.6	531	8.1	85.4	83	333.49	20.80	0.14	0.0
4/29/2019 11:40	2	64.6	2,170	29.4	78.2	72	334.84	19.58	0.50	0.0
4/29/2019 16:52	2	65.9	2,460	37.2	73.2	73	333.35	19.50	0.56	0.0
4/30/2019 15:20	2	64.8	3,260	43.9	72.1	68	331.31	19.18	0.68	0.0
5/1/2019 14:52	2	52.6	3,870	35.5	83.4	74	334.44	18.88	0.80	0.0
5/3/2019 12:25	2	56.0	4,960	48.5	74.9	70	335.80	18.10	1.08	0.0
5/5/2019 10:47	2	52.6	5,750	40.8	79.7	70	334.44	17.31	1.36	0.0
5/9/2019 16:16	2	65.5	7,480	49.3	71.5	65	333.89	15.71	2.24	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 10:21	2	55.0	15,220	48.6	83.2	81	335.93	5.77	7.90	0.0
Post-Injection										
6/26/2019 10:03	2	57.2	101	8.3	87.5	82	337.02	20.44	0.14	0.0
6/26/2019 15:46	2	56.3	362	10.7	89.1	92	336.34	20.00	0.32	0.0
6/27/2019 8:31	2	57.4	1,476	38.2	74.3	72	338.11	19.18	0.86	0.0
6/27/2019 14:08	2	58.3	2,030	26.3	88.5	91	337.70	18.72	1.06	0.0
6/28/2019 12:07	2	56.2	4,180	24.6	95.3	86	338.24	17.46	1.78	0.0
6/30/2019 12:49	2	53.9	4,890	25.1	98.0	90	337.56	17.21	1.94	0.0
7/2/2019 10:11	2	54.6	3,060	39.0	84.2	77	336.75	17.80	1.38	0.0
7/5/2019 12:00	2	56.8	3,940	29.0	92.8	90	337.29	16.45	1.90	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-9
SVMW-11-260 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 13:22	1	14.4	18390	76.4	59.4	53	331.17	1.15	13.20	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 11:48	2	142.0	5.0	16.4	80.0	72	334.44	21.32	0.04	0.0
4/28/2019 16:02	2	124.6	11	22.6	86.3	83	333.49	20.55	0.02	0.0
4/29/2019 11:46	2	58.5	29	39.8	78.4	73	334.84	20.41	0.02	0.0
4/29/2019 16:57	2	57.2	49	44.1	74.1	73	333.35	20.43	0.02	0.0
4/30/2019 15:28	2	57.7	131	47.7	72.2	70	333.89	20.37	0.06	0.0
5/1/2019 14:57	2	47.3	219	37.8	82.3	74	334.44	20.38	0.04	0.0
5/3/2019 12:16	2	48.3	374	50	73.4	70	335.80	19.67	0.08	0.0
5/5/2019 10:55	2	49.8	846	41.5	78.4	70	334.44	19.71	0.06	0.0
5/9/2019 16:23	2	61.1	2,110	50.1	71.0	65	333.89	18.74	0.08	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 10:28	2	46.6	7380	49.0	83.5	82	335.93	6.35	2.24	0.0
Post-Injection										
6/26/2019 10:10	2	47.5	3	22.0	87.5	82	337.43	20.67	0.02	0.0
6/26/2019 15:50	2	58.7	8	28.5	88.8	92	336.34	20.48	0.04	0.0
6/27/2019 8:36	2	48.8	16	52.5	74.5	72	338.11	20.44	0.06	0.0
6/27/2019 14:13	2	47.8	16	34.0	88.4	91	337.70	20.37	0.04	0.0
6/28/2019 12:13	2	47.4	22	24.2	94.3	86	338.24	20.17	0.02	0.0
6/30/2019 12:54	2	58.1	61	23.7	98.5	90	337.56	19.89	0.08	0.0
7/2/2019 10:15	2	49.2	175	42.6	83.3	77	336.75	19.86	0.06	0.0
7/5/2019 12:04	2	47.8	382	30.5	93.3	90	337.29	19.28	0.10	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-10
SVEW-01-260 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/13/2019 13:09	3	64.6	16,970	33.1	71.4	60	333.21	0.30	12.02	0.1
Dry Respirometry										
Post-Injection										
4/28/2019 12:30	3	66.1	7	10.4	80.6	78	334.44	20.77	0.00	0.0
4/28/2019 16:45	3	181.1	30	1.7	83.5	83	333.08	20.79	0.02	0.0
4/29/2019 12:29	3	65.4	216	15.9	77.3	72	334.71	20.68	0.00	0.0
4/29/2019 17:30	3	65.5	320	20.6	73.3	73	333.62	20.63	0.04	0.0
4/30/2019 16:25	3	67.8	641	30.3	71.1	72	333.76	20.25	0.14	0.0
5/1/2019 15:33	3	69.9	728	25.3	79.8	74	334.44	19.27	0.44	0.0
5/3/2019 11:29	3	63.8	1,055	35.0	73.4	70	335.39	13.39	3.88	0.0
5/5/2019 10:19	3	65.8	1,442	30.0	80.1	70	334.44	18.08	1.02	0.0
5/6/2019 14:11	3	67.6	1,852	20.7	88.8	81	334.17	17.36	1.42	0.0
5/6/2019 14:18	3	68.1	1,918	21.1	88.4	81	334.17	17.29	1.44	0.0
5/6/2019 14:23	3	68.4	1,953	21.5	88.5	81	334.17	17.18	1.44	0.0
5/9/2019 16:52	3	77.7	1,823	40.1	68.3	64	333.89	13.83	3.84	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 10:49	3	65.5	4,720	26.7	89.6	82	335.93	6.55	8.06	0.0
Post-Injection										
6/26/2019 10:43	3	67.7	540	17.5	91.0	82	337.43	18.56	1.50	0.0
6/26/2019 16:09	3	80.5	270	21.6	91.2	88	336.34	13.54	3.96	0.0
6/27/2019 9:05	3	70.0	87	43.1	77.8	73	338.11	12.88	5.36	0.0
6/27/2019 14:28	3	69.3	89	29.7	88.5	91	337.70	13.14	5.42	0.0
6/28/2019 12:29	3	70.0	65	23.5	95.9	86	338.24	14.48	5.14	0.0
6/30/2019 13:13	3	68.0	106	20.7	100.9	91	337.56	15.45	4.98	0.0
7/2/2019 10:29	3	69.9	1,404	35.9	82.4	77	336.75	13.93	5.70	0.0
7/5/2019 12:14	3	68.3	275	23.9	95.4	90	337.29	14.96	4.44	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-11
SVEW-02/03-160 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/13/2019 13:35	2	40.7	14,640	48.2	71.9	60	337.43	0.24	12.52	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 12:38	3	163.3	66	1.9	80.3	78	334.44	20.79	0.02	0.0
4/28/2019 16:54	3	178.3	163	3.5	82.6	83	333.08	20.79	0.04	0.0
4/29/2019 12:38	3	65.2	316	17.0	75.8	72	334.71	20.58	0.12	0.0
4/29/2019 17:38	3	65.2	444	21.7	72.8	73	333.49	20.39	0.14	0.0
4/30/2019 16:36	3	66.8	622	26.5	70.3	72	333.76	19.87	0.36	0.0
5/1/2019 15:42	3	67.3	826	26.9	80.0	74	334.44	19.05	0.72	0.0
5/3/2019 12:00	3	64.9	4,220	36.8	73.3	70	335.80	9.81	5.48	0.0
5/5/2019 10:31	3	66.8	1,354	28.4	86.3	70	334.44	16.99	1.68	0.0
5/6/2019 14:30	3	65.4	1,343	19.5	89.0	81	334.17	16.50	1.88	0.0
5/6/2019 14:35	3	65.2	1,429	19.5	89.5	81	334.17	16.10	2.06	0.0
5/6/2019 14:39	3	65.7	1,395	19.5	89.5	81	334.30	16.20	1.98	0.0
5/9/2019 17:01	3	71.5	2,090	42.3	66.7	63	333.89	13.59	3.48	0.1
Wet Respirometry										
Pre-Injection										
6/20/2019 10:39	3	64.8	7,200	29.2	86.2	81	335.93	2.15	10.66	0.0
Post-Injection										
6/26/2019 10:24	3	68.0	855	19.5	88.9	82	337.43	18.08	2.16	0.0
6/26/2019 16:17	3	72.2	5,480	22.0	91.3	88	336.34	8.16	8.40	0.0
6/27/2019 8:49	3	69.2	3,480	41.1	76.5	73	338.11	13.20	3.50	0.0
6/27/2019 14:22	3	69.5	7,230	26.0	88.3	91	337.70	6.27	9.52	0.0
6/28/2019 12:20	3	68.0	7,250	20.6	96.6	86	338.24	4.51	10.62	0.0
6/30/2019 13:22	3	67.1	9,060	17.9	102.9	92	337.56	2.31	12.20	0.0
7/2/2019 10:21	3	69.0	1,951	33.3	82.0	77	336.75	13.61	3.80	0.0
7/5/2019 12:08	3	68.0	4,950	24.8	94.8	90	337.29	4.56	9.92	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-12
SVEW-04/05-313 Respiration Monitoring Field Measurements

Date and Time	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry										
4/11/2019 14:44	3	65.0	1757	59.5	55.6	53	330.77	14.43	2.70	0.0
Dry Respirometry										
Post-Injection										
4/28/2019 12:18	3	80.5	4	5.6	79.5	73	334.44	20.77	0.04	0.0
4/28/2019 16:36	3	180.7	5	6.5	83.9	83	333.35	20.66	0.06	0.0
4/29/2019 12:17	3	66.8	26	28.9	77.3	72	334.71	16.91	1.84	0.0
4/29/2019 17:20	3	65.7	12	32.7	73.9	72	333.62	19.99	0.30	0.0
4/30/2019 16:13	3	66.3	41	39.0	71.2	72	333.76	15.31	2.98	0.0
5/1/2019 15:25	3	68.7	25	29.4	80.8	74	334.44	14.51	3.30	0.0
5/3/2019 11:19	3	66.3	148	36.5	72.4	70	335.39	12.63	3.60	0.0
5/5/2019 10:05	3	66.9	55	29.8	79.2	70	334.44	17.89	1.00	0.0
5/6/2019 13:54	3	68.8	21	21.5	88.1	81	334.17	13.72	3.84	0.0
5/6/2019 14:00	3	68.6	43	21.8	88.5	81	334.17	15.86	2.54	0.0
5/6/2019 14:05	3	68.0	57	21.7	89.3	81	334.17	16.95	1.64	0.0
5/9/2019 16:44	3	81.6	100	39.6	69.5	64	333.89	12.77	3.88	0.0
Wet Respirometry										
Pre-Injection										
6/20/2019 10:59	3	65.6	1311	24.7	91.2	82	335.93	12.77	3.29	0.0
Post-Injection										
6/26/2019 10:56	3	62.9	78	20.11	90.9	82	337.43	14.58	2.95	0.0
6/26/2019 16:01	3	81.0	25	22.0	90.4	92	336.34	19.68	0.54	0.0
6/27/2019 9:17	3	69.8	56	37.8	79.5	73	338.11	19.44	0.56	0.0
6/27/2019 14:40	3	70.2	52	27.4	88.6	91	337.70	19.43	0.48	0.0
6/28/2019 12:41	3	69.8	146	21.2	97.6	86	338.24	19.16	0.40	0.0
6/30/2019 13:03	3	69.6	295	20.3	99.3	91	337.56	18.58	0.50	0.0
7/2/2019 10:36	3	69.1	72	36.4	83.7	77	336.75	18.94	0.22	0.0
7/5/2019 12:20	3	67.4	342	25.1	95.1	90	337.29	13.36	2.96	0.0

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-13
KAFB-106V1-102 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/10/2019 9:46	1.0/0.0	1	2.0	21,430	66.2	64.0	61	329.54	0.20	12.38	0.0
Dry Respirometry - Post-Injection											
5/9/2019 14:35	0.0/0.0	2	50.4	19,480	56.8	69.7	65	334.44	8.02	9.18	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:02	0.0/0.0	2	43.3	19,650	31.7	92.8	87	335.80	5.61	9.44	0.0
Wet Respirometry - Post-Injection											
7/5/2019 8:08	0.0/0.0	2	47.2	18,810	51.8	77.8	79	337.29	10.81	7.38	0.0
Bioventing											
10/7/2019 12:42	0.8/0.9	2	42.1	18,690	35.6	75.7	66	412.61	4.20	9.60	NM
10/8/2019 12:21	0.0/0.0	2	44.1	18,440	47.2	72.9	72	409.62	4.18	9.50	NM
10/9/2019 12:03	0.8/0.9	2	41	19,430	52.1	79.0	70	409.21	4.09	9.58	NM
10/15/2019 9:23	0.0/0.0	2	44.5	19,440	52.2	65.8	56	408.80	12.18	7.32	NM
10/22/2019 8:25	0.0/0.0	2	44.3	18,260	69.4	45.4	36	411.52	16.80	3.96	NM
10/31/2019 8:09	0.0/0.0	2	46.3	17,380	52.0	24.5	22	414.78	18.65	2.42	NM
11/5/2019 8:13	0.0/0.0	2	46.5	18,820	59.0	44.5	41	410.84	19.06	1.88	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:00	-0.6	2	-40.3	19,590	47.0	48.2	36	414.78	19.99	0.96	NM
1/7/2020 8:15	-0.3	2	-42.3	18,640	57.5	31.1	21	414.92	19.52	0.86	NM
1/8/2020 8:27	0.5	2	-39.1	19,340	49.5	37.6	22	409.89	19.54	0.84	NM
1/9/2020 8:13	0.1	2	-43.9	19,200	60.9	36.7	33	408.12	19.69	0.72	NM
1/10/2020 8:34	0.1	2	-37.7	19,120	65.3	39.5	34	407.17	19.02	0.74	NM
1/13/2020 8:49	0.0/0.0	2	42.3	18,110	60.1	34.7	32	409.35	19.73	0.50	NM
Bioventing Blowers On											
2/18/2020 11:43	0.5/0.6	2	41.5	18,690	60.5	56.6	52	409.21	19.05	0.60	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 10:20	0.0/0.0	2	43.3	19,600	50.0	61.4	52	408.26	19.41	0.56	NM
3/31/2020 7:55	-0.5/-0.60.5/0.6	2	41.5	19,030	60.0	42.3	36	410.43	19.59	0.52	NM
4/1/2020 7:59	0.0/0.0	2	43.0	19,900	66.6	57.7	52	404.72	19.28	0.66	NM

Table 4-13
KAFB-106V1-102 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
4/2/2020 7:58	-0.5/-0.5	2	43.7	20,610	54.7	53.0	49	405.40	19.07	0.68	NM
4/3/2020 8:04	0.0/0.0	2	43.7	20,180	59.0	50.3	47	406.22	19.07	0.66	NM
4/6/2020 8:12	0.0/0.0	2	43.0	19,500	60.5	56.6	50	406.76	18.93	0.70	NM
Bioventing Blowers On											
5/5/2020 7:47	-0.7/-0.7	2	103.8	19,440	45.4	57.9	56	410.03	19.91	0.48	NM
5/28/2020 7:56	0.0/0.0	2	44.2	20,590	52.8	77.4	68	406.90	19.29	0.48	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 7:50	0.0/0.0	2	43.2	21,050	50.7	79.5	72	406.08	19.04	0.48	NM
6/23/2020 7:33	0.0/0.0	2	43.3	20,580	53.4	78.5	71	407.44	19.21	0.48	NM
6/23/2020 7:37	0.0/0.0	2	43.3	21,000	53.4	78.5	71	407.44	19.29	0.48	NM
6/24/2020 7:43	-0.5/-0.6	2	47.4	20,380	53.2	74.6	65	406.63	19.27	0.48	NM
6/25/2020 7:32	0.0/0.0	2	64.0	20,460	45.3	77.9	68	406.08	19.11	0.48	NM
6/26/2020 7:45	-0.8/-0.8	2	51.7	20,500	49.4	77.8	70	406.35	19.32	0.46	NM
6/26/2020 7:47	-0.8/-0.8	2	51.5	20,520	49.4	77.8	70	406.35	19.35	0.46	NM
Bioventing Blowers On											
6/30/2020 8:01	-0.7/-0.8	2	47.9	20,790	60.5	71.7	69	405.95	18.69	0.64	NM
7/31/2020 8:18	0.0/0.0	2	44.9	20,960	53.1	79.9	73	408.26	19.37	0.52	NM
8/31/2020 7:37	0.0/0.0	2	63.4	20,690	55.4	70.2	66	405.13	19.06	0.62	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:00	0.0/0.0	2	49.8	20,230	64.3	65.1	58	408.80	19.21	0.54	NM
9/22/2020 7:46	0.0/0.0	2	43.7	19,370	56.6	66.0	57	408.67	19.34	0.50	NM
9/22/2020 7:49	0.0/0.0	2	44.0	19,350	57.0	66.1	57	408.67	19.36	0.52	NM
9/23/2020 8:05	0.0/0.0	2	49.0	20,460	78.0	65.3	63	407.99	19.15	0.52	NM
9/24/2020 7:45	0.0/0.0	2	44.2	20,400	64.0	62.6	59	407.99	19.13	0.58	NM
9/25/2020 7:47	0.0/0.0	2	46.3	14,990	72.0	59.3	56	407.17	19.43	0.44	NM
9/25/2020 7:51	0.0/0.0	2	46.0	15,030	72.0	59.0	56	407.17	19.50	0.42	NM
9/29/2020 8:22	-0.6/-0.6	2	45.1	18,720	75.1	51.3	45	411.93	19.09	0.60	NM
Bioventing Blowers On											
10/29/2020 8:41	0.0/0.0	2	45.1	15,650	69.0	36.2	35	412.74	19.12	0.60	NM

Table 4-13
KAFB-106V1-102 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O₂ (%)	CO₂ (%)	CH₄ (%)
11/19/2020 8:43	0.0/0.0	2	35.5	17,210	68.1	58.9	55	409.62	19.03	0.54	NM
11/24/2020 7:58	0.0/0.0	2	34.0	17,640	58.0	48.5	42	405.54	19.38	0.56	NM
11/25/2020 7:36	0.0/0.0	2	35.3	15,520	60.3	39.4	29	410.70	19.32	0.58	NM
11/30/2020 7:54	0.0/0.0	2	35.2	14,070	42.2	40.6	26	415.46	19.18	0.58	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-14
KAFB-106V1-113 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/9/2019 10:05	1.3/1.2	1	10.6	22,800	78.9	64.2	63	329.41	0.10	12.26	0.0
Dry Respirometry - Post-Injection											
5/9/2019 14:50	0.0/0.0	2	57.7	15,230	55.5	70.9	65	334.44	8.16	8.70	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 11:58	0.0/0.0	2	43.0	21,420	32.6	92.4	86	335.80	4.10	10.54	0.0
Wet Respirometry - Post-Injection											
7/5/2019 8:32	0.0/0.0	2	47.8	20,800	51.1	75.0	79	337.29	8.90	8.68	0.0
Bioventing											
10/7/2019 12:48	1.2/1.2	2	40.3	20,900	58.7	74.5	66	412.61	4.26	9.40	NM
10/8/2019 12:25	0.0/0.0	2	44	20,330	47.2	72.9	72	409.62	4.11	9.38	NM
10/9/2019 12:08	1.0/1.0	2	43.2	21,350	54.3	78.3	70	409.21	3.08	10.36	NM
10/15/2019 9:32	0.0/0.0	2	46.8	21,280	55.5	63.4	56	408.80	12.08	7.90	NM
10/22/2019 8:49	0.0/0.0	2	46.9	20,280	69.9	47.1	36	411.52	15.98	4.96	NM
10/31/2019 8:29	0.0/-0.5	2	45.2	18,710	52.0	24.6	22	414.78	17.77	3.58	NM
11/5/2019 8:29	0.0/0.0	2	45.3	20,760	61.1	45.3	41	410.84	18.30	2.90	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:04	-0.6	2	-43.5	21,370	46.7	50.1	36	414.78	19.62	1.41	NM
1/7/2020 8:20	-0.3	2	-44.5	20,490	51.8	35.2	21	414.92	19.22	1.26	NM
1/8/2020 8:30	0.4	2	-42.6	21,070	47.2	40.0	22	409.89	19.03	1.34	NM
1/9/2020 8:16	0.1	2	-48.2	20,700	60.4	37.5	33	408.12	18.51	1.68	NM
1/10/2020 8:37	0.0	2	-43.3	20,700	64.5	37.7	34	407.03	17.89	1.78	NM
1/13/2020 9:07	0.0/0.0	2	43.8	19,360	64.0	35.9	32	409.35	18.89	1.18	NM
Bioventing Blowers On											
2/18/2020 11:48	0.0/0.0	2	42.3	20,530	58.5	57.0	52	409.21	18.47	1.18	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 10:25	0.0/0.0	2	43.3	21,150	48.1	61.5	52	408.26	18.97	0.92	NM
3/31/2020 8:03	-.05/-0.06	2	44.5	20,380	64.4	42.4	36	410.43	19.11	0.96	NM
4/1/2020 8:01	0.0/0.0	2	42	21,830	69.5	57.6	52	404.72	18.55	1.24	NM

Table 4-14
KAFB-106V1-113 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
4/2/2020 8:01	-0.5/-0.5	2	44.3	22,420	57.7	56.6	49	405.40	18.35	1.80	NM
4/3/2020 8:08	0.0/0.0	2	41.6	22,130	63.0	50.2	47	406.22	18.17	1.26	NM
4/6/2020 8:26	0.0/0.0	2	42.9	21,530	51.7	61.7	50	406.76	18.15	1.26	NM
4/6/2020 8:32	NM	NM	NM	21,860	NM	NM	50	406.76	18.16	1.26	NM
5/5/2020 7:51	-0.7/-0.7	2	107.5	21,310	28.0	62.4	56	410.03	19.85	0.84	NM
Bioventing Blowers On											
5/25/2020 8:06	0.0/0.0	2	43	22,380	54.0	76.5	68	406.90	18.88	0.74	NM
5/28/2020 8:08	0.0/0.0	2	43.2	22,360	54.1	76.5	68	406.90	18.97	0.76	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 7:53	0.0/0.0	2	45.1	23,140	53.4	79.3	72	406.08	18.54	0.84	NM
6/22/2020 7:56	0.0/0.0	2	44.8	22,940	52.9	79.5	72	406.08	18.61	0.82	NM
6/23/2020 7:39	0.0/0.0	2	43.7	23,060	57.3	77.9	71	407.44	18.68	0.86	NM
6/23/2020 7:42	0.0/0.0	2	43.7	23,100	57.3	77.9	71	407.44	18.77	0.86	NM
6/24/2020 7:46	-0.6/-0.6	2	49.9	22,820	53.1	73.9	65	406.63	18.74	0.84	NM
6/25/2020 7:35	0.0/0.0	2	59.1	22,100	47.3	77.7	68	406.08	18.60	0.90	NM
6/26/2020 7:49	-0.8/-0.8	2	47.2	21,180	55.5	77.1	70	406.35	18.58	0.88	NM
6/30/2020 8:20	-0.8/-0.8	2	44.8	23,430	64.6	73.2	69	405.95	17.81	1.12	NM
Bioventing Blowers On											
7/31/2020 8:23	0.0/0.0	2	55.5	22,480	58.0	79.4	73	408.26	18.95	0.76	NM
8/31/2020 7:43	0.0/0.0	2	76.5	23,000	53.4	69.8	66	405.13	18.95	0.82	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:05	0.0/0.0	2	47.6	22,400	65.1	65.2	58	408.80	18.67	0.86	NM
9/22/2020 7:51	0.0/0.0	2	45.8	22,820	60.0	65.2	57	408.67	18.66	0.92	NM
9/23/2020 8:07	0.0/0.0	2	51.4	23,330	88.3	62.5	63	407.99	18.50	0.96	NM
9/24/2020 7:49	0.0/0.0	2	49.9	23,060	63.6	62.6	59	407.99	18.48	1.00	NM
9/25/2020 7:52	0.0/0.0	2	50.2	22,260	83.1	58.8	56	407.17	18.36	1.04	NM
9/29/2020 8:37	0.0/0.0	2	47.1	21,010	95.3	52.7	45	411.93	18.68	0.92	NM
9/29/2020 8:39	0.0/0.0	2	47	20,860	95.0	52.8	45	411.93	18.71	0.92	NM
Bioventing Blowers On											

Table 4-14
KAFB-106V1-113 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O₂ (%)	CO₂ (%)	CH₄ (%)
10/29/2020 8:45	0.0/0.0	2	48	16,500	74.5	36.6	35	412.74	18.63	0.86	NM
11/19/2020 8:50	0.0/0.0	2	35.2	18,820	68.0	59.3	55	409.62	18.55	0.86	NM
11/24/2020 8:01	0.0/0.0	2	33.8	19,160	65.0	47.0	42	405.54	18.32	1.24	NM
11/25/2020 7:43	0.0/0.0	2	34.2	17,300	58.4	38.5	29	410.70	18.57	1.04	NM
11/30/2020 7:56	0.0/0.0	2	34.8	16,130	44.0	38.4	26	415.46	18.65	0.94	NM
11/30/2020 7:58	0.0/0.0	2	34.8	16,100	44.0	38.1	26	415.46	18.66	0.94	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-15
KAFB-106V1-160 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/10/2019 10:32	5.0/4.9	1	5.6	21,450	71.4	64.6	63	329.27	0.16	12.22	0.0
Dry Respirometry - Post-Injection											
5/9/2019 15:03	0.0/0.0	2	57.1	22,030	47.7	73.3	65	334.44	10.80	7.40	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 11:51	0.0/0.0	2	44.3	22,900	32.0	92.3	86	335.93	2.70	9.96	0.0
Wet Respirometry - Post-Injection											
7/5/2019 8:50	-1.1/-1.1	2	50.1	21,640	54.1	79.5	79	337.29	11.48	6.78	0.0
Bioventing											
10/7/2019 12:51	-1.4/-1.4	2	45.0	21,840	58.2	73.8	66	412.61	0.18	10.94	NM
10/8/2019 12:28	0.7/0.7	2	44.5	21,040	47.2	72.9	72	409.62	0.25	10.72	NM
10/9/2019 12:11	2.4/2.3	2	42.7	21,710	55.6	77.8	71	404.72	2.69	10.68	NM
10/15/2019 9:52	-1.4/-1.3	2	44.8	21,150	62.6	62.3	56	408.80	19.16	1.82	NM
10/22/2019 9:00	-2.1/-2.1	2	46.5	19,130	70.0	47.7	36	411.52	19.92	0.46	NM
10/31/2019 8:45	-3.5/-3.5	2	47.6	10,170	55.5	25.4	22	414.78	20.34	0.42	NM
11/5/2019 8:41	-0.9/-0.9	2	45.6	17,560	66.2	46.4	41	410.84	20.00	0.28	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:08	-2.8	2	-46.6	13,270	43.0	52.0	36	409.21	20.81	0.30	NM
1/7/2020 8:24	-2.7	2	-46.6	12,480	51.0	39.5	21	414.92	19.98	0.34	NM
1/8/2020 8:34	1.3	2	-40.6	13,430	45.5	42.3	22	409.89	19.86	0.30	NM
1/9/2020 8:19	1.8	2	-42.7	14,030	62.5	37.9	33	408.12	19.86	0.30	NM
1/10/2020 8:40	2.0	2	-47.6	13,820	64.2	37.5	34	407.17	20.03	0.30	NM
1/13/2020 9:22	0.5/0.5	2	41.6	13,250	66.5	37.3	32	409.35	19.41	0.32	NM
Bioventing Blowers On											
2/18/2020 11:52	-0.7/-0.7	2	44.5	11,540	60.8	57.7	52	409.21	20.09	0.18	NM

Table 4-15
KAFB-106V1-160 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 10:30	-0.6/-0.7	2	42.1	10,370	52.9	60.6	52	408.26	20.10	0.16	NM
3/31/2020 8:08	-1.9/-2.0	2	44.9	9,560	70.0	42.8	36	410.43	20.16	0.24	NM
4/1/2020 8:04	1.2/1.2	2	41.8	10,460	66.9	57.7	52	404.72	19.87	0.22	NM
4/2/2020 8:05	0.5/0.5	2	45.3	11,110	61.8	52.5	49	405.40	19.67	0.28	NM
4/3/2020 8:11	0.0/0.0	2	44.0	10,940	66.6	50.2	47	406.22	19.46	0.30	NM
4/6/2020 8:42	-0.5/-0.5	2	44.6	10,870	60.0	58.0	50	406.76	19.29	0.40	NM
Bioventing Blowers On											
5/5/2020 8:00	-2.3/-2.3	2	159.7	9,700	36.7	60.7	56	410.03	20.17	0.29	NM
5/28/2020 8:11	-1.4/-1.4	2	44.7	9,770	48.5	80.5	68	406.90	19.83	0.20	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 7:58	-0.5/-0.5	2	44.0	9,660	57.7	79.0	72	406.08	19.70	0.36	NM
6/23/2020 7:44	-0.8/-0.8	2	45.3	10,070	60.2	77.2	71	407.58	19.69	0.44	NM
6/24/2020 7:52	-0.9/-0.9	2	49.3	9,480	56.4	72.8	65	406.63	19.81	0.48	NM
6/24/2020 8:01	-0.9/-0.9	2	49.0	9,500	56.4	72.8	65	406.63	19.80	0.48	NM
6/25/2020 7:37	-0.6/-0.6	2	56.8	9,730	50.5	77.5	68	406.08	19.53	0.48	NM
6/26/2020 7:52	-1.3/-1.3	2	48.1	9,830	54.7	76.5	70	406.35	19.28	0.54	NM
6/30/2020 8:37	-1.1/-1.1	2	47.7	10,150	62.5	73.7	69	405.95	18.85	0.60	NM
Bioventing Blowers On											
7/31/2020 8:26	-1.5/-1.5	2	47.6	8,810	59.4	79.4	73	408.26	19.88	0.28	NM
8/31/2020 7:47	0.6/0.6	2	77.2	8,030	54.0	69.6	66	405.13	20.00	0.24	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:08	0.0/0.0	2	48.6	7,340	67.0	65.3	58	408.80	20.00	0.26	NM
9/22/2020 7:53	0.0/0.0	2	46.7	5,700	62.4	64.7	57	408.67	19.92	0.30	NM
9/23/2020 8:10	0.0/0.0	2	50.6	7,750	86.7	62.5	63	407.99	19.73	0.36	NM
9/24/2020 7:51	0.0/0.0	2	49.5	7,360	66.6	66.2	59	407.99	19.70	0.38	NM
9/25/2020 7:54	0.0/0.0	2	46.9	7,020	81.2	58.8	56	407.17	19.56	0.40	NM
9/29/2020 8:53	-2.1/-2.1	2	49.6	6,880	94.7	55.8	45	411.93	19.02	0.58	NM

Table 4-15
KAFB-106V1-160 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Bioventing Blowers On											
10/29/2020 8:48	-2.8/-2.8	2	49.9	4,910	76.0	37.0	35	412.74	20.24	0.24	NM
11/19/2020 8:53	0.0/0.0	2	36.2	6,020	71.1	59.6	55	409.62	20.00	0.28	NM
11/24/2020 8:04	2.7/2.7	2	31.5	5,760	69.1	46.0	42	405.54	20.14	0.26	NM
11/25/2020 7:46	-0.6/-0.6	2	36.1	4,990	62.0	37.6	29	410.70	20.04	0.34	NM
11/30/2020 8:00	-2.9/-2.9	2	37.3	4,530	48.5	36.8	26	415.46	19.33	0.50	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-16
KAFB-106V1-217 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/10/2019 10:56	5.2/4.9	2	37.9	24,270	62.6	64.3	63	329.27	0.09	11.40	0.0
Dry Respirometry - Post-Injection											
5/6/2019 15:26	0.0/0.0	2	65.2	24,970	47.1	74.5	65	334.44	0.11	11.50	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 11:42	0.0/0.0	2	45.0	25,730	33.6	92.1	84	335.93	0.17	12.02	0.0
Wet Respirometry - Post-Injection											
7/5/2019 9:21	-1.1/-1.2	2	50.1	24,980	49.3	80.5	81	337.29	0.47	11.98	0.0
Bioventing											
10/7/2019 12:57	-1.5/-1.5	2	53.9	25,170	61.7	71.6	66	412.61	0.12	12.20	NM
10/8/2019 12:33	0.6/0.6	2	48.2	24,420	55.3	75.1	72	409.62	0.35	11.72	NM
10/9/2019 12:15	2.3/2.3	2	48.1	25,530	57.0	77.4	71	404.72	1.66	11.38	NM
10/15/2019 10:20	-1.2/-1.3	2	48.6	23,160	65.1	62.2	59	408.80	12.96	5.02	NM
10/22/2019 9:20	-2.1/-2.2	2	50.6	9,800	65.6	49.9	44	411.25	18.77	1.42	NM
10/31/2019 9:12	-3.5/-3.5	2	54.2	996	60.7	27.4	27	415.06	20.65	0.18	NM
11/5/2019 9:09	-0.6/-0.6	2	47.6	6,420	69.1	49.3	45	410.57	19.84	0.64	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:12	-2.9	2	-47.9	20,596	44.7	53.3	36	409.21	19.63	0.88	NM
1/7/2020 8:27	-2.6	2	-44.4	5,700	49.0	40.3	21	414.92	20.13	0.34	NM
1/8/2020 8:37	1.2	2	-47.8	15,850	46.0	43.0	22	409.89	18.79	1.06	NM
1/9/2020 8:22	1.8	2	-44.2	18,670	66.1	38.8	33	408.12	18.79	1.08	NM
1/10/2020 8:43	1.9	2	-44.8	18,760	68.1	37.4	34	339.20	18.99	1.10	NM
1/13/2020 9:43	0.7/0.8	2	45.0	19,080	69.0	35.5	40	409.21	18.53	1.02	NM
Bioventing Blowers On											
2/18/2020 11:57	-0.6/-0.6	2	80.0	2,770	53.2	58.1	52	408.67	20.25	0.30	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 10:35	-0.6/-0.7	2	43.7	3,450	56.6	59.8	52	408.26	20.07	0.34	NM
3/31/2020 8:12	-1.9/-1.9	2	43.1	1,201	71.4	43.3	38	409.75	20.78	0.06	NM
4/1/2020 8:07	1.3/1.3	2	42.8	12,780	66.3	57.9	53	404.72	18.95	0.82	NM

Table 4-16
KAFB-106V1-217 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
4/2/2020 8:08	0.5/0.5	2	43.7	15,740	64.6	52.5	49	405.40	18.60	0.96	NM
4/3/2020 8:15	0.0/0.0	2	45.4	14,110	67.7	50.4	47	406.22	18.49	1.08	NM
4/6/2020 9:04	0.0/0.0	2	43.8	7,970	62.6	59.6	55	406.76	18.81	1.10	NM
4/6/2020 9:07	NM	NM	NM	13,470	NM	NM	55	406.76	18.71	1.10	NM
4/6/2020 9:10	0.0/0.0	2	44.2	18,310	62.8	60.0	55	406.76	18.37	1.20	NM
Bioventing Blowers On											
5/5/2028 8:05	-2.3/-2.4	2	144.0	17,500	41.3	60.2	56	409.07	19.26	0.62	NM
5/5/2020 8:08	-2.3/-2.3	2	138.0	17,400	42.0	60.3	56	409.07	19.30	0.60	NM
5/28/2020 8:15	-1.4/-1.6	2	46.8	18,430	46.4	79.4	70	407.58	19.03	0.58	NM
5/28/2020 8:18	-1.4/-1.4	2	46.4	19,330	46.4	79.4	70	407.58	19.01	0.62	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:02	-0.5/-0.6	2	46.3	22,600	51.2	78.8	73	405.67	18.36	1.04	NM
6/22/2020 8:05	0.0/0.0	2	46.5	22,580	51.4	78.8	73	405.67	18.31	1.02	NM
6/23/2020 7:47	-0.7/-0.9	2	44.2	18,430	57.8	76.7	72	407.44	18.56	1.00	NM
6/23/2020 7:52	-0.7/-0.7	2	44.2	20,550	57.8	76.7	72	407.44	18.52	1.04	NM
6/24/2020 8:02	-0.8/-0.8	2	58.5	18,130	58.0	71.6	66	406.63	18.40	1.12	NM
6/25/2020 7:41	0.0/-0.6	2	65.0	21,760	47.1	76.9	68	406.08	18.01	1.26	NM
6/26/2020 7:55	-1.1/-1.3	2	48.9	21,000	55.9	76.6	70	406.35	18.12	1.24	NM
6/26/2020 7:58	-1.1/-1.1	2	49.0	20,930	56.0	76.6	70	406.35	18.10	1.24	NM
6/30/2020 9:01	-1.0/-1.1	2	51.0	21,280	57.7	74.0	73	405.27	17.89	1.36	NM
Bioventing Blowers On											
7/31/2020 8:29	-1.5/-1.6	2	55.3	18,580	57.6	79.2	74	409.07	18.90	0.86	NM
8/31/2020 7:50	0.0/0.0	2	77.5	21,860	54.0	69.3	66	405.27	18.62	1.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:11	0.0/0.0	2	46.3	20,080	66.6	65.0	59	408.67	18.64	1.02	NM
9/22/2020 7:56	-0.5/-0.5	2	66.6	20,050	60.4	63.9	58	408.67	18.51	1.18	NM
9/23/2020 8:13	0.0/0.0	2	51.7	21,520	81.5	64.0	63	407.99	18.19	1.30	NM
9/24/2020 7:55	0.0/0.0	2	46.7	21,300	72.8	62.2	59	407.99	18.15	1.36	NM
9/25/2020 7:57	0.0/0.0	2	47.6	20,950	82.3	58.9	56	407.17	18.14	1.40	NM

Table 4-16
KAFB-106V1-217 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
9/29/2020 9:12	-2.4/-2.4	2	49.2	15,490	82.6	57.5	51	411.93	18.47	1.26	NM
9/29/2020 9:14	-2.2/-2.2	2	49.0	15,510	83.0	57.5	51	411.93	18.51	1.26	NM
Bioventing Blowers On											
10/29/2020 8:51	-2.8/-2.8	2	47.3	12,170	78.5	37.5	35	412.74	19.13	0.88	NM
11/19/2020 8:58	0.0/0.0	2	34.9	16,890	76.1	59.9	57	409.62	18.51	1.00	NM
11/24/2020 8:06	2.7/2.7	2	32.2	16,030	73.1	45.9	42	405.54	18.74	1.06	NM
11/25/2020 7:49	-0.6/-0.6	2	35.8	12,120	71.0	36.6	29	410.70	18.75	1.22	NM
11/30/2020 8:03	-3.0/-3.0	2	36.6	7,660	57.8	34.7	26	415.46	18.94	1.04	NM
11/30/2020 8:05	-3.0/-3.0	2	36.8	7,700	57.0	35.0	26	415.46	18.90	1.04	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-17
KAFB-106V1-252 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/10/2019 11:13	4.8/4.8	2	42.1	22,740	62.9	65.4	63	329.27	0.13	11.56	0.0
Dry Respirometry - Post-Injection											
5/9/2019 15:39	0.0/0.0	2	63.2	22,570	47.0	74.1	65	334.44	9.80	7.80	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 11:36	0.0/0.0	2	44.8	23,030	33.3	91.6	84	335.93	6.12	7.92	0.0
Wet Respirometry - Post-Injection											
7/5/2019 9:37	-1.1/-1.1	2	53.6	22,420	46.7	81.5	81	337.29	12.62	5.34	0.0
Bioventing											
10/7/2019 13:00	-1.3/-1.3	2	44.0	21,540	63.0	73.3	66	412.61	2.63	9.20	NM
10/8/2019 12:35	0.8/0.7	2	50.8	21,690	54.0	78.7	72	409.62	3.11	8.88	NM
10/9/2019 12:19	2.5/2.5	2	44.9	22,430	57.3	77.0	71	404.72	10.25	7.80	NM
10/15/2019 10:35	-1.2/-1.1	2	47.6	22,350	69.0	62.9	59	408.80	19.60	0.14	NM
10/22/2019 9:33	-2.0/-2.0	2	47.5	19,870	71.4	51.1	44	411.25	20.07	0.00	NM
10/31/2019 9:28	-3.3/-3.3	2	51.4	15,290	64.4	28.8	27	415.06	20.28	0.00	NM
11/5/2019 9:23	-0.9/-0.9	2	47.7	18,990	70.8	51.0	46	410.57	20.04	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:16	-2.8	2	-47.9	17,790	42.9	55.8	36	414.78	20.91	0.04	NM
1/7/2020 8:31	-2.8	2	-46.5	15,590	51.2	41.3	21	414.92	20.11	0.18	NM
1/8/2020 8:41	1.2	2	-42.1	16,010	48.0	44.0	22	409.89	19.90	0.16	NM
1/9/2020 8:25	1.9	2	-43.3	16,830	64.7	39.7	33	408.12	19.97	0.16	NM
1/10/2020 8:47	2.0	2	-44.0	15,870	70.1	37.2	34	407.17	20.29	0.18	NM
1/13/2020 9:58	0.0/0.0	2	43.2	16,380	71.2	41.1	40	409.21	19.86	0.14	NM
Bioventing Blowers On											
2/18/2020 12:02	-0.5/0.0	2	78.0	17,950	50.0	61.1	52	408.67	20.15	0.00	NM

Table 4-17
KAFB-106V1-252 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 10:40	-0.7/-0.7	2	44.2	16,620	58.0	59.0	52	408.26	20.17	0.00	NM
3/31/2020 8:18	-1.9/-2.0	2	45.8	14,640	72.0	44.4	38	409.75	20.19	0.00	NM
4/1/2020 8:12	1.2/1.2	2	42.1	17,860	66.6	58.0	53	404.72	19.94	0.00	NM
4/2/2020 8:12	0.5/0.5	2	45.0	13,180	67.0	52.6	49	405.40	19.89	0.04	NM
4/3/2020 8:18	0.0/0.0	2	43.9	17,250	70.2	50.8	47	406.22	19.72	0.04	NM
4/6/2020 9:22	0.0/0.0	2	43.3	17,820	62.6	60.5	55	406.76	19.59	0.10	NM
5/5/2020 8:09	-2.3/-2.3	2	159.2	16,260	39.0	59.7	56	409.07	20.21	0.00	NM
5/28/2020 8:20	-1.4/-1.4	2	44.2	18,930	48.2	80.5	70	407.58	19.91	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:08	-0.5/-0.6	2	45.4	19,480	55.6	78.6	73	405.67	19.81	0.00	NM
6/23/2020 7:53	-1.2/-1.2	2	47.7	19,510	61.7	76.4	72	407.44	19.80	0.00	NM
6/24/2020 8:05	-0.9/-0.9	2	46.8	19,210	64.2	74.2	66	406.63	19.99	0.00	NM
6/24/2020 8:17	-0.9/-0.9	2	46.9	19,200	64.0	74.0	66	406.63	20.03	0.00	NM
6/25/2020 7:44	-0.6/-0.6	2	57.2	19,500	52.4	76.5	68	406.08	19.73	0.06	NM
6/26/2020 8:00	-1.3/-1.3	2	51.0	18,780	54.5	76.5	70	406.35	19.65	0.06	NM
6/30/2020 9:17	-1.0/-1.0	2	48.9	20,160	59.3	74.4	73	405.27	19.39	0.20	NM
Bioventing Blowers On											
7/31/2020 8:33	-1.5/-1.5	2	64.6	19,300	51.9	79.0	74	409.07	20.00	0.00	NM
8/31/2020 7:54	0.7/0.7	2	68.0	17,760	58.1	68.9	66	405.27	20.09	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:15	0.0/0.0	2	47.4	16,810	70.0	65.7	59	408.67	20.08	0.00	NM
9/22/2020 8:00	0.0/0.0	2	47.2	17,110	67.8	63.8	58	408.67	20.06	0.00	NM
9/23/2020 8:17	0.0/0.0	2	50.2	17,810	80.3	64.7	63	407.99	19.91	0.00	NM
9/24/2020 8:00	0.0/0.0	2	45.5	16,940	71.4	62.1	59	407.99	19.89	0.06	NM
9/25/2020 8:01	0.0/0.0	2	47.6	14,300	82.8	59.0	56	407.17	20.02	0.04	NM
9/25/2020 8:04	0.0/0.0	2	48.0	13,970	83.0	59.0	56	407.17	20.01	0.04	NM
9/29/2020 9:28	-2.4/-2.4	2	49.7	14,560	81.4	58.9	51	411.93	19.71	0.18	NM

Table 4-17
KAFB-106V1-252 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Bioventing Blowers On											
10/29/2020 8:54	-2.7/-2.7	2	47.6	10,460	80.0	38.0	35	412.74	20.43	0.00	NM
11/19/2020 9:02	0.0/0.0	2	35.1	13,590	74.5	60.2	57	409.62	20.11	0.00	NM
11/24/2020 8:10	2.7/2.7	2	32.7	11,920	74.7	45.3	42	405.54	20.34	0.00	NM
11/25/2020 7:53	-0.7/-0.7	2	36.9	8,740	69.9	36.5	29	410.70	20.27	0.02	NM
11/30/2020 8:10	-3.0/-3.0	2	37.8	7,730	63.0	33.6	26	415.46	19.98	0.22	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-18
KAFB-106V1-263 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/10/2019 11:30	5.1/5.1	2	40.3	23,530	64.0	64.4	63	329.27	0.31	11.26	0.0
Dry Respirometry - Post-Injection											
5/9/2019 15:50	0.0/0.0	2	62.9	23,310	45.9	74.7	65	334.44	9.74	7.54	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 11:25	0.0/0.0	2	44.9	23,830	33.5	90.7	84	335.93	6.92	7.32	0.0
Wet Respirometry - Post-Injection											
7/5/2019 9:52	-0.9/-1.0	2	49.7	23,160	43.9	82.3	81	337.29	12.80	5.10	0.0
Bioventing											
10/7/2019 13:05	-1.3/-1.3	2	44.4	22,910	63.6	72.9	66	412.61	3.35	8.38	NM
10/8/2019 12:39	0.6/0.6	2	50.7	22,220	54.0	78.2	72	409.62	3.17	8.36	NM
10/9/2019 12:23	2.5/2.4	2	44.0	22,990	54.7	76.7	71	404.72	5.44	8.36	NM
10/15/2019 10:51	-1.1/-1.0	2	45.3	23,150	70.8	63.8	59	408.80	18.82	1.10	NM
10/22/2019 9:47	-2.0/-2.0	2	47.2	20,650	71.0	54.0	44	411.25	19.96	0.02	NM
10/31/2019 9:50	-3.2/-3.3	2	47.5	16,670	68.0	30.5	30	414.65	20.28	0.00	NM
11/5/2019 9:43	-0.7/-0.7	2	47.1	21,470	70.7	53.5	49	410.30	19.99	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:20	-2.9	2	-52.9	19,040	41.2	56.8	36	414.78	20.97	0.02	NM
1/7/2020 8:35	-2.8	2	-44.3	16,690	50.1	43.5	21	414.92	20.45	0.02	NM
1/8/2020 8:44	1.3	2	-45.3	17,210	47.3	45.3	22	409.89	20.00	0.10	NM
1/9/2020 8:28	1.9	2	-40.7	18,190	68.3	40.9	33	408.12	20.03	0.10	NM
1/10/2020 8:51	1.9	2	-43.0	16,960	70.1	37.5	34	407.17	20.23	0.16	NM
1/13/2020 10:15	0.0/0.0	2	43.2	17,600	71.1	42.5	40	409.21	19.90	0.04	NM
Bioventing Blowers On											
2/18/2020 12:17	0.0/0.0	2	76.4	19,420	55.5	60.8	52	408.67	20.10	0.00	NM

Table 4-18
KAFB-106V1-263 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 10:45	-0.7/-0.7	2	42.3	18,500	64.5	58.5	52	408.26	20.12	0.00	NM
3/31/2020 8:25	-2.0/-2.0	2	46.7	15,630	70.2	45.1	38	409.75	20.29	0.00	NM
4/1/2020 8:15	1.2/1.2	2	41.7	19,160	68.3	58.3	53	404.72	20.02	0.00	NM
4/2/2020 8:15	0.5/0.5	2	45.4	16,210	66.6	52.7	49	405.40	19.78	0.00	NM
4/3/2020 8:21	0.0/0.0	2	45.3	18,370	68.6	51.3	47	406.22	19.69	0.02	NM
4/6/2020 9:39	0.0/0.0	2	43.8	20,250	65.3	61.4	55	406.76	19.65	0.04	NM
Bioventing Blowers On											
5/5/2020 8:15	-2.3/-2.3	2	148.0	18,730	43.1	59.8	56	409.07	20.22	0.00	NM
5/28/2020 8:25	-1.4/-1.4	2	47.8	20,760	46.5	81.0	70	407.58	19.92	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:11	-0.6/-0.6	2	46.0	21,420	53.7	78.5	73	405.67	19.80	0.00	NM
6/23/2020 7:57	-1.2/-1.3	2	44.6	21,360	60.9	76.4	72	407.44	19.90	0.00	NM
6/23/2020 7:59	-1.2/-1.2	2	44.8	21,740	60.9	76.4	72	407.44	19.97	0.00	NM
6/24/2020 8:18	-0.8/-0.8	2	45.3	19,760	66.9	71.3	66	406.63	19.96	0.00	NM
6/25/2020 7:47	-0.6/-0.6	2	67.8	20,820	50.2	76.1	68	406.08	19.84	0.00	NM
6/26/2020 8:03	-1.3/-1.3	2	48.4	21,360	56.1	76.5	70	406.35	19.68	0.00	NM
6/30/2020 9:32	-1.0/-1.0	2	51.0	21,750	56.7	75.0	73	405.27	19.40	0.06	NM
Bioventing Blowers On											
7/31/2020 8:35	-1.5/-1.5	2	62.8	21,350	51.6	71.9	74	409.07	20.03	0.00	NM
8/31/2020 7:58	0.7/0.7	2	71.6	20,180	58.4	69.0	66	405.27	20.07	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:18	0.0/0.0	2	47.4	18,940	70.6	65.8	59	408.67	20.07	0.00	NM
9/22/2020 8:03	0.0/0.0	2	49.0	19,460	74.6	63.4	58	408.67	20.05	0.00	NM
9/23/2020 8:20	0.0/0.0	2	52.9	19,620	78.0	65.3	63	407.99	19.99	0.00	NM
9/24/2020 8:02	0.0/0.0	2	48.8	19,330	69.8	62.1	59	407.99	19.97	0.00	NM
9/25/2020 8:06	0.0/0.0	2	50.8	19,030	84.5	59.2	56	407.17	19.94	0.02	NM
9/29/2020 9:41	-2.4/-2.4	2	50.4	12,940	77.5	60.1	51	411.93	20.08	0.04	NM
9/29/2020 9:43	-2.4/-2.4	2	50.2	13,050	78.0	60.0	51	411.93	20.05	0.04	NM

Table 4-18
KAFB-106V1-263 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Bioventing Blowers On											
10/29/2020 8:58	-2.7/-2.7	2	48.0	12,480	78.1	38.1	35	412.74	20.40	0.00	NM
11/19/2020 9:04	0.0/0.0	2	36.5	15,760	73.8	60.6	57	409.62	20.11	0.00	NM
11/24/2020 8:13	2.6/2.6	2	31.9	13,530	76.4	45.0	42	405.54	20.28	0.00	NM
11/25/2020 7:57	-0.8/-0.8	2	36.9	10,700	72.3	36.3	29	410.70	20.22	0.00	NM
11/30/2020 8:12	-3.1/-3.1	2	37.8	9,320	64.0	33.0	26	415.46	20.14	0.06	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-19
KAFB-106V2-102 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/11/2019 8:23	0.0/0.0	2	44.5	20,350	66.5	48.4	44	330.77	0.20	12.14	0.0
Dry Respirometry - Post-Injection											
5/9/2019 12:36	0.0/0.0	2	55.5	27,600	61.5	63.8	61	334.71	3.40	9.96	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:50	0.0/0.0	2	46.2	29,260	23.9	98.7	88	335.80	2.12	11.06	0.0
Wet Respirometry - Post-Injection											
7/5/2019 10:22	0.0/0.0	2	45.8	27,940	40.0	83.5	82	337.29	3.69	10.32	0.0
Bioventing											
10/7/2019 13:30	0.0/0.0	2	41.3	27,780	61.4	74.2	66	412.61	1.98	10.80	NM
10/8/2019 13:00	0.0/0.0	2	45.9	28,800	49.6	80.0	72	409.62	2.09	10.82	NM
10/9/2019 12:32	0.6/0.5	2	45.7	27,710	52.4	78.0	73	404.04	2.30	10.50	NM
10/15/2019 11:19	0.0/0.0	2	47.7	28,190	69.9	66.3	64	408.26	5.34	9.80	NM
10/22/2019 10:23	0.0/0.0	2	46.1	26,110	52.4	60.0	50	410.98	12.98	6.26	NM
10/31/2019 10:18	0.0/0.0	2	46.2	22,060	62.0	32.5	32	414.24	16.74	4.04	NM
11/5/2019 10:14	0.0/0.0	2	47.8	27,590	63.4	57.9	53	410.43	17.31	2.96	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:27	-0.7	2	-48.3	24,800	35.6	56.5	36	414.78	19.57	1.42	NM
1/7/2020 8:45	-0.5	2	-38.7	22,980	41.9	45.6	24	414.92	19.17	1.36	NM
1/8/2020 8:53	0.4	2	-47.5	24,580	44.5	44.9	27	409.89	19.13	1.46	NM
1/9/2020 8:35	0.1	2	-43.0	24,640	60.9	42.7	35	408.12	18.95	1.62	NM
1/10/2020 9:03	0.0	2	-42.9	22,610	66.6	36.1	34	407.17	18.82	1.76	NM
1/13/2020 10:42	0.0/0.0	2	44.8	23,520	59.7	44.5	43	409.07	19.02	1.16	NM
Bioventing Blowers On											
2/18/2020 12:28	0.0/0.0	2	92.2	25,880	43.7	60.9	54	408.94	17.70	1.10	NM

Table 4-19
KAFB-106V2-102 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 11:00	0.0/0.0	2	44.6	26,420	57.5	58.2	54	408.12	19.15	0.74	NM
3/31/2020 8:33	-0.5/-0.5	2	44.0	24,260	66.6	47.1	44	410.30	19.29	0.78	NM
4/1/2020 8:26	0.0/0.0	2	42.5	28,170	66.6	59.3	55	405.27	18.83	0.80	NM
4/2/2020 8:25	0.0/0.0	2	45.6	28,710	63.8	53.9	52	405.40	18.55	1.00	NM
4/3/2020 8:31	0.0/0.0	2	42.0	27,960	64.0	53.2	51	407.71	18.49	1.02	NM
4/6/2020 10:05	0.0/0.0	2	42.2	28,260	60.1	64.0	61	406.22	18.41	0.92	NM
Bioventing Blowers On											
5/5/2020 8:25	-0.7/-0.7	2	162.1	26,980	39.3	60.6	57	409.07	19.35	0.52	NM
5/5/2020 8:27	-0.6/-0.6	2	168.4	26,920	39.7	60.8	57	409.07	19.37	0.48	NM
5/28/2020 8:35	0.0/0.0	2	43.4	29,570	43.1	82.0	71	407.58	18.98	0.36	NM
5/28/2020 8:37	0.0/0.0	2	43.4	29,600	43.1	82.0	71	407.58	18.96	0.38	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:26	0.0/0.0	2	43.7	30,540	49.0	79.5	74	405.67	18.81	0.38	NM
6/23/2020 8:05	0.0/0.0	2	43.5	30,400	55.9	76.0	73	406.49	19.27	0.38	NM
6/23/2020 8:10	0.0/0.0	2	43.5	30,730	55.9	76.0	73	406.49	19.31	0.36	NM
6/24/2020 8:28	-0.5/-0.5	2	45.9	29,620	64.3	73.6	67	406.49	19.04	0.38	NM
6/25/2020 7:56	0.0/0.0	2	48.9	29,760	52.6	76.1	69	406.08	18.93	0.40	NM
6/26/2020 8:11	-0.7/-0.7	2	48.8	28,940	50.6	77.8	71	406.08	19.00	0.42	NM
6/26/2020 8:13	-0.7/-0.7	2	49.0	29,000	50.6	77.8	71	406.08	18.99	0.42	NM
6/30/2020 9:47	0.0/0.0	2	63.8	31,000	48.8	76.5	75	408.94	18.61	0.62	NM
Bioventing Blowers On											
7/31/2020 8:49	0.0/0.0	2	62.8	30,980	48.4	80.0	74	409.07	18.92	0.36	NM
8/31/2020 8:10	0.0/0.0	2	55.3	30,360	62.0	68.8	65	405.27	18.81	0.54	NM

Table 4-19
KAFB-106V2-102 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:25	0.0/0.0	2	50.4	25,830	67.4	67.1	59	408.67	19.06	0.44	NM
9/22/2020 8:14	0.0/0.0	2	47.4	28,330	72.2	64.1	59	408.67	18.76	0.54	NM
9/23/2020 8:30	0.0/0.0	2	47.1	30,600	80.5	66.6	65	408.26	18.65	0.48	NM
9/24/2020 8:10	0.0/0.0	2	48.6	23,700	68.1	62.6	60	407.85	19.50	0.48	NM
9/24/2020 8:16	0.0/0.0	2	49.0	23,700	68.0	62.5	60	407.85	19.43	0.48	NM
9/25/2020 8:18	0.0/0.0	2	50.2	23,950	89.3	60.2	58	407.31	19.18	0.46	NM
9/29/2020 10:04	0.0/0.0	2	50.9	28,560	75.0	61.1	55	411.38	18.64	0.58	NM
Bioventing Blowers On											
10/29/2020 9:19	-0.7/-0.7	2	50.9	20,540	72.8	39.1	37	412.74	18.65	0.46	NM
11/19/2020 9:16	0.0/0.0	2	35.6	24,600	67.8	61.4	60	409.62	18.13	0.44	NM
11/24/2020 8:23	0.0/0.0	2	35.8	22,640	69.0	45.7	42	405.67	18.24	0.84	NM
11/25/2020 8:09	-0.6/-0.6	2	36.1	20,440	69.0	35.9	32	410.43	18.45	0.78	NM
11/30/2020 8:25	0.0/0.0	2	114.0	17,080	57.3	32.3	28	415.33	18.43	0.90	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-20
KAFB-106V2-117 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/11/2019 8:56	0.9/0.9	2	44.3	26,840	63.4	52.9	44	330.90	0.22	12.02	0.0
Dry Respirometry - Post-Injection											
5/9/2019 12:52	0.0/0.0	2	54.0	27,820	63.3	64.5	61	334.71	4.23	8.96	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:45	0.0/0.0	2	46.8	30,890	24.6	98.1	88	335.80	0.70	11.40	0.0
Wet Respirometry - Post-Injection											
7/5/2019 10:26	0.0/0.0	2	46.4	29,660	34.1	89.6	82	337.29	3.48	10.02	0.0
Bioventing											
10/7/2019 13:33	0.0/0.0	2	42.5	29,440	58.4	74.8	66	412.61	1.97	10.54	NM
10/8/2019 13:05	0.5/0.5	2	49.1	31,350	48.4	80.1	72	409.62	1.49	10.74	NM
10/9/2019 12:37	0.0/0.0	2	47.2	30,530	50.0	78.9	73	404.04	5.58	8.64	NM
10/15/2019 11:45	0.0/0.0	2	49.4	31,250	66.0	67.5	64	408.26	4.01	9.90	NM
10/22/2019 10:37	0.0/0.0	2	48.5	27,990	55.3	59.0	50	410.98	11.01	7.32	NM
10/31/2019 10:35	0.0/0.0	2	47.4	23,500	58.2	33.0	32	414.24	15.05	5.52	NM
11/5/2019 10:29	0.0/0.0	2	48.3	29,640	65.1	59.1	53	410.43	14.21	5.16	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:29	-0.8	2	-44.4	26,440	41.3	57.5	36	414.78	18.59	2.54	NM
1/7/2020 8:47	-0.6	2	-45.8	24,670	45.9	42.0	24	414.92	18.19	2.36	NM
1/8/2020 8:56	0.4	2	-44.5	26,770	49.6	42.8	27	409.89	14.55	4.90	NM
1/9/2020 8:38	0.1	2	-45.3	26,160	59.4	42.7	35	408.12	14.70	5.10	NM
1/10/2020 9:08	0.0	2	-41.1	23,680	65.7	35.6	34	407.17	13.81	5.80	NM
1/13/2020 10:59	0.0/0.0	2	46.1	26,200	56.7	45.3	43	409.07	13.00	6.74	NM
Bioventing Blowers On											
2/18/2020 12:31	0.0/0.0	2	86.6	28,280	45.5	60.2	54	408.94	15.92	3.64	NM

Table 4-20
KAFB-106V2-117 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 11:05	0.0/0.0	2	45.5	29,720	59.3	57.8	54	421.72	15.71	4.86	NM
3/31/2020 8:38	-0.5/-0.5	2	45.8	27,560	65.3	48.4	44	410.30	17.71	2.62	NM
4/1/2020 8:28	0.0/0.0	2	46.1	30,950	63.3	59.9	55	405.27	13.59	6.16	NM
4/2/2020 8:27	0.0/0.0	2	47.7	31,280	60.6	54.9	52	405.40	13.48	6.14	NM
4/3/2020 8:33	0.0/0.0	2	45.7	31,740	65.0	54.4	51	407.71	14.78	6.08	NM
4/3/2020 14:11	0.0/0.0	2	46.1	30,880	69.1	68.2	67	405.40	14.85	6.10	NM
4/6/2020 10:17	0.0/0.0	2	47.0	30,850	50.2	68.9	61	406.22	15.14	5.16	NM
4/6/2020 10:21	0.0/0.0	2	47.5	31,700	50.7	71.0	61	406.22	15.37	4.84	NM
Bioventing Blowers On											
5/5/2020 8:31	-0.6/-0.7	2	144.6	30,280	43.7	61.5	57	409.07	18.28	1.70	NM
5/5/2020 8:35	-0.6/-0.6	2	155.0	29,960	43.5	61.5	57	409.07	18.32	1.68	NM
5/28/2020 8:40	0.0/0.0	2	47.3	32,800	41.1	83.0	71	407.58	18.08	1.66	NM
5/28/2020 8:42	0.0/0.0	2	47.3	32,760	41.1	83.0	71	407.58	18.10	1.64	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:28	0.0/0.0	2	45.8	32,760	48.8	80.7	74	405.67	17.22	2.72	NM
6/22/2020 8:30	0.0/0.0	2	45.8	32,760	48.8	80.7	74	405.67	17.49	2.26	NM
6/23/2020 8:11	0.0/-0.5	2	44.6	32,760	56.0	77.5	73	406.49	17.63	2.32	NM
6/23/2020 8:14	0.0/0.0	2	44.8	32,760	56.0	77.5	73	406.49	17.61	2.34	NM
6/24/2020 8:31	-0.5/-0.6	2	47.2	32,760	62.3	74.9	67	406.49	16.59	3.36	NM
6/25/2020 7:59	0.0/0.0	2	49.9	32,760	53.9	76.3	69	406.08	16.02	4.14	NM
6/26/2020 8:15	-0.7/-0.7	2	50.2	32,760	48.8	78.3	71	406.08	17.00	2.56	NM
6/26/2020 8:17	-0.7/-0.7	2	50.2	32,760	49.0	78.1	71	406.08	17.10	2.54	NM
6/30/2020 10:02	0.0/0.0	2	68.5	32,760	44.0	79.4	75	408.94	16.07	4.02	NM
Bioventing Blowers On											
7/31/2020 8:52	-0.5/-0.6	2	52.0	32,800	52.3	80.3	74	409.07	17.83	1.70	NM
7/31/2020 8:55	-0.5/-0.6	2	52.0	32,760	52.3	80.3	74	409.07	17.87	1.70	NM
8/31/2020 8:12	0.0/0.0	2	74.6	32,760	58.1	68.9	65	405.27	14.15	5.28	NM
8/31/2020 8:14	0.0/0.0	2	74.0	32,760	58.1	68.9	65	405.27	14.20	5.30	NM

Table 4-20
KAFB-106V2-117 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:33	0.0/0.0	2	50.5	32,760	71.8	67.5	59	408.67	15.28	4.02	NM
9/22/2020 8:17	0.0/0.0	2	53.1	32,760	76.8	64.7	59	408.67	15.32	4.26	NM
9/22/2020 8:19	0.0/0.0	2	53.0	32,760	77.0	65.0	59	408.67	15.30	4.26	NM
9/23/2020 8:33	0.0/0.0	2	49.6	32,760	78.0	67.3	65	408.26	14.88	4.48	NM
9/24/2020 8:18	0.0/0.0	2	46.3	32,760	74.2	63.9	60	407.85	16.40	3.76	NM
9/24/2020 8:20	0.0/0.0	2	46.0	32,760	74.0	64.0	60	407.85	16.43	3.80	NM
9/25/2020 8:19	0.0/0.0	2	51.1	28,960	91.3	60.0	58	407.31	15.90	4.04	NM
9/25/2020 8:23	0.0/0.0	2	51.0	29,570	91.0	60.0	58	407.31	15.92	3.98	NM
9/29/2020 10:28	0.0/0.0	2	51.3	31,500	67.8	60.4	55	411.38	18.08	1.34	NM
9/29/2020 10:30	0.0/0.0	2	51.0	31,470	69.0	60.7	55	411.38	18.06	1.34	NM
Bioventing Blowers On											
10/29/2020 9:21	-0.9/-0.9	2	49.9	22,940	75.5	40.2	37	412.74	17.80	1.28	NM
11/19/2020 9:20	0.0/0.0	2	37.5	27,500	69.1	61.9	60	409.48	14.97	3.00	NM
11/19/2020 9:22	0.0/0.0	2	37.1	27,410	69.1	62.3	60	409.48	14.93	3.02	NM
11/24/2020 8:25	0.0/0.0	2	37.8	24,770	69.4	45.7	42	405.67	14.53	4.10	NM
11/25/2020 8:12	-0.6/-0.6	2	38.4	23,340	72.0	35.7	32	410.43	15.51	3.72	NM
11/25/2020 8:14	-0.6/-0.6	2	38.1	23,500	72.0	35.7	32	410.43	15.53	3.76	NM
11/30/2020 8:29	-0.5/-0.5	2	176.1	21,100	61.1	32.2	28	415.33	15.93	3.54	NM
11/30/2020 8:31	-0.5/-0.5	2	168.0	21,000	61.5	32.0	28	415.33	15.90	3.52	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-21
KAFB-106V2-160 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/11/2019 9:27	2.7/2.6	2	41.6	9,060	64.7	53.4	46	330.90	0.53	12.88	0.0
Dry Respirometry - Post-Injection											
5/9/2019 13:13	0.0/0.0	2	56.9	9,770	59.5	64.7	62	334.71	13.78	4.08	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:40	0.5/0.0	2	45.1	10,120	25.5	97.3	88	335.80	0.84	11.36	0.0
Wet Respirometry - Post-Injection											
7/5/2019 10:52	-1.2/-1.2	2	47.2	9,630	37.5	86.3	86	337.29	12.80	4.22	0.0
Bioventing											
10/7/2019 13:37	-1.6/-1.8	2	43.4	11,120	59.0	74.3	66	412.61	13.97	8.40	NM
10/8/2019 13:08	1.1/1.1	2	46.3	11,080	49.2	80.3	72	409.62	19.23	2.32	NM
10/9/2019 12:44	2.6/2.6	2	42.8	9,390	48.7	79.9	73	404.04	19.94	0.48	NM
10/15/2019 12:08	-0.5/-0.5	2	47.2	4,990	65.0	69.4	67	408.39	20.12	0.04	NM
10/22/2019 10:55	-2.0/-1.9	2	46.9	3,470	57.0	59.6	55	410.70	20.40	0.08	NM
10/31/2019 11:00	-2.4/-2.4	2	48.9	2,340	58.2	34.0	35	413.83	20.56	0.16	NM
11/5/2019 10:50	0.0/0.0	2	47.1	2,400	64.4	59.9	57	409.75	20.33	0.10	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:33	-2.7	2	-44.0	960	47.3	47.7	36	414.78	20.84	0.12	NM
1/7/2020 8:51	-2.7	2	-41.2	1,050	57.1	40.2	24	414.92	20.51	0.26	NM
1/8/2020 8:59	1.3	2	-45.0	1,136	51.8	42.0	27	409.89	20.80	0.26	NM
1/9/2020 8:41	1.9	2	-42.5	1,313	61.2	42.9	35	408.12	20.81	0.26	NM
1/10/2020 9:11	1.9	2	-42.7	1,448	66.3	35.0	34	407.17	20.31	0.26	NM
1/13/2020 11:20	0.5/0.5	2	43.4	1,600	63.1	46.8	43	409.07	19.73	0.52	NM
Bioventing Blowers On											
2/18/2020 12:037	-0.6/-0.6	2	77.4	1,204	48.0	60.7	54	408.94	20.51	0.14	NM

Table 4-21
KAFB-106V2-160 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 11:07	-0.6/-0.6	2	43.3	661	64.7	67.6	54	408.12	20.44	0.08	NM
3/31/2020 8:40	-1.5/-1.4	2	44.1	1,231	63.3	49.8	44	410.30	20.39	0.20	NM
4/1/2020 8:32	1.5/1.5	2	41.8	994	64.0	61.0	55	405.27	20.16	0.22	NM
4/2/2020 8:31	1.0/1.0	2	41.3	1,166	68.3	56.3	52	405.40	20.06	0.22	NM
4/3/2020 8:37	0.0/0.0	2	43.0	1,264	63.8	57.2	51	407.71	19.88	0.24	NM
4/6/2020 10:39	-0.5/-0.6	2	43.7	1,213	42.6	73.1	61	406.22	19.73	0.34	NM
Bioventing Blowers On											
5/5/2020 8:37	-1.9/-1.9	2	151.4	858	40.4	62.6	57	409.07	20.33	0.24	NM
5/28/2020 8:44	-1.5/-1.4	2	45.2	897	42.8	81.0	71	407.58	20.26	0.14	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:35	-0.5/-0.5	2	44.4	1,079	42.4	83.0	74	405.67	20.13	0.16	NM
6/23/2020 8:15	-0.9/-0.9	2	45.1	980	52.6	77.6	73	406.49	20.20	0.24	NM
6/23/2020 8:17	-0.9/-0.9	2	45.0	976	52.6	77.6	73	406.49	20.19	0.26	NM
6/24/2020 8:33	-0.5/-0.5	2	53.0	964	56.1	75.6	67	406.49	20.10	0.26	NM
6/25/2020 8:01	0.0/0.0	2	51.3	1,021	50.6	76.4	69	406.08	19.96	0.32	NM
6/26/2020 8:19	-0.9/-0.8	2	59.1	1,066	44.7	79.5	71	406.08	19.81	0.34	NM
6/30/2020 10:31	0.0/0.0	2	54.0	1,197	40.5	81.9	75	408.94	19.47	0.40	NM
Bioventing Blowers On											
7/31/2020 8:56	-1.4/-1.3	2	50.5	815	49.2	80.7	74	409.07	20.39	0.10	NM
8/31/2020 8:16	0.7/0.7	2	66.8	703	61.7	69.2	65	405.27	20.32	0.16	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:36	0.0/0.0	2	45.3	689	73.0	68.0	59	408.67	20.25	0.14	NM
9/22/2020 8:20	0.0/0.0	2	47.0	844	75.3	65.2	59	408.67	20.23	0.20	NM
9/23/2020 8:36	0.0/0.0	2	48.8	779	76.2	60.6	65	408.26	20.01	0.24	NM
9/24/2020 8:22	0.0/0.0	2	46.4	978	74.7	64.1	60	407.85	20.00	0.24	NM
9/25/2020 8:24	0.0/0.0	2	46.6	934	91.2	62.2	58	407.31	19.94	0.28	NM
9/29/2020 10:49	-1.9/-1.9	2	50.1	819	59.2	70.2	55	411.38	19.38	0.46	NM

Table 4-21
KAFB-106V2-160 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Bioventing Blowers On											
10/29/2020 9:24	-3.0/-3.0	2	51.6	1,380	74.5	40.4	37	412.74	20.56	0.12	NM
11/19/2020 9:25	0.0/0.0	2	35.6	713	71.6	62.4	60	409.48	20.37	0.14	NM
11/24/2020 8:28	2.6/2.6	2	33.1	1,419	71.2	45.7	42	405.67	20.54	0.14	NM
11/25/2020 8:17	-0.7/-0.7	2	35.3	2,990	74.0	35.6	32	410.43	20.37	0.16	NM
11/30/2020 8:32	-2.6/-2.6	2	38.7	2,870	62.0	31.7	28	415.33	19.71	0.40	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-22
KAFB-106V2-217 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/11/2019 10:08	2.2/2.2	2	42.8	21,340	66.6	52.6	32	331.04	0.38	12.08	0.0
Dry Respirometry - Post-Injection											
5/9/2019 13:25	0.0/0.0	2	60.6	21,960	58.3	64.8	62	334.71	1.39	11.82	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:33	0.5/0.0	2	45.2	23,260	28.6	95.7	88	335.80	0.87	12.10	0.0
Wet Respirometry - Post-Injection											
7/5/2019 11:06	-1.3/-1.3	2	50.9	22,650	39.1	87.5	87	337.29	1.40	11.92	0.0
Bioventing											
10/7/2019 13:41	-1.3/-1.4	2	44.5	22,860	62.2	73.6	66	412.61	0.45	12.46	NM
10/8/2019 13:12	0.9/0.9	2	45.7	23,610	55.6	80.2	72	409.62	0.43	12.56	NM
10/9/2019 12:47	2.3/2.3	2	42.1	22,730	55.1	80.7	73	404.04	0.71	12.20	NM
10/15/2019 12:22	-0.8/-0.8	2	48.0	23,450	64.4	71.2	67	408.39	7.00	10.12	NM
10/22/2019 11:08	-2.2/-2.2	2	47.7	21,890	60.4	59.1	55	410.70	12.17	6.80	NM
10/31/2019 11:13	-3.3/-3.4	2	49.6	19,600	64.0	35.0	35	413.83	16.11	4.18	NM
11/5/2019 11:03	-0.5/-0.5	2	48.8	22,840	66.3	60.5	57	409.75	17.33	2.42	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:37	-3.0	2	-48.3	20,910	52.9	43.8	36	414.78	19.31	0.96	NM
1/7/2020 8:54	-2.8	2	-45.0	20,170	57.0	38.3	24	414.92	18.89	1.15	NM
1/8/2020 9:02	1.3	2	-40.9	20,960	56.0	41.5	27	409.89	19.11	1.18	NM
1/9/2020 8:44	1.7	2	-40.6	21,010	65.7	43.6	35	408.12	19.19	1.08	NM
1/10/2020 9:14	1.8	2	-45.7	19,270	68.5	34.6	34	407.17	18.75	1.10	NM
1/13/2020 11:30	0.0/0.0	2	46.9	20,640	65.4	48.5	46	408.94	18.47	0.98	NM
Bioventing Blowers On											
2/18/2020 12:39	-0.9/-0.9	2	91.7	20,770	43.3	61.9	53	408.80	18.82	0.72	NM

Table 4-22
KAFB-106V2-217 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 11:11	-0.7/-0.7	2	45.6	20,850	63.8	57.1	54	407.71	18.85	0.80	NM
3/31/2020 8:45	-1.9/-1.9	2	46.6	20,080	63.3	50.6	45	423.76	18.86	0.98	NM
4/1/2020 8:36	1.5/1.5	2	43.9	22,130	61.9	62.3	56	405.13	18.61	1.00	NM
4/2/2020 8:35	1.1/1.1	2	43.0	22,810	68.5	57.8	53	405.40	18.49	1.00	NM
4/3/2020 8:42	0.0/0.0	2	45.5	21,850	65.8	58.0	51	407.71	18.31	1.00	NM
4/6/2020 10:51	-0.8/-0.8	2	46.9	22,800	39.3	74.7	64	406.35	18.28	1.02	NM
Bioventing Blowers On											
5/5/2020 8:40	-2.1/-2.1	2	166.0	21,000	36.2	63.2	58	410.03	18.84	0.88	NM
5/5/2020 8:42	-2.1/-2.1	2	167.1	20,900	36.2	63.2	58	410.03	18.85	0.86	NM
5/25/2020 8:47	-1.7/-1.7	2	47.3	22,470	43.8	80.2	72	407.58	18.63	0.82	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:40	0.0/0.0	2	44.8	23,500	43.0	83.8	76	405.95	18.14	1.14	NM
6/22/2020 8:43	0.0/0.0	2	44.8	23,550	43.0	83.8	76	405.95	18.17	1.12	NM
6/23/2020 8:20	-1.3/-1.4	2	46.2	23,220	54.3	77.6	74	407.31	18.15	1.20	NM
6/24/2020 8:36	0.0/0.0	2	52.4	22,920	56.1	76.3	68	406.49	18.12	1.26	NM
6/25/2020 8:03	0.0/0.0	2	52.0	23,050	52.5	76.4	72	405.81	18.00	1.34	NM
6/26/2020 8:22	-0.9/-0.8	2	50.6	23,510	46.0	80.2	73	406.35	17.86	1.32	NM
6/30/2020 10:43	0.0/0.0	2	62.8	24,250	40.5	82.0	77	405.40	17.57	1.50	NM
Bioventing Blowers On											
7/31/2020 8:59	-1.6/-1.6	2	51.8	23,720	51.4	80.8	75	408.53	18.22	1.30	NM
8/31/2020 8:20	0.5/0.5	2	79.1	22,580	59.3	69.5	67	405.13	18.56	1.04	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:39	0.0/0.0	2	46.9	21,500	70.0	69.1	61	408.67	18.51	1.06	NM
9/22/2020 8:23	0.0/0.0	2	47.9	22,210	76.3	65.8	60	408.53	18.43	1.20	NM
9/23/2020 8:40	0.0/0.0	2	50.0	22,810	74.0	69.9	66	408.26	18.25	1.24	NM
9/24/2020 8:24	0.0/0.0	2	49.6	22,080	72.8	64.0	60	407.85	18.20	1.26	NM
9/25/2020 8:27	0.0/0.0	2	49.8	22,360	87.6	63.1	58	407.31	18.18	1.28	NM
9/29/2020 11:06	-2.1/-2.1	2	50.9	20,250	58.5	72.0	56	411.38	18.02	1.42	NM

Table 4-22
KAFB-106V2-217 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Bioventing Blowers On											
10/29/2020 9:28	-3.4/-3.4	2	51.4	15,690	77.7	40.6	37	412.74	18.76	1.06	NM
11/19/2020 9:28	0.0/0.0	2	36.2	18,220	74.0	63.0	60	409.48	18.52	0.96	NM
11/24/2020 8:32	2.5/2.5	2	33.3	16,910	72.5	45.7	42	405.67	18.86	1.00	NM
11/25/2020 8:20	-0.8/-0.8	2	36.9	15,810	78.2	35.6	32	410.43	18.78	1.14	NM
11/30/2020 8:35	-1.9/-1.9	2	39.2	15,220	66.0	31.4	28	415.33	18.46	1.36	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-23
KAFB-106V2-252 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/11/2019 10:36	2.3/2.4	2	41.6	14,710	69.3	55.5	48	330.77	7.19	7.74	0.0
Dry Respirometry - Post-Injection											
5/9/2019 13:38	0.0/0.0	2	59.2	14,010	61.4	65.0	62	334.71	12.85	5.04	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:28	0.5/0.5	2	46.9	14,790	29.2	95.7	88	335.80	5.47	8.58	0.0
Wet Respirometry - Post-Injection											
7/5/2019 11:17	-0.9/-0.9	2	47.7	14,430	41.5	88.4	88	337.29	15.09	2.92	0.0
Bioventing											
10/7/2019 13:44	-1.0/-1.3	2	44.6	15,100	63.4	73.4	66	412.61	2.00	10.38	NM
10/8/2019 13:15	1.1/1.1	2	46.2	15,590	54.0	79.6	72	409.62	16.15	5.02	NM
10/9/2019 12:51	2.6/2.7	2	41.0	15,190	53.4	81.3	74	403.91	19.50	0.92	NM
10/15/2019 12:35	0.0/0.0	2	48.3	15,360	62.8	72.2	70	407.85	19.90	0.00	NM
10/22/2019 11:22	-1.7/-1.8	2	49.2	14,680	67.0	58.1	55	411.11	20.19	0.00	NM
10/31/2019 11:28	-3.0/-3.1	2	49.2	12,730	66.4	36.2	36	413.42	20.46	0.00	NM
11/5/2019 11:14	0.0/0.0	2	46.7	14,490	67.2	60.9	59	410.03	20.13	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:40	-2.8	2	-43.3	10,990	60.2	42.1	36	414.78	20.95	-0.01	NM
1/7/2020 8:57	-2.7	2	-42.9	9,900	60.4	37.7	24	414.92	20.58	0.06	NM
1/8/2020 9:06	1.4	2	-43.2	10,740	53.7	42.5	27	409.89	20.87	0.08	NM
1/9/2020 8:47	2.0	2	-42.7	11,320	63.2	45.1	35	408.12	20.86	0.10	NM
1/10/2020 9:17	1.9	2	-44.6	10,200	71.3	34.6	34	407.17	20.30	0.10	NM
1/13/2020 11:42	0.0/0.0	2	46.0	11,150	60.5	50.1	46	408.94	20.07	0.04	NM
Bioventing Blowers On											
2/18/2020 12:43	-0.7/-0.7	2	90.4	10,210	42.2	62.2	53	408.80	20.31	0.00	NM

Table 4-23
KAFB-106V2-252 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 11:14	-0.6/-0.6	2	43.5	8,620	67.0	57.3	54	407.71	20.33	0.00	NM
3/31/2020 8:49	-1.7/-1.7	2	47.2	7,250	62.2	51.1	45	410.16	20.40	0.04	NM
4/1/2020 8:39	1.6/1.6	2	41.7	8,010	62.1	63.3	56	394.26	20.13	0.08	NM
4/2/2020 8:38	1.3/1.2	2	43.1	8,200	67.0	59.0	53	405.40	19.94	0.10	NM
4/3/2020 8:45	0.0/0.0	2	42.9	8,070	61.4	59.6	51	407.71	19.95	0.10	NM
4/6/2020 11:05	-0.7/-0.7	2	44.8	8,220	41.4	74.7	64	406.35	19.85	0.14	NM
Bioventing Blowers On											
5/5/2020 8:46	-1.9/-1.9	2	191.9	7,160	28.0	63.5	58	410.03	20.36	0.00	NM
5/28/2020 8:51	-1.4/-1.4	2	45.6	7,070	49.2	80.8	72	407.58	20.15	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:46	0.0/0.0	2	44.4	6,750	45.0	84.5	76	405.95	19.96	0.00	NM
6/23/2020 8:22	-1.1/-1.1	2	46.1	6,500	59.1	77.7	74	407.31	20.06	0.08	NM
6/23/2020 8:25	-1.1/-1.1	2	46.0	6,500	59.0	77.7	74	407.31	20.08	0.08	NM
6/24/2020 8:39	0.0/0.0	2	68.3	6,580	53.6	76.9	68	406.49	20.10	0.12	NM
6/24/2020 8:43	0.0/0.0	2	68.3	6,580	53.6	76.9	68	406.49	20.14	0.14	NM
6/25/2020 8:07	0.0/0.0	2	52.0	6,590	56.8	76.5	72	405.81	19.98	0.12	NM
6/26/2020 8:24	-0.6/-0.6	2	50.2	6,500	49.3	80.9	73	406.35	19.79	0.16	NM
6/30/2020 10:53	0.0/0.0	2	52.0	6,550	45.2	83.2	77	405.40	19.60	0.22	NM
Bioventing Blowers On											
7/31/2020 9:01	-1.3/-1.3	2	54.3	6,330	55.1	81.2	75	408.53	20.20	0.00	NM
8/31/2020 8:22	0.8/0.8	2	78.4	5,490	60.3	70.0	67	405.13	20.27	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:42	0.0/0.0	2	47.4	4,680	70.8	70.0	61	408.67	20.25	0.00	NM
9/22/2020 8:26	0.0/0.0	2	48.4	4,660	74.0	66.5	60	408.53	20.18	0.12	NM
9/23/2020 8:43	0.0/0.0	2	48.3	4,900	71.6	71.2	66	408.26	19.98	0.12	NM
9/24/2020 8:29	0.0/0.0	2	46.9	3,600	72.9	65.5	60	407.85	20.24	0.16	NM
9/24/2020 8:33	0.0/0.0	2	47.0	3,540	73.0	66.0	60	407.85	20.21	0.16	NM
9/25/2020 8:31	0.0/0.0	2	50.3	4,770	83.3	64.7	58	407.58	19.95	0.22	NM

Table 4-23
KAFB-106V2-252 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
9/29/2020 11:18	-1.9/-1.9	2	50.8	4,770	58.2	72.1	56	411.38	19.75	0.28	NM
Bioventing Blowers On											
10/29/2020 9:31	-3.1/-3.1	2	49.7	3,910	80.4	40.9	37	412.88	20.55	0.00	NM
11/19/2020 9:29	0.0/0.0	2	36.2	4,250	74.0	63.5	60	409.48	20.32	0.02	NM
11/24/2020 8:35	2.6/2.6	2	33.9	3,720	72.9	45.6	42	405.67	20.47	0.12	NM
11/25/2020 8:23	-0.7/-0.7	2	36.5	3,660	80.0	35.6	32	410.43	20.37	0.16	NM
11/30/2020 8:40	-2.6/-2.6	2	44.7	3,250	69.8	31.3	28	415.33	20.20	0.28	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-24
KAFB-106V2-270 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Baseline Respirometry											
4/11/2019 11:09	2.4/2.4	2	41.1	14,610	64.4	55.6	NM	331.17	8.63	6.98	0.0
Dry Respirometry - Post-Injection											
5/9/2019 13:50	0.0/0.0	2	59.8	18,180	59.0	65.1	62	334.71	11.73	5.66	0.0
Wet Respirometry - Pre-Injection											
6/20/2019 12:21	0.0/0.0	2	47.3	20,420	29.3	94.5	88	335.80	5.37	8.56	0.0
Wet Respirometry - Post-Injection											
7/5/2019 11:29	-1.3/-1.2	2	50.0	20,050	35.2	89.2	88	337.29	13.54	4.58	0.0
Bioventing											
10/7/2019 13:48	-1.2/-1.3	2	45.4	19,600	63.4	73.5	66	412.61	2.18	9.72	NM
10/8/2019 13:19	1.0/1.0	2	45.3	19,680	52.3	78.5	72	409.62	9.99	8.82	NM
10/9/2019 12:55	2.6/2.6	2	44.1	18,890	46.2	81.7	74	403.91	18.58	2.08	NM
10/15/2019 12:46	0.0/0.0	2	48.8	18,950	60.7	73.0	70	407.85	19.64	0.08	NM
10/22/2019 11:35	-1.7/-1.7	2	49.8	17,420	67.8	58.7	55	411.11	19.99	0.00	NM
10/31/2019 11:36	-3.0/-3.0	2	50.5	14,470	65.1	37.0	36	413.42	20.22	0.00	NM
11/5/2019 11:25	0.0/0.0	2	49.8	17,560	67.5	61.5	59	410.03	19.98	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
1/6/2020 9:44	-2.8	2	-46.8	11,340	62.6	41.2	36	414.65	20.88	0.02	NM
1/7/2020 9:00	-2.8	2	-43.2	10,960	61.4	37.5	24	414.92	20.49	0.08	NM
1/8/2020 9:08	1.3	2	-57.8	11,680	53.5	42.3	27	409.89	20.75	0.14	NM
1/9/2020 8:57	2.0	2	-42.6	12,410	64.0	45.7	35	408.12	20.45	0.44	NM
1/10/2020 9:20	2.0	2	-45.0	11,050	71.8	34.6	34	407.17	19.71	0.58	NM
1/13/2020 11:57	0.0/0.0	2	46.8	12,390	62.1	51.6	46	408.94	19.73	0.26	NM
Bioventing Blowers On											
2/18/2020 12:47	-0.7/-0.8	2	86.0	11,230	42.7	62.6	53	408.80	20.28	0.00	NM

Table 4-24
KAFB-106V2-270 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
Quarterly Respiration Monitoring - Bioventing Blowers Off											
3/30/2020 11:18	-0.6/-0.7	2	43.9	6,820	67.7	57.1	54	407.71	20.32	0.00	NM
3/31/2020 8:52	-1.6/-1.6	2	46.6	6,000	63.3	51.1	45	410.16	20.42	0.04	NM
4/1/2020 8:43	1.6/1.6	2	41.7	7,410	60.2	64.4	56	405.13	19.99	0.16	NM
4/2/2020 8:41	1.3/1.3	2	42.2	7,850	65.6	60.3	53	405.40	19.65	0.44	NM
4/3/2020 8:48	0.0/0.0	2	43.1	7,900	60.2	60.5	51	407.71	19.53	0.48	NM
4/6/2020 11:16	-0.7/-0.7	2	46.3	8,590	41.0	74.1	64	406.35	19.47	0.52	NM
Bioventing Blowers On											
5/5/2020 8:50	-1.9/-1.9	2	194.7	7,400	28.4	63.9	58	410.03	20.16	0.20	NM
5/28/2020 8:54	-1.4/-1.4	2	47.5	6,030	43.9	80.5	72	407.58	20.20	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
6/22/2020 8:47	0.0/0.0	2	44.6	6,290	39.7	85.5	76	405.95	20.08	0.02	NM
6/23/2020 8:27	-1.2/-1.2	2	47.4	6,070	52.6	77.7	74	407.31	20.06	0.10	NM
6/24/2020 8:44	0.0/0.0	2	61.0	6,250	50.7	77.2	68	406.49	20.17	0.10	NM
6/24/2020 8:47	0.0/0.0	2	61.0	6,260	50.8	77.0	68	406.49	20.24	0.10	NM
6/25/2020 8:10	-0.5/-0.5	2	51.0	6,180	51.8	76.7	72	405.81	19.89	0.16	NM
6/26/2020 8:26	-0.5/-0.5	2	48.7	6,340	44.0	81.5	73	406.35	19.75	0.28	NM
6/30/2020 11:13	0.0/0.0	2	83.4	7,110	45.1	83.5	77	405.40	19.47	0.44	NM
Bioventing Blowers On											
7/31/2020 9:05	-1.2/-1.1	2	53.3	5,800	47.8	81.4	75	408.53	20.28	0.00	NM
8/31/2020 8:25	0.8/0.8	2	73.6	4,430	60.2	70.5	67	405.13	20.32	0.00	NM
Quarterly Respiration Monitoring - Bioventing Blowers Off											
9/21/2020 8:46	0.0/0.0	2	47.2	3,560	69.1	71.7	61	408.67	20.33	0.00	NM
9/22/2020 8:29	0.0/0.0	2	50.1	3,980	71.7	67.2	60	408.53	20.23	0.06	NM
9/23/2020 8:46	0.0/0.0	2	49.8	4,310	68.9	72.1	66	408.26	19.99	0.14	NM
9/24/2020 8:34	0.0/0.0	2	50.5	3,100	70.9	66.5	60	407.85	20.22	0.12	NM
9/24/2020 8:38	0.0/0.0	2	51.0	3,230	71.0	67.0	60	407.85	20.20	0.10	NM
9/25/2020 8:34	0.0/0.0	2	48.7	4,180	81.1	65.5	58	407.58	19.85	0.30	NM
9/29/2020 11:31	-1.8/-1.8	2	52.1	3,700	57.1	73.1	56	411.38	20.01	0.20	NM

Table 4-24
KAFB-106V2-270 Respiration Monitoring Field Measurements

Date and Time	Well Head Pressure Pre/Post Purge (in-WC)	Flow Rate (scfm)	Vacuum (in-WC)	HC (ppmv)	Relative Humidity (%)	Vapor Temperature (°F)	Ambient Temperature (°F)	Barometric Pressure (in-WC)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)
9/29/2020 11:33	-1.8/-1.8	2	52.0	3,560	57.0	73.0	56	411.38	20.02	0.20	NM
Bioventing Blowers On											
10/29/2020 9:34	-3.1/-3.1	2	50.4	2,650	82.2	41.0	37	412.88	20.61	0.02	NM
11/19/2020 9:31	0.0/0.0	2	36.3	3,500	73.0	64.2	60	409.48	20.37	0.02	NM
11/24/2020 8:38	2.6/2.6	2	33.5	2,970	74.1	45.6	42	405.67	20.20	0.30	NM
11/25/2020 8:28	-0.6/-0.6	2	36.5	2,990	82.0	35.6	32	410.43	20.23	0.28	NM
11/30/2020 8:44	-2.6/-2.6	2	42.3	2,720	72.1	31.3	28	415.33	20.29	0.22	NM
11/30/2020 8:48	-2.6/-2.6	2	42.0	2,700	72.0	31.0	28	415.33	20.28	0.20	NM

% = percent

°F = degrees Fahrenheit

CH₄ = methane

CO₂ = carbon dioxide

HC = hydrocarbon

in-WC = inches of water column

NM = not measured

O₂ = oxygen

ppmv = parts per million by volume

scfm = standard cubic feet per minute

Table 4-25
Bioventing Respiration Pilot Test Analytical Requirements and Sampling Frequency

Parameter	Method	Media	Number of Samples Per Event^a	Sample Container	Data Use	Respiration Test Frequency	Long-Term Test Frequency
BTEX/TPH-GRO	EPA TO-3	Soil Vapor	12	1-liter Summa canister	Evaluate soil vapor hydrocarbons	Baseline and end of test	Weekly for first month; quarterly to end of test
VOCs	EPA TO-15 SIM	Soil Vapor	12	1-liter Summa canister	Evaluate soil vapor EDB concentrations	Baseline and end of test	Weekly for first month; quarterly to end of test
Fixed Gases ^b	ASTM D1945	Soil Vapor	12	1-liter Summa canister	Verify field instrument reading	Baseline and end of test	Weekly for first month; quarterly to end of test
C1-C5 Hydrocarbon Compounds ^c	ASTM D1945	Soil Vapor	12	1-liter Summa canister	Evaluate degradation of EDB	Baseline and end of test	Weekly for first month; quarterly to end of test

^a Soil vapor samples collected from each of the six nested wells in both KAFB-106V1 and KAFB-106V2 (does not include quality control samples).

^b Fixed gases: nitrogen, oxygen, hydrogen, carbon monoxide, and carbon dioxide.

^c C1-C5 hydrocarbon compounds: methane, ethane, propane, butane, and pentane.

ASTM = ASTM International

BTEX = benzene, toluene, ethylbenzene, and total xylenes

EDB = ethylene dibromide (1,2-dibromoethane)

EPA = U.S. Environmental Protection Agency

GRO = gasoline range organics

SIM = selective ion monitoring

TPH = total petroleum hydrocarbons

VOC = volatile organic compound

Table 4-26
Respiration Test Flow Design and Field Injection Quantities

Respiration Testing Design Inputs								
Injection Well	Screened Interval (ft bgs)	Screen Length (ft)	Screen Diameter (in.)	Casing Volume (ft ³)	Filter Pack Thickness (ft)	Assumed Venting Thickness (ft) ¹	Control Radius (ft)	Test Cell Pore Volume (ft ³)
SVMW-11-100	100-102.5	2.5	0.5	0.140	8.2	18.2	15	4,500
SVMW-11-250	250-252.5	2.5	0.5	0.344	7.3	17.3	15	4,278
SVMW-11-260	260-262.5	2.5	0.5	0.358	22.5	32.5	15	8,036
SVEW-01-260	245-260	15	4	22.678	26	36	15	8,902
SVMW-10-100	100-102.5	2.5	0.5	0.140	7.9	17.9	15	4,426
SVMW-10-150	150-152.5	2.5	0.5	0.208	9.5	19.5	15	4,822
SVMW-10-250	250-252.5	2.5	0.5	0.344	10.3	20.3	15	5,020
SVMW-02/03-160	145-160	15	2	3.489	29	39	15	9,644
SVEW-04/05-313	298-313	15	2	6.825	25	35	15	8,655

¹ Vertical leakance into formation assumed 5 feet above and 5 below filter pack interval

Test cell pore volume is equivalent to the area within the control radius multiplied by the assumed venting thickness

Assumed porosity = 35%

Respiration Testing Air Injection Parameters									
Injection Well	Prescribed in Work Plan				Performed in Field				
	Target Moisture Volume (gallons) ¹	Air Injection Period (days)	Design Flow Rate (cfm)	Target Air Injection Volume (ft ³) ²	Added Moisture Volume (gallons)	Air Injection Period (days)	Flow Rate (cfm)	Air Injection Volume (ft ³)	
								Dry	Wet
SVMW-11-100	337	3	4.2	18,002	350	6	2.3	18,833	18,709
SVMW-11-250	320	3	4.0	17,111	325	6	2.3	18,833	18,709
SVMW-11-260	601	3	7.4	32,146	625	6	4.0	33,480	33,260
SVEW-01-260	666	3	8.2	35,608	675	6	5.0	36,625	35,775
SVMW-10-100	331	3	4.1	17,705	350	6	2.3	18,821	18,709
SVMW-10-150	361	3	4.5	19,287	375	6	2.5	20,913	20,787
SVMW-10-250	375	3	4.6	20,079	375	6	2.5	20,913	20,787
SVMW-02/03-160	721	3	8.9	38,575	725	6	5.5	40,287	39,353
SVEW-04/05-313	647	3	8.0	34,619	650	6	5.0	36,625	35,775

¹ Moisture added at 1 % of pore volume

² Prescribed air injection volume is 4 times the test cell pore volume

Table 4-27
Bioventing Respiration Pilot Test Air Injection Summary - SVMW-10

Well ID	SVMW-10-100		SVMW-10-150		SVMW-10-250	
Pore Volume ^a (ft ³)	4,426		4,822		5,020	
Target Air Injection Volume ^b (ft ³)	17,704		19,288		20,080	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
Dry Respiration Testing						
4/22/2019 14:40	2.5	0	2.75	0	3.0	0
4/22/2019 15:20	2.25	90	2.5	100	2.5	100
4/23/2019 8:35	2.25	2,419	2.5	2,688	2.5	2,688
4/23/2019 15:45	2.25	3,386	2.5	3,763	2.5	3,763
4/24/2019 9:55	2.25	5,839	2.5	6,488	2.5	6,488
4/24/2019 14:56	2.25	6,516	2.5	7,240	2.5	7,240
4/25/2019 8:55	2.25	8,944	2.5	9,938	2.5	9,938
4/26/2019 13:05	2.25	12,746	2.5	14,163	2.5	14,163
4/27/2019 10:10	2.25	15,593	2.5	17,325	2.5	17,325
4/28/2019 10:05	2.25	18,821	2.5	20,913	2.5	20,913
Wet Respiration Testing						
6/20/2019 13:40	2.25	0	2.5	0	2.5	0
6/21/2019 9:30	2.25	2,678	2.5	2,975	2.5	2,975
6/22/2019 15:25	2.25	6,716	2.5	7,462	2.5	7,462
6/23/2019 13:35	2.25	9,709	2.5	10,787	2.5	10,787
6/24/2019 10:50	2.25	12,578	2.5	13,975	2.5	13,975
6/25/2019 9:25	2.25	15,627	2.5	17,362	2.5	17,363
6/26/2019 8:15	2.25	18,709	2.5	20,787	2.5	20,787

Table 4-27
Bioventing Respiration Pilot Test Air Injection Summary - SVMW-10

Well ID	SVMW-10-100		SVMW-10-150		SVMW-10-250	
Pore Volume ^a (ft ³)	4,426		4,822		5,020	
Target Air Injection Volume ^b (ft ³)	17,704		19,288		20,080	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
Long-Term Bioventing Pilot Test						
10/7/2019 8:30	2.5	0	2.0	0	2.8	0
10/8/2019 11:43	2.5	4,083	2.0	3,266	2.8	4,572
10/9/2019 11:49	2.5	7,697	2.0	6,158	2.8	8,621
10/15/2019 13:00	2.5	29,475	2.0	23,580	2.8	33,012
10/22/2019 11:51	2.5	54,503	2.0	43,602	2.8	61,043
10/31/2019 10:58	2.5	86,770	2.0	69,416	2.8	97,182
11/5/2019 11:38	2.5	104,870	2.0	83,896	2.8	117,454
1/6/2020 9:00	0.0	327,675	0.0	262,140	0.0	366,996
1/13/2020 11:04	2.5	327,675	2.0	262,140	2.8	366,996
2/18/2020 12:58	2.5	457,560	2.0	366,048	2.8	512,467
3/30/2020 10:09	2.5	604,738	2.0	483,790	2.8	677,306
3/30/2020 10:09	0	604,738	0.0	483,790	0.0	677,306
4/7/2020 15:00	2.5	604,738	2.0	483,790	2.8	677,306
5/5/2020 8:56	2.5	704,628	2.0	563,702	2.8	789,183
5/28/2020 8:57	2.5	787,430	2.0	629,944	2.8	881,922
6/22/2020 7:30	2.5	877,213	2.0	701,770	2.8	982,478
6/22/2020 7:30	0.0	877,213	0.0	701,770	0.0	982,478
7/2/2020 7:04	2.5	877,213	2.0	701,770	2.8	982,478
7/31/2020 7:52	2.5	981,733	2.0	785,386	2.8	1,099,540
8/31/2020 8:30	2.5	1,093,428	2.0	874,742	2.8	1,224,639

Table 4-27
Bioventing Respiration Pilot Test Air Injection Summary - SVMW-10

Well ID	SVMW-10-100		SVMW-10-150		SVMW-10-250	
Pore Volume ^a (ft ³)	4,426		4,822		5,020	
Target Air Injection Volume ^b (ft ³)	17,704		19,288		20,080	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
9/21/2020 7:50	2.5	1,168,928	2.0	935,142	2.8	1,309,199
9/21/2020 7:50	0.0	1,168,928	0.0	935,142	0.0	1,309,199
9/30/2020 12:45	2.5	1,168,928	2.0	935,142	2.8	1,309,199
10/29/2020 9:44	2.5	1,272,875	2.0	1,018,300	2.8	1,425,620
11/19/2020 9:38	2.5	1,348,460	2.0	1,078,768	2.8	1,510,275

^a Pore volume is the test cell pore volume as determined from Table 2 in the Bioventing Respiration Pilot Test Injection Design in the Bioventing Respiration Pilot Testing Procedure (Kirtland AFB, 2018).

^b Target volume is the target volume for air injection, approximately 4 times the pore volume.

Bioventing blowers were turned off on January 6, 2020 to assess oxygen utilization rates. The blowers were restarted on January 13, 2020.

Bioventing blowers were turned off on March 30, 2020 to assess oxygen utilization rates. The blowers were restarted on April 7, 2020.

Bioventing blowers were turned off on June 22, 2020 to assess oxygen utilization rates. The blowers were restarted on July 2, 2020.

Bioventing blowers were turned off on September 21, 2020 to assess oxygen utilization rates. The blowers were restarted on September 30, 2020.

ft³ = cubic feet

ID = identification

in-WC = inches of water column

scfm = standard cubic feet per minute

Kirtland AFB, 2018. *Bioventing Respiration Pilot Testing Procedure, Rev.0*. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE-Albuquerque District Contract No. W9128F-

Table 4-28
Bioventing Respiration Pilot Test Air Injection Summary - SVMW-11

Well ID	SVMW-11-100		SVMW-11-250		SVMW-11-260	
Pore Volume ^a (ft ³)	4,500		4,278		8,036	
Target Air Injection Volume ^b (ft ³)	18,002		17,111		32,146	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
Dry Respiration Testing						
4/22/2019 14:30	2.25	0	2.25	0	4.25	0
4/22/2019 15:15	2.25	101	2.25	101	4.0	180
4/23/2019 8:40	2.25	2,453	2.25	2,453	4.0	4,360
4/23/2019 15:40	2.25	3,398	2.25	3,398	4.0	6,040
4/24/2019 10:00	2.25	5,873	2.25	5,873	4.0	10,440
4/24/2019 14:51	2.25	6,527	2.25	6,527	4.0	11,604
4/25/2019 9:03	2.25	8,984	2.25	8,984	4.0	15,972
4/26/2019 13:10	2.25	12,780	2.25	12,780	4.0	22,720
4/27/2019 10:15	2.25	15,626	2.25	15,626	4.0	27,780
4/28/2019 10:00	2.25	18,833	2.25	18,833	4.0	33,480
Wet Respiration Testing						
6/20/2019 13:45	2.25	0	2.25	0	4.0	0
6/21/2019 9:28	2.25	2,662	2.25	2,662	4.0	4,732
6/22/2019 15:35	2.25	6,728	2.25	6,728	4.0	11,960
6/23/2019 13:30	2.25	9,686	2.25	9,686	4.0	17,220
6/24/2019 11:00	2.25	12,589	2.25	12,589	4.0	22,380
6/25/2019 9:15	2.25	15,593	2.25	15,593	4.0	27,720
6/26/2019 8:20	2.25	18,709	2.25	18,709	4.0	33,260

Table 4-28
Bioventing Respiration Pilot Test Air Injection Summary - SVMW-11

Well ID	SVMW-11-100		SVMW-11-250		SVMW-11-260	
Pore Volume ^a (ft ³)	4,500		4,278		8,036	
Target Air Injection Volume ^b (ft ³)	18,002		17,111		32,146	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
Long-Term Bioventing Pilot Test						
10/7/2019 8:30	3.3	0	2.5	0	3.0	0
10/8/2019 11:45	3.3	5,396	2.5	4,088	3.0	4,905
10/9/2019 11:52	3.3	10,171	2.5	7,705	3.0	9,246
10/15/2019 13:02	3.3	38,914	2.5	29,480	3.0	35,376
10/22/2019 11:54	3.3	71,953	2.5	54,510	3.0	65,412
10/31/2019 11:43	3.3	114,685	2.5	86,883	3.0	104,259
11/5/2019 11:41	3.3	138,438	2.5	104,878	3.0	125,853
1/6/2020 9:00	0.0	432,531	0.0	327,675	0.0	393,210
1/13/2020 11:10	3.3	432,531	2.5	327,675	3.0	393,210
2/18/2020 13:00	3.3	603,966	2.5	457,550	3.0	549,060
3/30/2020 10:11	3.3	798,240	2.5	604,727	3.0	725,673
3/30/2020 10:11	0	798,240	0.0	604,727	0.0	725,673
4/7/2020 15:00	3.3	798,240	2.5	604,727	3.0	725,673
5/5/2020 9:02	3.3	930,115	2.5	704,632	3.0	845,559
5/28/2020 9:05	3.3	1,039,421	2.5	787,440	3.0	944,928
6/22/2020 7:31	3.3	1,157,911	2.5	877,205	3.0	1,052,646
6/22/2020 7:31	0.0	1,157,911	0.0	877,205	0.0	1,052,646
7/2/2020 7:08	3.3	1,157,911	2.5	877,205	3.0	1,052,646
7/31/2020 7:53	3.3	1,295,867	2.5	981,718	3.0	1,178,061
8/31/2020 8:30	3.3	1,443,301	2.5	1,093,410	3.0	1,312,092
9/21/2020 7:50	3.3	1,542,961	2.5	1,168,910	3.0	1,402,692

Table 4-28
Bioventing Respiration Pilot Test Air Injection Summary - SVMW-11

Well ID	SVMW-11-100		SVMW-11-250		SVMW-11-260	
Pore Volume ^a (ft ³)	4,500		4,278		8,036	
Target Air Injection Volume ^b (ft ³)	18,002		17,111		32,146	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
9/21/2020 7:50	0.0	1,542,961	0.0	1,168,910	0.0	1,402,692
9/30/2020 12:45	3.3	1,542,961	2.5	1,168,910	3.0	1,402,692
10/29/2020 9:47	3.3	1,680,182	2.5	1,272,865	3.0	1,527,438
11/19/2020 9:41	3.3	1,779,954	2.5	1,348,450	3.0	1,618,140

^a Pore volume is the test cell pore volume as determined from Table 2 in the Bioventing Respiration Pilot Test Injection Design in the Bioventing Respiration Pilot Testing Procedure (Kirtland AFB, 2018).

^b Target volume is the target volume for air injection, approximately 4 times the pore volume.

Bioventing blowers were turned off on January 6, 2020 to assess oxygen utilization rates. The blowers were restarted on January 13, 2020.

Bioventing blowers were turned off on March 30, 2020 to assess oxygen utilization rates. The blowers were restarted on April 7, 2020.

Bioventing blowers were turned off on June 22, 2020 to assess oxygen utilization rates. The blowers were restarted on July 2, 2020.

Bioventing blowers were turned off on September 21, 2020 to assess oxygen utilization rates. The blowers were restarted on September 30, 2020.

ft³ = cubic feet

ID = identification

in-WC = inches of water column

scfm = standard cubic feet per minute

Kirtland AFB, 2018. *Bioventing Respiration Pilot Testing Procedure, Rev.0*. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE-Albuquerque District Contract No. W9128F-

Table 4-29
Bioventing Respiration Pilot Test Air Injection Summary - SVEWs

Well ID	SVEW-01-260		SVEW-02/03-160		SVEW-04/05-313	
Pore Volume ^a (ft ³)	8,902		9,644		8,655	
Target Air Injection Volume ^b (ft ³)	35,608		38,575		34,619	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
Dry Respiration Testing						
4/22/2019 14:50	5.0	0	5.5	0	5.0	0
4/22/2019 15:15	5.0	125	5.5	137	5.0	125
4/23/2019 8:30	5.0	125	5.5	137	5.0	125
4/23/2019 13:30	5.0	1,625	5.5	1,788	5.0	1,625
4/24/2019 10:05	5.0	7,800	5.5	8,580	5.0	7,800
4/24/2019 15:00	5.0	9,275	5.5	10,203	5.0	9,275
4/25/2019 10:25	5.0	15,100	5.5	16,610	5.0	15,100
4/26/2019 13:15	5.0	23,150	5.5	25,465	5.0	23,150
4/27/2019 10:20	5.0	29,475	5.5	32,423	5.0	29,475
4/28/2019 10:10	5.0	36,625	5.5	40,287	5.0	36,625
Wet Respiration Testing						
6/21/2019 9:10	5.0	0	5.5	0	5.0	0
6/22/2019 15:40	5.0	9,150	5.5	10,065	5.0	9,150
6/23/2019 13:25	5.0	15,675	5.5	17,243	5.0	15,675
6/24/2019 11:10	5.0	22,200	5.5	24,420	5.0	22,200
6/25/2019 9:30	5.0	28,900	5.5	31,790	5.0	28,900
6/26/2019 8:25	5.0	35,775	5.5	39,353	5.0	35,775

Table 4-29
Bioventing Respiration Pilot Test Air Injection Summary - SVEWs

Well ID	SVEW-01-260		SVEW-02/03-160		SVEW-04/05-313	
Pore Volume ^a (ft ³)	8,902		9,644		8,655	
Target Air Injection Volume ^b (ft ³)	35,608		38,575		34,619	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
Long-Term Bioventing Pilot Test						
10/7/2019 8:30	12.0	0	15.0	0	10.0	0
10/8/2019 11:45	12.0	19,620	15.0	0	10.0	16,350
10/9/2019 11:52	12.0	36,984	15.0	21,705	10.0	30,820
10/15/2019 13:02	12.0	141,504	15.0	152,355	10.0	117,920
10/22/2019 11:54	12.0	261,648	15.0	302,535	10.0	218,040
10/31/2019 11:43	12.0	417,036	15.0	496,770	10.0	347,530
11/5/2019 11:41	12.0	503,412	15.0	604,740	10.0	419,510
1/6/2020 9:00	0.0	1,572,840	0.0	1,941,525	0.0	1,310,700
1/13/2020 11:10	12.0	1,572,840	15.0	1,941,525	10.0	1,310,700
2/18/2020 13:02	12.0	2,196,264	15.0	2,720,805	10.0	1,830,220
3/30/2020 10:07	12.0	2,902,644	15.0	3,603,780	10.0	2,418,870
3/30/2020 10:07	0.0	2,902,644	0.0	3,603,780	0.0	2,418,870
4/7/2020 15:00	12.0	2,902,644	15.0	3,603,780	10.0	2,418,870
5/5/2020 9:05	12.0	3,382,224	15.0	4,203,255	10.0	2,818,520
5/28/2020 9:11	12.0	3,779,736	15.0	4,700,145	10.0	3,149,780
6/22/2020 7:35	12.0	4,210,584	15.0	5,238,705	10.0	3,508,820
6/22/2020 7:35	0.0	4,210,584	0.0	5,238,705	0.0	3,508,820
7/2/2020 7:11	12.0	4,210,584	15.0	5,238,705	10.0	3,508,820
7/31/2020 8:00	12.0	4,712,292	15.0	5,865,840	10.0	3,926,910
8/31/2020 8:30	12.0	5,248,332	15.0	6,535,890	10.0	4,373,610
9/21/2020 7:52	12.0	5,610,756	15.0	6,988,920	10.0	4,675,630
9/21/2020 7:52	0.0	5,610,756	0.0	6,988,920	0.0	4,675,630

Table 4-29
Bioventing Respiration Pilot Test Air Injection Summary - SVEWs

Well ID	SVEW-01-260		SVEW-02/03-160		SVEW-04/05-313	
Pore Volume ^a (ft ³)	8,902		9,644		8,655	
Target Air Injection Volume ^b (ft ³)	35,608		38,575		34,619	
Date and Time	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)	Flow Rate (scfm)	Total Volume Injected (ft ³)
9/30/2020 12:45	12.0	5,610,756	15.0	6,988,920	10.0	4,675,630
10/29/2020 10:11	12.0	6,110,028	15.0	7,613,010	10.0	5,091,690
11/19/2020 9:42	12.0	6,472,560	15.0	8,066,175	10.0	5,393,800

^a Pore volume is the test cell pore volume as determined from Table 2 in the Bioventing Respiration Pilot Test Injection Design in the Bioventing Respiration Pilot Testing Procedure (Kirtland AFB, 2018).

^b Target volume is the target volume for air injection, approximately 4 times the pore volume.

On October 7, 2019 at 1330, the flowmeter to SVEW-02/03-160 was damaged. Air injection on that well was shut off.

On October 8, 2019 at 0720, the flowmeter was repaired and air injection was resumed.

Bioventing blowers were turned off on January 6, 2020 to assess oxygen utilization rates. The blowers were restarted on January 13, 2020.

Bioventing blowers were turned off on March 30, 2020 to assess oxygen utilization rates. The blowers were restarted on April 7, 2020.

Bioventing blowers were turned off on June 22, 2020 to assess oxygen utilization rates. The blowers were restarted on July 2, 2020.

Bioventing blowers were turned off on September 21, 2020 to assess oxygen utilization rates. The blowers were restarted on September 30, 2020.

ft³ = cubic feet

ID = identification

in-WC = inches of water column

NM = not measured

scfm = standard cubic feet per minute

Kirtland AFB, 2018. *Bioventing Respiration Pilot Testing Procedure, Rev.0*. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE-Albuquerque District Contract No. W9128F-13-D-0006.

Table 4-30
Bioventing Pilot Test Wellhead Pressure Response

Dry Respiration Test												
Well ID	KAFB-106V1-102	KAFB-106V1-113	KAFB-106V1-160	KAFB-106V1-217	KAFB-106V1-252	KAFB-106V1-263	KAFB-106V2-102	KAFB-106V2-117	KAFB-106V2-160	KAFB-106V2-217	KAFB-106V2-252	KAFB-106V2-270
Date and Time	Wellhead Pressure Response ^a (in-WC)											
4/24/19 10:10	0.0	0.0	-0.5	-0.5	-0.5	-0.5	0.0	0.0	0.0	0.0	0.0	0.0
4/24/19 15:15	0.5	0.5	0.6	0.5	0.7	0.7	0.0	0.5	0.6	0.6	0.9	0.7
4/25/19 11:30	0.0	0.0	-0.6	-0.7	-0.5	-0.5	0.0	0.0	-0.6	-0.8	-0.6	-0.7
4/26/19 15:20	0.9	1.2	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	0.0	0.0
4/27/19 10:25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4/28/19 10:15	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.7	0.5	0.7	0.7
Wet Respiration Test												
Well ID	KAFB-106V1-102	KAFB-106V1-113	KAFB-106V1-160	KAFB-106V1-217	KAFB-106V1-252	KAFB-106V1-263	KAFB-106V2-102	KAFB-106V2-117	KAFB-106V2-160	KAFB-106V2-217	KAFB-106V2-252	KAFB-106V2-270
Date and time	Wellhead Pressure Response ^a (in-WC)											
6/21/19 9:50	0.5	0.6	0.8	0.7	0.8	0.8	0.5	0.5	0.9	0.8	1.0	0.9
6/22/19 15:50	1.0	1.0	1.4	1.4	1.5	1.5	0.8	0.8	1.5	1.4	1.4	1.5
6/23/19 13:40	0.7	0.6	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
6/24/19 11:10	0.0	0.0	-0.9	-1.0	-0.9	-0.9	0.0	0.0	-0.9	-1.1	-0.8	-1.0
6/25/19 9:38	0.0	0.0	-0.7	-0.9	-0.7	-0.7	0.0	0.0	-0.7	-0.9	-0.6	-0.8
6/26/19 8:28	0.0	0.0	-1.3	-1.4	-1.4	-1.5	0.0	-0.5	-1.5	-1.4	-1.4	-1.5
Long-Term Bioventing Pilot Test												
Well ID	KAFB-106V1-102	KAFB-106V1-113	KAFB-106V1-160	KAFB-106V1-217	KAFB-106V1-252	KAFB-106V1-263	KAFB-106V2-102	KAFB-106V2-117	KAFB-106V2-160	KAFB-106V2-217	KAFB-106V2-252	KAFB-106V2-270
Date and time	Wellhead Pressure Response ^a (in-WC)											
10/7/19 12:42	0.8	1.2	-1.7	-1.5	-1.3	-1.3	0.0	0.0	-1.6	-1.3	-1.0	-1.2
10/8/19 12:21	0.0	0.0	0.7	0.6	-0.8	0.6	0.0	0.5	1.1	0.9	1.1	1.0
10/9/19 12:03	0.8	1.0	2.4	2.3	2.5	2.5	0.6	0.0	2.6	2.3	2.6	2.6
10/15/19 9:23	0.0	0.0	-1.4	-1.2	-1.2	-1.1	0.0	0.0	-0.5	-0.8	0.0	0.0
10/22/19 8:25	0.0	0.0	-2.1	-2.1	-2.0	-2.0	0.0	0.0	-2.0	-2.2	-1.7	-1.7
10/31/19 8:09	0.0	0.0	-3.5	-3.5	-3.3	-3.2	0.0	0.0	-2.4	-3.3	-3.0	-3.0
11/5/19 8:13	0.0	0.0	-0.9	-0.6	-0.9	-0.7	0.0	0.0	0.0	-0.5	0.0	0.0
2/18/20 11:43	0.5	0.0	-0.7	-0.6	-0.5	0.0	0.0	0.0	-0.6	-0.9	-0.7	-0.7
5/5/20 7:47	-0.7	-0.7	-2.3	-2.3	-2.3	-2.3	-0.6	-0.6	-1.9	-2.1	-1.9	-1.9
5/28/20 7:56	0.0	0.0	-1.4	-1.4	-1.4	-1.4	0.0	0.0	-1.5	-1.7	-1.4	-1.4
7/31/20 8:18	0.0	0.0	-1.5	-1.5	-1.5	-1.5	0.0	-0.5	-1.4	-1.6	-1.3	-1.2
8/31/20 7:37	0.0	0.0	0.6	0.0	0.7	0.7	0.0	0.0	0.7	0.0	0.8	0.8
10/29/20 8:41	0.0	0.0	-2.8	-2.8	-2.7	-2.7	-0.7	-0.9	-3.0	-3.4	-3.1	-3.1
11/19/20 8:43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

^aNegative values indicate vacuum was observed in the well.
Wellhead pressure reading for the long-term bioventing pilot test were collected during times when the bioventing blowers were **operating**.
ID = identification
in-WC = inches of water column

Table 4-31
Bioventing Respiration Pilot Test Water Injection Summary

Well ID		SVMW-10-100	SVMW-10-150	SVMW-10-250	SVMW-11-100	SVMW-11-250	SVMW-11-260	SVEW-01	SVEW-02/03-160	SVEW-04/05-313
Target Volume ^a (gallons)		331	361	375	337	320	601	666	721	647
Date	Batch Number	Batch Volume ^{b,c} (gallons)								
5/23/2019	1	-	-	-	75	200	200	-	-	-
	2	-	-	-	125	125	250	-	-	-
5/24/2019	1	-	-	-	150	-	175	-	-	-
	2	200	125	200	-	-	-	-	-	-
	3	150	250	175	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	650
	5	-	-	-	-	-	-	675	-	-
	6	-	-	-	-	-	-	-	725	-
Total Volume		350	375	375	350	325	625	675	725	650

^a The target volume is the added moisture volume specified in Table 2 of the approved Bioventing Respiration Testing Procedure (Kirtland AFB, 2018).

^b Water injection was performed in batches using 250-gallon graduated polyethylene totes located at the well head.

^c The batch volume is the fluid volume placed in the polyethylene tote.

- = not applicable

ID = identification

Kirtland AFB, 2018. *Bioventing Respiration Pilot Testing Procedure, Rev.0*. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE-Albuquerque District Contract No. W9128F-13-D-0006. September.

Table 4-32
Long-Term Bioventing Flow Design

Injection Well	Screened Interval (ft bgs)	Screen Length (ft)	Screen Diameter (in.)	Casing Volume (cubic ft)	Filter Pack Thickness (ft)	Control Radius (ft)	Control Area (square ft)	Control Cell Pore Volume (cubic ft)	Total Volume Injected (cubic ft)¹
SVMW-11-100	100-102.5	2.5	0.5	0.140	8.2	70	15,400	37,884	138,438
SVMW-11-250	250-252.5	2.5	0.5	0.344	7.3	70	15,400	33,726	104,878
SVMW-11-260	260-262.5	2.5	0.5	0.358	22.5	70	15,400	103,950	125,853
SVEW-01-260	245-260	15	4	22.678	26	70	15,400	120,120	503,412
SVMW-10-100	100-102.5	2.5	0.5	0.140	7.9	70	15,400	36,498	104,870
SVMW-10-150	150-152.5	2.5	0.5	0.208	9.5	70	15,400	43,890	83,896
SVMW-10-250	250-252.5	2.5	0.5	0.344	10.3	70	15,400	47,586	117,454
SVMW-02/03-160	145-160	15	2	3.489	29	70	15,400	133,980	604,740
SVEW-04/05-313	298-313	15	2	6.825	25	70	15,400	115,500	419,510

¹ = Total injected volume during the long-term bioventing pilot test as of November 5, 2019

Control cell volume is calculated using a venting thickness equivalent to the filter pack thickness

Assumed porosity = 30% (KAFB-106V air filled porosity = 32.6%, KAFB-106V2 air filled porosity = 21.4%)

Control radius is equal to the farthest distance between injection and observation wells

bgs = below ground surface

ft = foot/feet

in. = inch(es)

Table 5-1
Summary of Soil Analytical Moisture Content

Depth (ft bgs)	Soil Moisture Content ¹ and Soil Classification ²	
	KAFB-106V1	KAFB-106V2
20	NS	NS
40	NS	NS
50	NS	NS
61	5.3 (ML)	NS
80	NS	9.2 (ML)
102	NS	NS
103	NS	2.9 (SP)
105	NS	NS
110	NS	NS
115	14.3 (CL)	NS
117	NS	11.8 (ML)
120	NS	NS
122	31.1 (FS) ³	28.8 (FS) ³
131	3.5 (SP)	NS
140	NS	NS
144	NS	20.3 ⁴
147	3.9 (SW)	NS
158	14.3 (FS) ³	NS
159	NS	8.4 (SW)
160	NS	NS
161	24.1 (CL)	NS
162	12.9 (FS) ³	NS
164	8.5 (FS) ³	NS
174	NS	NS
194	NS	14.9 (MS) ³
199	NS	NS
208	NS	NS
210	NS	NS
215	NS	3.1 (SP)
216	3.4 (SW)	NS
240	NS	NS
252	NS	NS
254	22.2 (SP)	4.4 (SP)
260	NS	NS
270	NS	19.9 (CL)
271	19.6 (CL)	NS
278	NS	NS
279	NS	NS
285	3.3 (SP/SM)	NS
287	NS	6.5 (SP/SM)

Table 5-1
Summary of Soil Analytical Moisture Content

Depth (ft bgs)	Soil Moisture Content ¹ and Soil Classification ²	
	KAFB-106V1	KAFB-106V2
Minimum	3.3	2.9
Maximum	31.1	28.8
Average	12.8	11.8

Soil samples were collected using the sonic drilling method from various depths below ground surface under significant overburden pressures. As a result, the samples should be considered disturbed and may not be representative of the in-situ density of the sample. It is also likely that the moisture contents of saturated sand and gravel samples collected below the water table have been biased low due to gravity drainage within the sample bags.

¹Moisture content is gravimetric moisture content (mass of water /mass of solids) expressed in

²Classification taken from Lithologic Well Logs.

³Core interval was not logged in the field. Core bag was kept sealed before being sent directly to the laboratory for ultraviolet analysis. Mean grain size is shown.

⁴Core interval was not logged in the field. Core bag was kept sealed before being sent directly to the laboratory for analysis. USCS/Mean grain size not shown.

Color Code:

TestAmerica, Inc. (analysis performed by ASTM International D2216-90)

[PTS Laboratories, Inc.](#) (analysis performed by ASTM 2216-90)

[Daniel B. Stephens and Associates](#) (analysis performed by ASTM International D2216-90)

bgs = below ground surface

CL = clay

FS = fine sand

ft = foot/feet

ML = silt

MS = medium sand

NS = Not Sampled

SM = silty sand

SP = poorly graded sand

SW = well graded sand

USCS = Unified Soil Classification System

Table 5-2
Respiration Testing Operational Parameter Summary

Well ID	Oxygen Utilization Rate (% per day)		Biodegradation Rate (mg/kg/day)		Oxygen Demand Flow Rate (scfm)		Oxygen Radius of Influence (ft)		Long-Term Operational Flow Rate (scfm)	
	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
SVMW-10-100	0.40	0.27	0.24	0.16	0.64	0.42	138	144	2.5	1.8
SVMW-10-150	0.25	0.25	0.15	0.15	0.49	0.48	142	142	2.0	2.0
SVMW-10-250	0.33	0.29	0.20	0.17	0.69	0.61	141	142	2.8	2.5
SVMW-11-100	0.48	0.52	0.28	0.31	0.79	0.86	143	141	3.3	3.5
SVMW-11-250	0.42	0.37	0.25	0.22	0.61	0.55	142	144	2.5	2.3
SVMW-11-260	0.16	0.14	0.10	0.08	0.74	0.62	141	140	3.0	2.5
SVEW-01-260	0.55	0.02	0.33	0.01	2.90	0.11	143	152	12.0	0.5
SVEW-02/03-160	0.64	0.63	0.38	0.37	3.74	3.66	140	142	15.0	15.0
SVEW-04/05-313	0.50	0.36	0.29	0.23	2.50	1.81	140	147	10.0	8.0
Minimum	0.16	0.02	0.10	0.01						
Maximum	0.64	0.63	0.38	0.37						
Average	0.41	0.32	0.25	0.19						

% = percent

cm = centimeter

ft = foot/feet

ID = Identification

mg = milligram(s)

kg = kilogram(s)

NC = not calculated

scfm = standard cubic feet per minute

Table 5-3
Long-Term Bioventing Respiration Parameter Summary

Respirometry Parameters								
Well ID	Oxygen Utilization Rate (% per day)				Biodegradation Rate (mg/kg/day)			
	Q4 2019 (Jan 20)	Q1 2020 (Mar-Apr 20)	Q2 2020 (June 20)	Q3 2020 (Sep 20)	Q4 2019 (Jan 20)	Q1 2020 (Mar-Apr 20)	Q2 2020 (June 20)	Q3 2020 (Sep 20)
KAFB-106V1-102	0.03	0.09	0.05	0.01	0.02	0.05	0.03	0.01
KAFB-106V1-113	0.13	0.13	0.10	0.08	0.08	0.07	0.06	0.05
KAFB-106V1-160	0.15	0.13	0.12	0.12	0.09	0.08	0.07	0.07
KAFB-106V1-217	0.18	0.31	0.08	0.14	0.11	0.18	0.04	0.08
KAFB-106V1-252	0.09	0.09	0.06	0.04	0.06	0.05	0.04	0.03
KAFB-106V1-263	0.12	0.09	0.06	0.01	0.07	0.05	0.04	0.01
KAFB-106V2-102	0.07	0.13	0.05	0.02	0.04	0.08	0.03	0.01
KAFB-106V2-117	0.81	0.10	0.15	-0.37*	0.48	0.06	0.09	NC
KAFB-106V2-160	0.15	0.11	0.09	0.11	0.09	0.06	0.05	0.06
KAFB-106V2-217	0.10	0.09	0.08	0.06	0.06	0.05	0.05	0.03
KAFB-106V2-252	0.12	0.08	0.06	0.06	0.07	0.05	0.03	0.03
KAFB-106V2-270	0.17	0.14	0.08	0.04	0.10	0.09	0.05	0.02
Minimum	0.03	0.08	0.05	0.01	0.02	0.05	0.03	0.01
Maximum	0.81	0.31	0.15	0.14	0.48	0.18	0.09	0.08
Average	0.18	0.12	0.08	0.06	0.11	0.07	0.05	0.04

The oxygen utilization rate for well KAFB-106V2-117 was negative during the September 2020 respiration testing. This data is not valid and is excluded from calculations.

* Excluded from average

kg = kilogram

mg - miligram

NC = Not calculated

Q1 = 1st quarter

% = percent

Table 5-4
Long-Term Bioventing Injection Parameter Summary

Injection Parameters								
Well ID	Oxygen Demand Flow Rate (scfm)				Oxygen Radius of Influence (ft)			
	Q4 2019 (Jan 20)	Q1 2020 (Mar-Apr 20)	Q2 2020 (June 20)	Q3 2020 (Sep 20)	Q4 2019 (Jan 20)	Q1 2020 (Mar-Apr 20)	Q2 2020 (June 20)	Q3 2020 (Sep 20)
SVMW-10-100	0.29	0.19	0.13	0.10	207	253	310	358
SVMW-10-150	0.35	0.23	0.15	0.12	169	206	253	292
SVMW-10-250	0.37	0.25	0.17	0.12	192	235	287	332
SVMW-11-100	0.30	0.20	0.13	0.10	233	286	350	404
SVMW-11-250	0.27	0.18	0.12	0.09	215	263	323	372
SVMW-11-260	0.82	0.54	0.36	0.27	134	164	201	232
SVEW-01-260	0.94	0.63	0.42	0.31	250	306	374	432
SVEW-02/03-160	1.05	0.70	0.47	0.35	264	324	396	458
SVEW-04/05-313	0.91	0.61	0.40	0.30	232	285	349	403
Minimum	0.27	0.18	0.12	0.09	134	164	201	232
Maximum	1.05	0.70	0.47	0.35	264	324	396	458
Average	0.59	0.39	0.26	0.20	211	258	316	365

Injection parameters were cacluated using the average oxygen utilization rates calcauted from the observation wells (KAFB-106V1 and KAFB-106V2.

ft = foot/feet

ID = Identification

scfm = Standard cubic feet per minute

Table 6-1
Summary of Hydrocarbon Analytical Results

Well ID	Sample Event	Sample Date	Analyte													
			1,2-Dibromoethane (EDB)		Benzene		Ethylbenzene		Toluene		Xylenes, Total		Total BTEX		TPH-GRO (C6-C10)	
			$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$	
			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
KAFB-106V1-102	Baseline	4/10/2019	3,800	J	2,100,000	--	170,000	--	1,900,000	--	350,000	--	4,520,000	--	120,000,000	--
	Post-Dry Respirometry	5/9/2019	3,500	J	2,300,000	--	280,000	--	2,100,000	--	610,000	--	5,290,000	--	120,000,000	--
	Post-Wet Respirometry	7/5/2019	3,100	J	2,000,000	--	190,000	J	1,800,000	--	400,000	J	4,390,000	J	110,000,000	--
	Long-Term Bioventing	10/15/2019	< 19000	U	2,300,000	--	180,000	--	1,900,000	--	370,000	--	4,750,000	--	130,000,000	--
		10/22/2019	43	R	12,000	R	3,500	R	21,000	R	9,100	R	45,600	R	1,100,000	R
		10/31/2019	3,100	J	2,200,000	--	120,000	--	1,600,000	--	200,000	--	4,120,000	--	120,000,000	--
		11/5/2019	4,500	J	2,300,000	J	230,000	J	2,100,000	J	450,000	J	5,080,000	J	130,000,000	--
		1/13/2020	3,600	J	2,300,000	J	160,000	J	1,800,000	J	320,000	J	4,580,000	J	130,000,000	--
		4/6/2020	4,500	J	2,300,000	--	160,000	--	1,900,000	--	350,000	--	4,710,000	--	140,000,000	--
		6/30/2020	4,900	J	2,500,000	--	190,000	--	2,000,000	--	420,000	--	5,110,000	--	120,000,000	--
		9/29/2020	3,900	--	2,000,000	--	150,000	--	1,700,000	--	310,000	--	4,160,000	--	110,000,000	--
KAFB-106V1-113	Baseline	4/10/2019	3,800	J	1,600,000	--	190,000	--	1,700,000	--	410,000	--	3,900,000	--	120,000,000	--
	Post-Dry Respirometry	5/9/2019	2,800	J	1,400,000	--	200,000	--	1,500,000	--	420,000	--	3,520,000	--	74,000,000	--
	Post-Wet Respirometry	7/5/2019	5,000	J	1,500,000	--	220,000	J	2,200,000	--	460,000	J	4,380,000	J	110,000,000	--
	Long-Term Bioventing	10/15/2019	5,800	J	2,900,000	J	270,000	J	3,100,000	J	560,000	J	6,830,000	J	140,000,000	--
		10/22/2019	16	R	1,900	R	1,300	R	5,400	R	3,200	R	11,800	R	270,000	R
		10/31/2019	4,600	J	2,300,000	--	120,000	--	1,900,000	--	200,000	--	4,520,000	--	120,000,000	--
		11/5/2019	6,900	--	2,500,000	--	250,000	--	2,700,000	--	480,000	--	5,930,000	--	130,000,000	--
		1/13/2020	4,300	J	1,900,000	--	160,000	--	1,800,000	--	320,000	--	4,180,000	--	150,000,000	--
		4/6/2020	5,800	J	2,300,000	--	190,000	--	2,300,000	--	400,000	--	5,190,000	--	160,000,000	--
		6/30/2020	8,100	J	2,600,000	--	240,000	--	2,700,000	--	510,000	--	6,050,000	--	140,000,000	--
		9/29/2020	8,800	--	3,200,000	--	240,000	--	3,200,000	--	470,000	--	7,110,000	--	130,000,000	--
KAFB-106V1-160	Baseline	4/10/2019	2,800	J	1,300,000	--	280,000	--	2,200,000	--	790,000	--	4,570,000	--	110,000,000	--
	Post-Dry Respirometry	5/9/2019	2,600	J	1,600,000	--	390,000	--	2,800,000	--	1,200,000	--	5,990,000	--	130,000,000	--
	Post-Wet Respirometry	7/5/2019	2,700	J	1,600,000	J	330,000	J	1,800,000	J	920,000	J	4,650,000	J	130,000,000	--
	Long-Term Bioventing	10/15/2019	3,400	J	2,100,000	--	430,000	--	3,500,000	--	1,300,000	--	7,330,000	--	120,000,000	--
		10/22/2019	< 49	R	1,900	R	3,000	R	9,600	R	11,000	R	25,500	R	520,000	R
		10/31/2019	1,800	J	1,200,000	--	190,000	--	2,000,000	--	460,000	--	3,850,000	--	70,000,000	--
		11/5/2019	2,600	J	1,500,000	J	360,000	J	3,000,000	J	960,000	J	5,820,000	J	110,000,000	--
		1/13/2020	1,700	J	1,100,000	J	280,000	J	2,200,000	J	780,000	J	4,360,000	J	92,000,000	--
		4/6/2020	1,600	J	850,000	--	280,000	--	2,100,000	--	780,000	--	4,010,000	--	77,000,000	--
		6/30/2020	1,700	J	450,000	--	310,000	--	1,600,000	--	920,000	--	3,280,000	--	56,000,000	--
		9/29/2020	1,300	J	240,000	--	220,000	--	1,300,000	--	580,000	--	2,340,000	--	34,000,000	--

Table 6-1
Summary of Hydrocarbon Analytical Results

Well ID	Sample Event	Sample Date	Analyte													
			1,2-Dibromoethane (EDB)		Benzene		Ethylbenzene		Toluene		Xylenes, Total		Total BTEX		TPH-GRO (C6-C10)	
			µg/m ³		µg/m ³		µg/m ³		µg/m ³		µg/m ³		µg/m3		µg/m ³	
			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
KAFB-106V1-217	Baseline	4/10/2019	4,500	--	1,700,000	--	460,000	--	4,200,000	--	1,800,000	--	8,160,000	--	160,000,000	--
	Post-Dry Respirometry	5/9/2019	3,000	J	1,600,000	--	360,000	--	3,400,000	J	1,400,000	--	6,760,000	--	170,000,000	--
	Post-Wet Respirometry	7/5/2019	4,400	J	1,600,000	--	470,000	J	3,200,000	J	1,800,000	J	7,070,000	J	170,000,000	--
	Long-Term Bioventing	10/15/2019	4,400	J	2,400,000	J	590,000	J	5,600,000	J	2,300,000	J	10,890,000	J	160,000,000	--
		10/22/2019	< 51	R	92	R	170	R	510	R	840	R	1,612	R	30,000	R
		10/31/2019	330	J	180,000	--	46,000	--	420,000	--	170,000	--	816,000	--	20,000,000	--
		11/5/2019	2,000	J	770,000	--	170,000	--	2,000,000	--	590,000	--	3,530,000	--	57,000,000	--
		1/13/2020	ND	U	1,200,000	--	350,000	--	2,800,000	--	1,400,000	--	5,750,000	--	140,000,000	--
		4/6/2020	3,900	J	1,600,000	J	370,000	J	4,100,000	J	1,400,000	J	7,470,000	J	110,000,000	--
		6/30/2020	4,300	J	1,300,000	--	390,000	--	3,900,000	--	1,700,000	--	7,290,000	--	92,000,000	--
		9/29/2020	3,100	J	720,000	--	300,000	--	2,700,000	--	1,200,000	--	4,920,000	--	85,000,000	--
KAFB-106V1-252	Baseline	4/10/2019	18,000	--	870,000	--	400,000	--	5,400,000	--	1,500,000	--	8,170,000	--	140,000,000	--
	Post-Dry Respirometry	5/9/2019	12,000	--	810,000	--	360,000	--	4,200,000	J	1,400,000	--	6,770,000	J	150,000,000	--
	Post-Wet Respirometry	7/5/2019	18,000	J	800,000	--	470,000	J	4,200,000	J	1,800,000	J	7,270,000	J	150,000,000	--
	Long-Term Bioventing	10/15/2019	22,000	--	1,400,000	--	600,000	--	7,500,000	--	2,400,000	--	11,900,000	--	150,000,000	--
		10/22/2019	21,000	--	1,300,000	--	450,000	--	6,900,000	--	1,700,000	--	10,350,000	--	160,000,000	--
		10/31/2019	10,000	--	880,000	--	160,000	--	3,400,000	--	500,000	--	4,940,000	--	96,000,000	--
		11/5/2019	24,000	--	1,300,000	--	440,000	--	6,500,000	--	1,500,000	--	9,740,000	--	140,000,000	--
		1/13/2020	18,000	--	1,200,000	--	330,000	--	5,300,000	--	1,100,000	--	7,930,000	--	100,000,000	--
		4/6/2020	18,000	--	680,000	--	380,000	--	5,600,000	--	1,500,000	--	8,160,000	--	130,000,000	--
		6/30/2020	18,000	--	330,000	--	420,000	--	5,300,000	--	1,700,000	--	7,750,000	--	110,000,000	--
		9/29/2020	11,000	--	64,000	--	320,000	--	3,200,000	--	1,300,000	--	4,884,000	--	64,000,000	--
KAFB-106V1-263	Baseline	4/10/2019	23,000	--	920,000	--	410,000	--	6,400,000	--	1,400,000	--	9,130,000	--	160,000,000	--
	Post-Dry Respirometry	5/9/2019	15,000	--	840,000	--	320,000	--	4,700,000	J	1,100,000	--	6,960,000	--	160,000,000	--
	Post-Wet Respirometry	7/5/2019	24,000	J	780,000	J	460,000	J	5,500,000	J	1,500,000	J	8,240,000	J	150,000,000	--
	Long-Term Bioventing	10/15/2019	25,000	--	1,100,000	--	470,000	--	6,700,000	--	1,600,000	--	9,870,000	--	150,000,000	--
		10/22/2019	39,000	--	2,000,000	--	690,000	--	12,000,000	--	2,200,000	--	16,890,000	--	150,000,000	--
		10/31/2019	7,900	--	630,000	--	91,000	--	2,500,000	--	260,000	--	3,481,000	--	110,000,000	--
		11/5/2019	32,000	--	1,400,000	--	480,000	--	7,800,000	--	1,500,000	--	11,180,000	--	160,000,000	--
		1/13/2020	20,000	--	1,100,000	--	350,000	--	5,600,000	--	1,100,000	--	8,150,000	--	110,000,000	--
		4/6/2020	24,000	J	960,000	J	460,000	J	7,000,000	J	1,600,000	J	10,020,000	J	140,000,000	--
		6/30/2020	26,000	--	570,000	--	480,000	--	6,500,000	--	1,700,000	--	9,250,000	--	99,000,000	--
		9/29/2020	25,000	--	400,000	--	420,000	--	7,000,000	--	1,300,000	--	9,120,000	--	130,000,000	--

Table 6-1
Summary of Hydrocarbon Analytical Results

Well ID	Sample Event	Sample Date	Analyte													
			1,2-Dibromoethane (EDB)		Benzene		Ethylbenzene		Toluene		Xylenes, Total		Total BTEX		TPH-GRO (C6-C10)	
			µg/m ³		µg/m ³		µg/m ³		µg/m ³		µg/m ³		µg/m3		µg/m ³	
			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
KAFB-106V2-102	Baseline	4/11/2019	20,000	J	2,100,000	J	280,000	J	5,100,000	--	890,000	J	8,370,000	J	370,000,000	--
	Post-Dry Respirometry	5/9/2019	15,000	--	1,800,000	--	330,000	--	4,400,000	J	1,000,000	--	7,530,000	--	210,000,000	--
	Post-Wet Respirometry	7/5/2019	24,000	J	1,800,000	--	440,000	J	4,500,000	J	1,400,000	J	8,140,000	J	200,000,000	--
	Long-Term Bioventing	10/15/2019	37,000	J	3,200,000	J	630,000	J	8,700,000	J	2,000,000	J	14,530,000	J	170,000,000	--
		10/22/2019	25,000	J	2,900,000	J	420,000	J	7,500,000	J	1,300,000	J	12,120,000	J	210,000,000	--
		10/31/2019	12,000	J	2,200,000	--	120,000	--	3,700,000	--	340,000	--	6,360,000	--	140,000,000	--
		11/5/2019	32,000	--	3,200,000	--	520,000	--	7,800,000	--	1,600,000	--	13,120,000	--	220,000,000	--
		1/13/2020	17,000	J	2,000,000	--	230,000	--	4,100,000	--	660,000	--	6,990,000	--	200,000,000	--
		4/6/2020	29,000	J	2,900,000	J	450,000	J	7,000,000	J	1,400,000	J	11,750,000	J	200,000,000	--
		6/30/2020	22,000	--	2,200,000	--	390,000	--	5,500,000	--	1,300,000	--	9,390,000	--	200,000,000	--
		9/29/2020	24,000	--	3,000,000	--	400,000	--	6,700,000	--	1,200,000	--	11,300,000	--	160,000,000	--
KAFB-106V2-117	Baseline	4/11/2019	9,700	--	1,800,000	--	390,000	--	3,300,000	--	1,200,000	--	6,690,000	--	180,000,000	--
	Post-Dry Respirometry	5/9/2019	9,900	J	2,100,000	--	350,000	--	3,900,000	J	1,600,000	--	7,950,000	J	210,000,000	--
	Post-Wet Respirometry	7/5/2019	17,000	J	2,300,000	J	430,000	J	5,200,000	J	1,600,000	J	9,530,000	J	220,000,000	--
	Long-Term Bioventing	10/15/2019	19,000	J	3,600,000	J	540,000	J	7,000,000	J	1,900,000	J	13,040,000	J	240,000,000	--
		10/22/2019	21,000	--	3,900,000	--	450,000	--	7,500,000	--	1,500,000	--	13,350,000	--	230,000,000	--
		10/31/2019	9,000	J	2,700,000	--	150,000	--	3,400,000	--	460,000	--	6,710,000	--	150,000,000	--
		11/5/2019	21,000	--	4,200,000	--	510,000	--	7,500,000	--	1,700,000	--	13,910,000	--	250,000,000	--
		1/13/2020	9,800	J	2,400,000	J	220,000	J	3,700,000	J	650,000	J	6,970,000	J	240,000,000	--
		4/6/2020	23,000	J	4,900,000	--	640,000	--	8,800,000	--	2,200,000	--	16,540,000	--	230,000,000	--
		6/30/2020	18,000	J	4,000,000	--	500,000	--	7,000,000	--	1,600,000	--	13,100,000	--	240,000,000	--
		9/29/2020	21,000	--	4,400,000	--	500,000	--	7,800,000	--	1,600,000	--	14,300,000	--	270,000,000	--
KAFB-106V2-160	Baseline	4/11/2019	2,500	J	550,000	--	150,000	--	1,200,000	--	500,000	--	2,400,000	--	43,000,000	--
	Post-Dry Respirometry	5/9/2019	1,900	J	630,000	--	170,000	--	1,300,000	--	720,000	--	2,820,000	--	52,000,000	--
	Post-Wet Respirometry	7/5/2019	1,600	J	660,000	J	120,000	J	990,000	J	500,000	J	2,270,000	J	76,000,000	--
	Long-Term Bioventing	10/15/2019	1,000	J	290,000	--	95,000	--	730,000	--	400,000	--	1,515,000	--	54,000,000	--
		10/22/2019	890	--	110,000	--	82,000	--	610,000	--	360,000	--	1,162,000	--	19,000,000	--
		10/31/2019	800	J	57,000	J	66,000	J	380,000	J	290,000	J	793,000	J	22,000,000	--
		11/5/2019	880	--	34,000	--	71,000	--	340,000	--	310,000	--	755,000	--	20,000,000	--
		1/13/2020	300	J	31,000	--	38,000	--	140,000	--	160,000	--	369,000	--	14,000,000	--
		4/6/2020	270	J	8,000	--	63,000	--	120,000	--	260,000	--	451,000	--	6,900,000	--
		6/30/2020	ND	U	5,200	--	62,000	--	100,000	--	260,000	--	427,200	--	6,700,000	--
		9/29/2020	230	J	3,700	--	46,000	--	74,000	--	200,000	--	323,700	--	5,300,000	--

Table 6-1
Summary of Hydrocarbon Analytical Results

Well ID	Sample Event	Sample Date	Analyte													
			1,2-Dibromoethane (EDB)		Benzene		Ethylbenzene		Toluene		Xylenes, Total		Total BTEX		TPH-GRO (C6-C10)	
			µg/m ³		µg/m ³		µg/m ³		µg/m ³		µg/m ³		µg/m3		µg/m ³	
			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
KAFB-106V2-217	Baseline	4/11/2019	6,000	--	1,500,000	--	230,000	--	2,800,000	--	690,000	--	5,220,000	--	140,000,000	--
	Post-Dry Respirometry	5/9/2019	4,800	J	1,600,000	--	300,000	--	3,000,000	J	900,000	--	5,800,000	--	140,000,000	--
	Post-Wet Respirometry	7/5/2019	7,300	J	1,400,000	--	340,000	J	2,600,000	J	1,000,000	J	5,340,000	J	140,000,000	--
	Long-Term Bioventing	10/15/2019	8,700	J	2,200,000	--	430,000	--	4,200,000	--	1,300,000	--	8,130,000	--	160,000,000	--
		10/22/2019	7,200	J	2,400,000	J	360,000	J	4,400,000	J	1,000,000	J	8,160,000	J	150,000,000	--
		10/31/2019	5,600	J	2,200,000	--	190,000	--	3,300,000	--	490,000	--	6,180,000	--	120,000,000	--
		11/5/2019	7,700	J	1,900,000	J	390,000	J	3,900,000	J	1,200,000	J	7,390,000	J	150,000,000	--
		1/13/2020	5,400	J	1,600,000	J	230,000	J	2,700,000	J	670,000	J	5,200,000	J	130,000,000	--
		4/6/2020	7,500	J	2,500,000	J	430,000	J	4,800,000	J	1,300,000	J	9,030,000	J	150,000,000	--
		6/30/2020	6,200	J	1,700,000	--	320,000	--	3,200,000	--	1,000,000	--	6,220,000	--	150,000,000	--
		9/29/2020	4,600	--	1,400,000	--	250,000	--	2,600,000	--	780,000	--	5,030,000	--	150,000,000	--
KAFB-106V2-252	Baseline	4/11/2019	12,000	--	650,000	--	230,000	--	3,400,000	--	680,000	--	4,960,000	--	90,000,000	--
	Post-Dry Respirometry	5/9/2019	11,000	--	770,000	--	310,000	--	3,500,000	--	980,000	--	5,560,000	--	89,000,000	--
	Post-Wet Respirometry	7/5/2019	13,000	J	950,000	J	300,000	J	2,800,000	J	930,000	J	4,980,000	J	87,000,000	--
	Long-Term Bioventing	10/15/2019	13,000	J	980,000	--	320,000	--	4,000,000	--	1,000,000	--	6,300,000	--	98,000,000	--
		10/22/2019	15,000	--	1,100,000	--	320,000	--	4,400,000	--	990,000	--	6,810,000	--	88,000,000	--
		10/31/2019	10,000	J	760,000	J	140,000	J	2,900,000	J	400,000	J	4,200,000	J	74,000,000	--
		11/5/2019	18,000	J	940,000	J	390,000	J	4,200,000	J	1,200,000	J	6,730,000	J	94,000,000	--
		1/13/2020	8,400	J	330,000	J	150,000	J	2,600,000	J	440,000	J	3,520,000	J	66,000,000	--
		4/6/2020	14,000	--	110,000	--	310,000	--	4,200,000	--	940,000	--	5,560,000	--	52,000,000	--
		6/30/2020	20,000	--	13,000	--	500,000	--	4,300,000	--	1,600,000	--	6,413,000	--	42,000,000	--
		9/29/2020	8,400	--	1,800	--	250,000	--	1,500,000	--	770,000	--	2,521,800	--	34,000,000	--
KAFB-106V2-270	Baseline	4/11/2019	9,200	--	440,000	--	190,000	--	3,000,000	--	540,000	--	4,170,000	--	94,000,000	--
	Post-Dry Respirometry	5/9/2019	7,500	--	590,000	--	180,000	--	3,900,000	J	550,000	--	5,220,000	J	120,000,000	--
	Post-Wet Respirometry	7/5/2019	14,000	J	1,200,000	J	320,000	J	4,400,000	J	1,000,000	J	6,920,000	J	140,000,000	--
	Long-Term Bioventing	10/15/2019	14,000	J	980,000	--	290,000	--	4,700,000	--	960,000	--	6,930,000	--	130,000,000	--
		10/22/2019	20,000	J	1,500,000	J	390,000	J	7,200,000	J	1,200,000	J	10,290,000	J	110,000,000	--
		10/31/2019	12,000	--	1,200,000	--	210,000	--	4,500,000	--	600,000	--	6,510,000	--	86,000,000	--
		11/5/2019	14,000	--	980,000	--	280,000	--	4,400,000	--	870,000	--	6,530,000	--	110,000,000	--
		1/13/2020	16,000	J	260,000	J	310,000	J	5,600,000	J	990,000	J	7,160,000	J	75,000,000	--
		4/6/2020	17,000	--	52,000	--	320,000	--	4,700,000	--	1,000,000	--	6,072,000	--	55,000,000	--
		6/30/2020	12,000	--	29,000	--	280,000	--	1,900,000	--	990,000	--	3,199,000	--	42,000,000	--
		9/29/2020	7,500	--	17,000	--	280,000	--	860,000	--	940,000	--	2,097,000	--	27,000,000	--

µg/m³ = microgram per cubic meter
EDB = ethylene dibromide (1,2-dibromoethane)
GRO = gasoline range organics
ID = identification
TPH = total petroleum hydrocarbons
Val Qual = validation qualifiers
Val Quals based on independent data validation:
J = Qualifier denotes the analyte was positively identified, but the associated numerical value is estimated.
R = Qualifier denotes the data was rejected based on a data usability assessment and evaluation of data comparability to previous and subsequent data collected for the same well and intervals.
U = Qualifier denotes the analyte was analyzed but not detected above the detection limit. The value associated with the U-qualifier is the limit of detection.
-- = Validation qualifier not assigned.

Table 6-2
Observed Soil Vapor Anomalies

Quarterly Event	KAFB-106108-150		KAFB-106108-150		KAFB-106108-250		KAFB-106108-250		KAFB-106108-350		KAFB-106108-350		KAFB-106110-150		KAFB-106110-150		KAFB-106110-250	
	1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane	
	ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv	
	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Q1 2016	0	U	52		3		500		0.21	J	4.3		0.56	U	3.6		0.28	J
Q2 2016	0.24	J	24		2.5		210		0	U	3.6	J	0.51	U	70		0	U
Q3 2016	0	U	1.3	J	3		89		0	U	2.8	J	0.54	U	4.7		0	U
Q4 2016	0	U	19		1.9		31		0	U	2.3		0.54	U	0.97	J	0	U
Q2 2017	0	U	210		0.36	J	2.6		0	U	3.2		1.7	U	97		0	U
Q4 2017	0	U	75		0.2	J	0.67	J	0	U	1.8		0.17	U	24		0	U
Q2 2018	0	U	1.8		0.052	J	1.3		0	U	1.6		1	U	5.6	J	0	U
Q4 2018	0	U	0.45	J	0.056	J	0.23	J	0	U	1.8		0.11	U	10		0	U
Q2 2019	0	U	0.47	J	0	U	0.15	J	0	U	0.91		1.3	U	51		0	U
Q4 2019	0	U	0.34	J	0.086	J	0.28	J	0	U	1.3		0.47	U	7.7		0	U
Q2 2020	0	U	210		0	U	0	U	0.36	J	320		5.4	U	360		0	U
Q4 2020	0	U	560	J	0	U	1600		0	U	1.1	J	29	U	1200		0	U

Table 6-2
Observed Soil Vapor Anomalies

Quarterly Event	KAFB-106110-250		KAFB-106111-150		KAFB-106111-150		KAFB-106111-250		KAFB-106111-250		KAFB-106111-350		KAFB-106111-350		KAFB-106112-350		KAFB-106112-350	
	Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene	
	ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv	
	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Q1 2016	16		0.55	U	0.63	J	55	U	280		12	U	1300		0.19	J	7.9	
Q2 2016	13		0.51	U	1.4		41	U	170		17	U	1500		0.37	J	29	
Q3 2016	20		0.58	U	2.3		19	U	80		2.5	J	990		0.21	J	8.6	
Q4 2016	22		0.53	U	1.1	J	43	U	180		7.1	U	660		0.34	J	7.8	
Q2 2017	39	J	0.22	J	2.5		35	U	1100		18	U	920		0	U	10	
Q4 2017	75	J	0.17	U	0.44	J	3.5	U	800		6.7	U	330		0	U	8.6	
Q2 2018	210		0.1	U	1.1		4.2	U	850		16	U	1300		0.11	J	11	
Q4 2018	430		0.1	U	0.28	J	39	U	1900		15	U	1100		0.09	J	7	
Q2 2019	1100		0.091	U	0.24	J	13	U	920		19	U	1800		0	U	0.73	J
Q4 2019	2600		0.12	U	0.39	J	30	U	3100		22	U	2800		0.11	J	4.6	
Q2 2020	13000		41	U	57	J	150	U	54000		66	U	6300		5.9		480	
Q4 2020	21000		84	U	770		13	U	23000		280	U	64000		0.078	J	3.1	

Table 6-2
Observed Soil Vapor Anomalies

Quarterly Event	KAFB-106118-025		KAFB-106118-025		KAFB-106118-160		KAFB-106118-160		KAFB-106118-350		KAFB-106118-350		KAFB-106119-150		KAFB-106119-150		KAFB-106119-250	
	1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane	
	ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv	
	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Q1 2016	0	U	0	U	0	U	0	U	0	U	0.66	J	0.55	U	2.1		41	
Q2 2016	0.23	J	3.7		0	U	1.8		0	U	2.8		1.7		20		64	J
Q3 2016	0	U	1.9		0	U	1.8		0	U	2.8		3.8	U	6.2	J	22	J
Q4 2016	0	U	1.3		0	U	0.66	J	0	U	4.9		0.41	J	4.7		32	J
Q2 2017	0	U	0.65	J	0	U	0.59	J	0	U	1.1	J	1.4	U	2.4	J	49	J
Q4 2017	0	U	0.61	J	0	U	0	U	0	U	5.2		0.17	U	1.2	J	35	U
Q2 2018	0	U	0.79	J	0	U	0.81	J	0	U	0.33	J	0.1	U	2.6		7.4	J
Q4 2018	0	U	0.15	J	0	U	0	U	0	U	2.5	U	0.11	U	0.89		92	U
Q2 2019	0	U	0	U	0	U	0	U	0	U	0.25	U	0.11	U	0.58	J	27	U
Q4 2019	0	U	1.1		0	U	0.27	J	0	U	0.33	J	0.095	U	0.55	J	2.4	J
Q2 2020	0	U	71		0	U	0.17	J	0	U	0.28	J	170	U	2000		630	U
Q4 2020	0	U	0.16	J	0	U	15	J	0	U	48	J	24	U	320		250	U

**Table 6-2
Observed Soil Vapor Anomalies**

Quarterly Event	KAFB-106119-250		KAFB-106123-450		KAFB-106123-450		KAFB-106128-250		KAFB-106128-250		SVEW-08-260		SVEW-08-260		SVEW-09-460		SVEW-09-460	
	Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene	
	ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv	
	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Q1 2016	1500		0	U	0.97	J	0.55	U	1.1	J	0.35	J	71		0	U	88	
Q2 2016	6400		0	U	2		0.22	J	5.1		0.29	J	39		0.2	J	46	
Q3 2016	890		0	U	2.4		0.75	U	2.8		0	U	20		0	U	7.6	
Q4 2016	1800		0	U	0.88	J	0.51	U	0.48	J	0	U	10		0.26	J	7.8	
Q2 2017	12000		0	U	2.2		0.2	J	13		0.2	J	31		0.17	J	36	
Q4 2017	6600		0	U	0.8	J	0.16	U	0.4	U	0	U	40	J	0	U	12	J
Q2 2018	1200		0	U	4.5		0.14	J	1.8	J	0	U	1.9	J	0	U	0.72	J
Q4 2018	4700		0	U	2		0.094	U	0.34	J	0	U	490		0	U	12	
Q2 2019	1700		0	U	0.68	J	0.25	U	0.63	J	0	U	7.4		0	U	3.4	
Q4 2019	2000		0	U	0.94		0.12	U	0.21	J	0	U	150		0	U	91	
Q2 2020	57000		0	U	0.83		8.1	U	9.6	J	0	U	450		0	U	350	
Q4 2020	52000		0	U	44		59	U	6900		0	U	11000		0	U	48	

Table 6-2
Observed Soil Vapor Anomalies

Quarterly Event	SVMW-01-250		SVMW-01-250		SVMW-04-050		SVMW-04-050		SVMW-05-230		SVMW-05-230		SVMW-07-050		SVMW-07-050		SVMW-12-250	
	1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane		Benzene		1,2-dibromoethane	
	ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv		ppbv	
	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
Q1 2016	3.8		110		0	U	640		0.66		13		0	U	2.4		0.8	
Q2 2016	7.5	U	86		0	U	220		0.47	J	13		0.2	J	3.1		0.53	U
Q3 2016	1.9	J	140		0	U	100		0.58	U	120		0.45	J	23		0.55	U
Q4 2016	17	U	250		0	U	36	J	0.63		15		0	U	1.2	J	0.53	U
Q2 2017	36	U	420		0	U	0	U	0.35		9.9		0	U	0.76	J	0.42	U
Q4 2017	13	U	610		0	U	0	U	0.16	U	1.3		0	U	0.72	J	0.32	J
Q2 2018	76	U	1000		0	U	20	J	3	U	18	J	0	U	0.34	J	0.1	U
Q4 2018	81	U	1500		0	U	57	J	1.4	U	16		0	U	0.95		0.085	U
Q2 2019	72	U	1800		0	U	190	U	1.6	U	46		0	U	1		0.1	U
Q4 2019	78	U	4100		0	U	63	U	3.7	U	120		0	U	0.47	J	0.11	U
Q2 2020	190	U	11000		0	U	74000		190	U	3000		0	U	2400		0.1	U
Q4 2020	280	U	28000		0	U	62000		120	U	12000		0	U	17000		0	U

Table 6-2
Observed Soil Vapor Anomalies

Concentrations are presented in PPBV to allow comparison with historical data.

Abnormally high concentration compared to historical.

ppbv = parts per billion by volume

Q1 = first quarter

Q2 = second quarter

Q3 = third quarter

Q4 = fourth quarter

J = Qualifier denotes the analyte was positively identified, but the associated numerical value is estimated.

U = Qualifier denotes the analyte was analyzed but not detected above the detection limit. The value associated with the U-qualifier is the limit of detection.

LIST OF APPENDICES
(Provided electronically via CD)

- A Regulatory Correspondence, Revision Tracking, and Permits
 - A-1 Regulatory Correspondence
 - A-2 Regulatory Permit Cross Reference
- B Field Forms
- C Lithologic Boring Logs and Well Completion Diagrams for Soil Vapor Monitoring Wells KAFB-106V1 and KAFB-106V2
- D Deviations from Work Plan
 - D-1 Injection Wellhead Loss Calculations
 - D-2 Laboratory Correspondence
- E Laboratory Analytical Data
 - E-1 Injection Water Laboratory Analytical Results
 - E-2 Soil Vapor Laboratory Analytical Data
 - E-3 Summary of Soil Vapor Analytical Data
 - E-4 Data Quality Evaluation Report
- F Biodegradation, Oxygen Demand Flow Rate, and Radius of Influence Calculations

APPENDIX A

REGULATORY CORRESPONDENCE AND PERMITS

- A-1 Regulatory Correspondence
 - Bioventing Shut Down Concurrence
 - NMED Notice of Disapproval
 - Approval for the Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests
 - Bioventing Respiration Pilot Testing Approval
 - Air-lift Enhanced Pilot Test Deferral Letter
- A-2 Regulatory Permit Cross Reference

**APPENDIX A-1
REGULATORY CORRESPONDENCE**



Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1
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James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 11, 2021

Colonel David S. Miller
Base Commander
377 ABW/CC
2000 Wyoming Blvd SE
Kirtland AFB, NM 87117

Lt. Colonel Wayne J. Acosta
Civil Engineer Office
377 Civil Engineer Division
2050 Wyoming Blvd SE, Suite 116
Kirtland AFB, NM 87117

**RE: TECHNICAL MEMO: BIOVENTILATION PILOT TEST NOVEMBER 23rd 2020 SHUTDOWN
BULK FUELS FACILITY SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111
KIRTLAND AIR FORCE BASE, NEW MEXICO
EPA ID# NM6213820974
HWB-KAFB-20-001**

Dear Colonel Miller and Lt. Colonel Acosta:

The New Mexico Environment Department (NMED) received the U.S. Air Force (Permittee) Kirtland Air Force Base (Facility) Technical Memo for *Bioventing Pilot Test November 23rd 2020 Shutdown*, dated January 13, 2020. NMED has reviewed the letter for the Technical Memo and concurs with the Permittee's decision to permanently terminate the bioventilation pilot test. NMED did not review the Technical Memo in detail and this letter should not be construed as NMED concurrence with the Technical Memo or the Permittee's conclusions regarding data sufficiency or the feasibility of bioventilation as a remedial option for the Bulk Fuels Facility Spill site.

NMED concurs with the decision to terminate the bioventilation pilot test based on concerns regarding the mobilization and potential migration of soil vapor contamination to off-site locations. As stated previously by NMED in formal correspondence to the Permittee on

February 25, 2019 regarding the Bioventilation Pilot Testing: "... include a schedule for at least two soil vapor sampling events, one in the summer and one in the winter, that shall be timed to verify that bioventing pilot testing is not causing an increase in shallow soil vapor contaminant levels in the residential and VA hospital areas." To date, the effects of the bioventing test have not been evaluated.

The Permittee must submit an Investigation Report describing the bioventilation pilot testing in accordance with Section 6.2.4.3 of the Permittee's Hazardous Waste Treatment Facility Operating Permit, EPA ID No. NM9570024423. The Investigation Report must be submitted no later than **October 29, 2021**.

In addition, NMED has made efforts to set up a meeting to discuss its Disapproval provided for the Bioventilation Construction and Initiation Report since August 2020. NMED remains willing to meet with you and your staff.

If you have any questions regarding this letter, or to schedule a meeting regarding the NOD, please contact me at (505) 476-6035.

Sincerely,

Kevin M. Pierard, Chief
Hazardous Waste Bureau

cc: B. Wear, NMED HWB
M. Suzuki, NMED HWB
L. Andress, NMED HWB
S. Kottkamp, KAFB
K. Lynnes, KAFB
C. Cash, KAFB
D. Agnew, ABCWUA
A. Tafoya, VA

File: KAFB 2021 and Reading



Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

**NEW MEXICO
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James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

SEP 23 2020

Colonel David S. Miller
Base Commander
377 ABW/CC
2000 Wyoming Blvd SE
Kirtland AFB, NM 87117

Lt. Colonel Wayne J. Acosta
Civil Engineer Office
377 Civil Engineer Division
2050 Wyoming Blvd SE, Suite 116
Kirtland AFB, NM 87117

**RE: DISAPPROVAL
BIOVENTILATION CONSTRUCTION AND INITIATION REPORT
BULK FUELS FACILITY SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE, NEW MEXICO
EPA ID# NM6213820974
HWB-KAFB-20-001**

Dear Colonel Miller and Lt. Colonel Acosta:

The New Mexico Environment Department (NMED) is in receipt of Kirtland Air Force Base's (Permittee) *Bioventilation Construction and Initiation Report* (Report), dated January 2020. NMED has reviewed the Report and deficiencies were identified throughout the Report. NMED hereby issues this Disapproval with comments.

Although NMED is disapproving the Report we recommend continuation of the long-term pilot test. Continuation of data collection will help address many of the attached comments and will assist in ascertaining the long-term effectiveness of the bioventing technology.

The Permittee must submit a revised Report that addresses all comments contained in this letter. Two hard copies and an electronic version of the revised Report must be submitted to the NMED. Please include a redline-strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied with a response letter that details where all revisions have been made, cross-referencing NMED's

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numbered comments. The Revised Report must be submitted to NMED no later than **April 30, 2021**.

Should you have any questions or wish to meet with us to discuss these comments, please contact me at (505) 476-6035.

Sincerely,

**Kevin
Pierard**

Digitally signed by Kevin Pierard
Date: 2020.09.23 12:40:15 -06'00'

Kevin Pierard
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
B. Wear, NMED HWB
M. Suzuki, NMED HWB
L. King EPA Region 6 (6LCRRC)
S. Kottkamp, KAFB
K. Lynnes, KAFB

File: KAFB 2020 Bulk Fuels Facility Spill and Reading

Attachment

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SPECIFIC COMMENTS

1. Executive Summary, ES-1, Installation of Bioventing Monitoring Wells, page ES-1

Permittee Statement: "Each SVMW is comprised of six 0.75-inch outside diameter nested vapor probes with 2 feet (ft) of screen each targeting different depths of the vadose zone. Vapor probes were installed at depths varying between 102 and 262.5 ft below ground surface to facilitate discrete vertical monitoring of the vadose zone."

NMED Comment: According to the *Bioventing Respiration Pilot Testing Procedure* (Procedure), dated September 2018, lengths of the screened intervals for the nested vapor probes were indicated as 2.5 feet, rather than two feet. Clarify whether the vapor probes have two- or 2.5-feet screened intervals in the revised Report. Revise all applicable sections of the Report, as appropriate. In addition, the depths of both wells KAFB-106V1 and KAFB-106V2 were reported as 102.5 to 272.5 feet below ground surface (bgs) in Table 1-1. Provide an explanation for or resolve the discrepancies in the revised Report.

2. Section 1.2, Bioventing Pilot Test Objectives and Scope, page 1-1

Permittee Statement: "The bioventing pilot test is being performed to evaluate the feasibility of this technology for the Corrective Measures Evaluation Report."

NMED Comment: According to Table 3-12, *Summary of Hydrocarbon Analytical Results*, the elevated TPH-GRO concentrations in soil vapor samples collected from all pilot test monitoring wells indicate that free phase and adsorbed hydrocarbons may be present in the vicinity of the pilot test area. In order to maximize the effectiveness of remediation, delineation of the extent of hydrocarbon contamination is crucial regardless of the technology that is ultimately proposed through corrective measures evaluation (CME).

In order to effectively remediate the extent of hydrocarbon contamination where free phase hydrocarbon is present, the Permittee must clarify whether the extent has been fully delineated. Either confirm that the extent of contamination has been fully delineated through previous investigations in the revised Report or submit a work plan to delineate the extent of the vadose zone contamination (e.g., Laser-Induced Fluorescence), if necessary. If the work plan is deemed necessary, submit the work plan no later than **July 30, 2021**.

3. Section 1.2, Bioventing Pilot Test Objectives and Scope, page 1-1

Permittee Statement: "The rate of oxygen utilization is directly proportional to the aerobic biodegradation rate of fuel hydrocarbons in the subsurface and can be used as an indication of the effectiveness of bioventing to achieve site cleanup."

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NMED Comment: The reduction of oxygen levels in monitoring and injection wells does not necessarily mean that all of the oxygen is utilized for biodegradation of hydrocarbons. Although oxygen utilization may be an indicator, it is not clear that this is directly proportional due to a variety of factors including diffusion of oxygen-depleted soil gas from soil pore space and dissipation of injected air toward the low-pressure gradient outside of the test cell boundary. Other monitoring parameters (e.g., isotope analysis) may be necessary to confirm evidence of biodegradation. Because the Permittee continues to evaluate the effectiveness of the bioventing technology through the long-term pilot testing, additional monitoring parameters may be useful to confirm the occurrence of biodegradation. Evaluate the necessity of additional monitoring parameters to confirm evidence of biodegradation and provide a discussion in the revised Report (see Comment 34). Evidence of biodegradation does not necessarily indicate its effectiveness as a remedial alternative. In order for this technology to be considered as viable remedial alternative, the pilot test must demonstrate reduction of hydrocarbon concentrations.

4. Section 1.2, Bioventing Pilot Test Objectives and Scope, page 1-2, and Section 5.4, Bioventing Pilot Test Performance Assessment, page 5-2

Permittee Statements: "Status reports will be provided quarterly as an appendix to the appropriate Groundwater Monitoring Report."

and,

"Respiration and analytical data collected from each quarter will be reported in the appropriate quarterly groundwater monitoring report."

NMED Comment: The pilot test is not associated with groundwater remediation and groundwater is not monitored as part of this test. Inclusion of the status report in an appendix of a separate report is not appropriate. Status reports must be submitted separately from the quarterly groundwater monitoring reports. Please revise the Report accordingly.

5. Section 2, Background Information, page 2-1

NMED Comment: A discussion regarding fuel release (e.g., release date range, contaminants of concern, area where fuel was released, range of estimated volumes released) is not included in this section of the Report. Please include the discussion in the revised Report.

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6. Section 2.2, Site History, page 2-1

Permittee Statement: "Impacted soil was excavated in the release area to a depth of approximately 20 feet (ft) below ground surface in the area shown on Figure 1-2. Soil vapor extraction activities were performed at the site between 2003 and 2015 to reduce the mass of contaminants in the vadose zone."

NMED Comment: Figure 1-2, *Bioventing Pilot Test Area*, does not depict the area where contaminated soil was excavated. Please revise the figure or include a new figure to present the area where the soil was excavated. Additionally, explain whether the soil vapor extraction (SVE) system is still present at the Bulk Fuels Facility Site. Even if the SVE system alone did not achieve effective mass removal, the combination of SVE and bioventing technologies may increase the effectiveness of each technology. Please evaluate the feasibility and benefits of operating both systems concurrently and provide a discussion in the revised Report.

7. Section 2.3, Ongoing Soil Vapor Monitoring, page 2-1

Permittee Statement: "A total of 284 soil vapor monitoring points at 56 soil vapor monitoring locations are being sampled semiannually. The results from the vapor monitoring data indicate that the majority of the petroleum hydrocarbon concentrations found in the vadose zone are located in the vicinity of the release area."

NMED Comment: Please include a separate figure presenting locations of all soil vapor monitoring wells with designations in the revised Report.

8. Section 3.2, Bioventing Equipment Installation, page 3-1

Permittee Statements: "The [1.5-horsepower regenerative] blower unit provides injection air to the SVEWs through a 2-inch polyethylene conveyance line that manifolds to the individual SVEWs."

and,

"Due to high head losses associated with high volume injection flow rates through the 0.5-inch diameter SVMWs, the regenerative blower could not be used for air injection due to pressure limitations. As a result, injection air is provided to the SVMWs via two 1-horsepower Gast rotary vane pumps."

NMED Comment: It is not clear whether or not the 1.5-horsepower regenerative blower was concurrently used with rotary vane pumps during the pilot test. Please provide a clarification in the revised Report. In addition, it is not clear whether the two 1-horsepower rotary pumps provided sufficient power to deliver air to SVMWs or all wells. Please provide

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head loss calculations to demonstrate that the pumps were adequate in the revised Report.

9. Section 3.3, Baseline Respirometry and Vapor Sampling, page 3-2

Permittee Statement: "Well purging was performed by removing one well volume (casing volume plus the filter pack pore space volume of the screened interval) from the monitoring well utilizing a Gast rotary vane pump."

NMED Comment: The rotary vane pumps were used to inject air into SVMWs. Explain whether the same pump was used for the purpose of purging in the revised Report.

10. Section 3.3, Baseline Respirometry and Vapor Sampling, page 3-2

Permittee Statement: "Analytical samples were collected using 6-liter Summa cannisters and..."

NMED Comment: The September 2018 Procedure indicates that the size of Summa cannisters proposed to be used was one liter. Explain the basis for the deviation. All deviations from the work plan must be described in the revised Report. Please revise the Report to include a section that discusses deviations from the work plan.

11. Section 3.4, Respirometry Field Testing, page 3-2, and Section 4.1, Respiration Data Analysis, page 4-1

Permittee Statements: "The water injection was performed on May 23 and 24, 2019. After the water was injected, the test cells were allowed approximately 4 weeks to acclimate prior to the start of the wet respiration testing."

and,

"The results suggest little or no change to soil vapor humidity as the result of moisture addition."

NMED Comment: The September 2018 Procedure states, "[t]he water is radially forced into the formation." The pressurized water injection method was unlikely to distribute moisture radially throughout the pore space. Rather, injected water likely followed the least resistant (preferential) flow paths. The water may have infiltrated into deeper soils by gravity rather than providing moisture to soils in the target pore space during the acclimation period. As a result, changes to soil vapor humidity were not observed after water injection. The Executive Summary, *ES-4 Respiration Testing*, page ES-2, states, "[o]xygen utilization rates were marginally higher during the dry respiration testing compared to the wet respiration testing indicating that the moisture addition did not increase the rate of biodegradation." Because the water was likely not evenly distributed within the test cell, the results obtained from wet respiration test are not reliable and must not be used for decision-making

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purposes. The Permittee must not draw any conclusions related to the wet respiration test. In addition, the Executive Summary, *ES-4 Respiration Testing*, page ES-2, states, “[t]he need to add moisture will be further assessed during the long-term bioventing pilot test.” NMED agrees that further assessment through the long-term pilot test is appropriate and supports the injection of cool mist rather than pressurized water. Mist injected with air may provide more uniform distribution of moisture in the formation. Propose this approach in the revised Report.

12. Section 3.4, *Respirometry Field Testing*, page 3-2

Permittee Statement: “No measurable degradation was observed due to the high concentration of hydrocarbons and the limited amount of ambient air supplied to the subsurface.”

NMED Comment: Tables 4-2 through 4-13 provide volatile organic compound (VOC) concentrations measured in the monitoring wells. Air was continuously injected for more than 30 days between October 7 and November 5, 2019. However, the VOC concentrations appear to be persistent and relatively unchanged from the baseline levels in most monitoring locations. Considering the immediate effect of dilution with air, it is not clear why hydrocarbon concentrations are not declining after 30 days of air injection. It is possible that a major fraction of the injected air may have followed the preferential flow paths (e.g., fractures) and did not directly flow into the monitoring locations. Please evaluate the causes of persistent VOC concentrations and provide a discussion in the revised Report.

13. Section 3.4.1.1, *[Dry Respirometry Testing] Air Injection and Pressure Monitoring*, page 3-3, Section 3.4.3.1, *[Wet Respirometry Testing] Air Injection and Pressure Monitoring*, page 3-4, and Section 5.2, *Long-Term Pilot Test Operational Parameters*, page 5-1

Permittee Statement: “A 15-ft radius from the injection well was assumed for the calculation of each test cell control volume. The thickness of each test cell control volume was the filter pack length, plus 5 ft above and below to account for vertical air flow. The injection rate was calculated based on the addition of four pore volumes of the test cell in each well.”

and,

“The remediation area for the long-term bioventing test is defined as a control radius of 70 ft (the farthest distance between injection wells and observation wells) along with the filter pack thickness of the injection well to obtain a volume of impacted soil.”

NMED Comment: The estimated test cell volume was significantly increased for the long-term pilot test. In the revised Report, provide a table presenting (1) soil types at the screened intervals of injection and monitoring wells, (2) all input values (e.g., thickness,

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control radius, porosity) for the short- and long-term pilot tests, (3) calculated pore volumes based on the input values, (4) target volumes of air to be injected, and (5) actual volumes of air injected.

14. Section 3.4.1.1, [Dry Respirometry Testing] Air Injection and Pressure Monitoring, page 3-3

Permittee Statement: “Air injection flow rates and well head pressures were recorded daily and are presented in Tables 3-13 through 3-15. During air injection, well head pressures were monitored in wells KAFB-106V1 and KAFB-106V2 and are presented in Tables 3-16 and 3-17.”

NMED Comment: Tables 3-13 through 3-17 provide data collected during air injection for the dry (April 22 – 28) and wet (June 20 – 26) respiration tests. Although respiration monitoring was conducted for the dry (April 28 – May 9) and wet (June 26 – July 5) respiration tests without air injection, these tables do not indicate that subsequent monitoring was conducted. Section 3.4, *Respirometry Field Testing*, states that the dry and wet respiration pilot tests were conducted between April 22 and May 9, 2019 and between June 20 and July 5, 2019, respectively. However, since the timeline of the events was not clearly described in the Report, the tables may be perceived as incomplete and cause confusion among readers. In the revised Report, provide a table presenting timeline for the short- and long-term pilot tests including dates for (1) baseline data collection, (2) air injection periods, and (3) post-injection respiration monitoring periods.

15. Section 3.4.1.2, Dry Respirometry, page 3-3

Permittee Statement: “Oxygen concentration within the subsurface was plotted against time for each well location and a linear regression was applied to determine the oxygen utilization rate.”

NMED Comment: The plots were included in Appendix D, *Oxygen Utilization Plots*. However, it is more appropriate to include these plots in the Report, rather than the appendix because the slope of linear regression is interpreted as an oxygen utilization rate, which is the key parameter to estimate the biodegradation rate and long-term bioventing flow rate. Please include the plots in the figures section of the revised Report.

16. Section 3.4.2, Water Injection, page 3-3

Permittee Statement: “Prior to injection, the water was field tested for residual chlorine in order to reduce the possibility that chlorinated water could inhibit microbial growth in the subsurface.”

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NMED Comment: Explain what kind of field test was conducted to determine residual chlorine level in the water. If field notes that record testing procedures and results are available, include them in the revised Report.

17. Section 4.1, Respiration Data Analysis, page 4-1

Permittee Statement: "If the oxygen and carbon dioxide readings were at atmospheric conditions of 20.9 and 0.0%, respectively, then the field readings were accepted as correct."

NMED Comment: The statement indicates that the instrument is unable to detect changes in oxygen and carbon dioxide levels less than one thousand parts per million. The instrument may be adequate to monitor overall changes in oxygen and carbon dioxide concentrations in subsurface after air injection, but it is not clear whether such instrument is suitable for quantification of microbial activity. Please explain why the instrument is appropriate for the pilot tests in the revised Report.

18. Section 4.1, Respiration Data Analysis, page 4-1

Permittee Statement: "While variability of oxygen/carbon dioxide was observed in many of the wells during the respiration testing, the changes were more prevalent within the SVEWs, possibly due to the longer screen intervals that would be more greatly affected by barometric pressure changes."

NMED Comment: Discuss the correlation between barometric pressure, subsurface oxygen/carbon dioxide levels and screen length in the revised Report. Additionally, provide example data to support the discussion.

19. Section 4.1, Respiration Data Analysis, page 4-1

Permittee Statement: "However, oxygen concentrations overall consistently declined during the respiration testing providing clear evidence of oxygen demand and hydrocarbon biodegradation."

NMED Comment: The decrease in oxygen levels and increase in carbon dioxide levels in injection wells may also be attributed to diffusion of soil gas, dilution of injected air, and desorption/volatilization of organic compounds. Influx of soil gas and efflux of air may be the primary causes of an increase in carbon dioxide and a decrease in oxygen concentrations. Revise the statement for accuracy in the revised Report.

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20. Section 4.1, Respiration Data Analysis, page 4-1

Permittee Statement: “A safety factor of 4 times the calculated oxygen utilization rate is being supplied to ensure oxygen is being delivered at a rate much greater than it is being utilized.”

NMED Comment: If multiple pore volumes of air were applied to the test cell, air flow would have extended beyond the test cell boundary likely through the same flow paths originally created by initial application of air (e.g., fractures). Injection of multiple pore volumes of air may dilute soil gas within the test cell and push soil gas beyond the test cell boundary. However, excess air may not necessarily increase the microbial oxygen utilization rate. A large volume of the injected air may move contamination round in the subsurface. Revise the statement to acknowledge this possibility.

21. Section 4.1, Respiration Data Analysis, page 4-1

Permittee Statement: “As can be seen in the data, substantially lower relative humidity was measured during the wet respiration testing than the dry. It appears this is an artifact of timing; ambient air temperatures were warmer during the wet test. Measurement instability occurs when a soil vapor sample is extracted above ground and run through the instrument. On warm days, the sample temperature increases to near ambient, which decreases relative humidity. As the ambient temperature fluctuates, so does the relative humidity.”

NMED Comment: The method used to measure relative humidity is not appropriate. The relative humidity data must not be affected by fluctuations of the ambient temperature. Subsurface temperature is likely more stable than that of the ambient air; the measurements should have been conducted to minimize the influence of changes in ambient temperatures. Please evaluate alternative methods for relative humidity measurement and provide a discussion in the revised Report.

Since the relative humidity was higher during the dry respiration test compared to the wet respiration test, the relative humidity data does not make sense. The relative humidity data must be converted to absolute humidity values and its acceptability for use evaluated. If the converted data makes sense, revise all applicable tables to present absolute humidity, rather than relative humidity. Otherwise, remove all data and discussions regarding relative humidity from the revised Report.

22. Section 4.1, Respiration Data Analysis, pages 4-1 and 4-2

Permittee Statement: “In some of the locations, the absolute humidity appears marginally higher in the wet test; however, the reasons for this are unclear. The water injected into the

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wells for the wet test was likely warmer than the soils resulting in warmer soil immediately surrounding the sampling point screens. This could account for the absolute humidity differences.”

NMED Comment: Since water was injected prior to the wet respiration test, the higher absolute humidity readings during the wet respiration pilot test make sense; however, the readings were only marginally higher than those observed during the dry respiration test. This observation suggests that the method used to distribute moisture (pressurized water injection) was not effective. The moisture addition method must be evaluated during the long-term pilot test. During the evaluation, other moisture distribution methods (e.g., cool mist injection) must be evaluated.

Additionally, soil vapor temperatures were generally higher than ambient air temperatures according to Tables 3-2 through 3-10. The water temperature is lower than, or equivalent to, the ambient air temperature. It may be more reasonable to assume that soil temperature was higher than that of the water which would make the Permittee’s statement incorrect. Revise the statement accordingly.

23. Section 4.2.1, Oxygen Utilization Rate, page 4-2

Permittee Statement: “Oxygen utilization rates for the dry respiration testing varied between 0.163 and 0.475% per day for the SVMWs and between 0.497 and 0.639% per day for the SVEWs (Appendix D-1 and Table 4-1). The oxygen utilization rate averaged 0.340% per day for the SVMWs while averaging 0.563% per day for the SVEWs. The overall average oxygen utilization rate for the dry respiration test was 0.414% per day.”

NMED Comment: According to Appendix D-1, *Oxygen Utilization*, the daily oxygen concentrations are plotted for each injection well. Each slope of the curve is reported as “oxygen utilization rate”. However, the reduction in oxygen levels may be attributed to dilution of injected air and is not necessarily limited to oxygen utilized for hydrocarbon biodegradation (see Comment 19).

Additionally, elevated hydrocarbon concentrations (e.g., 250 parts per million benzene) reportedly inhibit aerobic biodegradation. The level of hydrocarbons at the site is high enough to affect the results. In order for aerobic biodegradation to be induced at the site, the concentrations may initially need to be diluted with air. The observed reduction in oxygen levels must not be assumed to be the result of microbial activity. The referenced oxygen utilization rate is more appropriately referred to as “oxygen reduction rate”. Please revise the Report for accuracy.

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24. Section 4.2.2, Biodegradation Rate, page 4-2

Permittee Statement: “Biodegradation rates during the dry respiration testing ranged between 0.096 and 0.281 milligrams per kilogram per day (mg/kg/day) for the SVMWs and between 0.294 and 0.378 mg/kg/day for the SVEWs (Table 4-1). Biodegradation rates during the wet respiration testing ranged between 0.081 and 0.308 mg/kg/day for the SVMWs and between 0.012 and 0.371 mg/kg/day for the SVEWs.”

NMED Comment: According to Appendix E-1, *Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence*, the biodegradation rates were calculated as a function of oxygen utilization rates. However, the observed oxygen reduction is not entirely accounted for by microbial oxygen utilization (see Comments 19 and 23). Therefore, the biodegradation rates must not be calculated from the observed oxygen reduction rates. Remove the discussion from the revised Report.

25. Section 4.2.3, Oxygen Demand Air Flow Rate, page 4-3

Permittee Statement: “The oxygen demand flow rate represents the minimum ambient air injection flow rate required to maintain the biodegradation rates obtained in the respirometry calculations. The oxygen demand air flow rate was calculated based on the oxygen utilization rate and corresponding biodegradation rates for each well under both the dry and wet respiration conditions (Appendix E-1).”

NMED Comment: The oxygen demand flow rates were calculated as a function of oxygen utilization rates. The calculated flow rates do not represent the minimum air flow rates required to maintain biodegradation rates. However, the minimum air injection flow rates required to compensate the loss of oxygen can be calculated from the observed oxygen reduction rates. Modify the formula provided in Section 3.1.6 of the *Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests* (Work Plan), dated November 2017, and calculate the required air injection flow rates. Revise the Report accordingly.

26. Section 4.2.4, Intrinsic Permeability, page 4-3

Permittee Statement: “Intrinsic permeability was calculated for the SVEWs under both the dry and wet respiration conditions (Table 4-1). The calculations are provided in Appendix E-2.”

NMED Comment: According to Appendix E-2, *Intrinsic Permeability Calculations*, intrinsic permeability was calculated based on well vacuum. A positive pressure was applied to the wells as air was injected from the wells; however, the formula used to calculate intrinsic permeability required vacuum (negative) pressure. Please provide an explanation for the discrepancy in the revised Report.

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In addition, the radii of influence (ROIs) used to calculate intrinsic permeability were different from the ROIs reported in Table 4-1. For example, the ROI used to calculate intrinsic permeability was 113 feet for well SVEW-01-260 during the dry respiration test according to Appendix E-2-1. However, the ROI reported in Table 4-1 was 143 feet for the same well. Correct, or provide an explanation for, the discrepancy in the revised Report.

27. Section 4.2.4, Intrinsic Permeability, page 4-3

Permittee Statement: "Intrinsic permeability was not calculated for the SVMWs as the large amount of head loss that occurred in the 0.5-inch diameter wells did not allow for accurate pressure monitoring at the injection point."

NMED Comment: Section 3.2 indicates that the issue associated with head loss was resolved by replacing the 1.5-horsepower regenerative blower with two 1-horsepower rotary vane pumps. Please provide further clarification of the issue and resolution in the revised Report. In addition, the well head pressure readings during and after air injection for SVMWs are reported in Tables 3-13, 3-14 and 3-2 through 3-7, respectively. This data should not be included in the Report or it must be qualified to account for the inaccurate pressure readings for SVMWs in the revised Report.

28. Section 4.2.5, Radius of Influence, page 4-3

Permittee Statement: "[T]he oxygen ROI was calculated using the oxygen utilization rates and long-term bioventing operation flow rates as described in the Work Plan (Kirtland AFB, 2017a)... The oxygen ROI varied between 138 and 143 ft for the dry respiration test and between 138 and 152 ft for the wet respiration test."

NMED Comment: The ROI was calculated based on oxygen utilization rates. However, the observed oxygen reduction is not entirely accounted for by microbial oxygen utilization. Therefore, the method used to estimate the ROI is not appropriate. Use pressure response data to estimate the ROIs, where applicable, or if appropriate, modify the formula provided in Section 3.1.8 of the November 2017 Work Plan, and calculate the ROIs. Revise the Report accordingly.

29. Section 4.2.6, Soil Vapor Analytical Results, page 4-3

Permittee Statement: "Soil vapor analytical data and the analytical laboratory reports are provided in Appendix B-2. TPH-GRO, BTEX, and EDB concentrations were collected and are provided in Table 3-12."

NMED Comment: According to Appendix B-2, *Soil Vapor Analytical Results*, EDB was only analyzed with EPA Method TO-15. The Permittee's April 3, 2017 letter states, "[Method]

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CARB 422 may be used for individual tasks where it is important to evaluate EDB in soil vapor in the presence of high concentrations of HC in relation to EDB concentrations, such as monitoring the effectiveness of bioventing or air-lifting interim measures in the source area. In these instances, CARB 422 will be included where appropriate in the individual work plan for that task." Since hydrocarbon molecules do not interfere with the measurement of EDB by Method CARB 422, lower limits of quantitation (LOQ) are achievable with the method, allowing for more accurate detection of EDB in soil vapor than with Method TO-15. Elevated hydrocarbon concentrations were observed in soil vapor samples at the site; therefore, it is appropriate to analyze EDB samples using both Methods CARB 422 and TO-15. Include this provision during the long-term pilot test.

30. Section 4.2.6.1, [Soil Vapor Analytical Results] Baseline Respiration Sampling, page 4-4

Permittee Statement: "The sum of BTEX ranged from 2,400,000 to 9,130,000 $\mu\text{g}/\text{m}^3$."

NMED Comment: Although Table 3-12, *Summary of Hydrocarbon Analytical Results*, records concentrations of benzene (B), toluene (T), ethylbenzene (E), and total xylenes (X) separately, the sum of these constituents is not recorded in the table. Revise the table to include the sum of BTEX.

31. Section 4.2.6.2, [Soil Vapor Analytical Results] Post-Dry Respiration Sampling, page 4-4

Permittee Statement: "TPH-GRO ranged from 52,000,000 to 210,000,000 $\mu\text{g}/\text{m}^3$."

NMED Comment: Out of 12 monitoring points, the TPH-GRO concentrations after the air injection were recorded as higher in six locations, the same in three locations, and lower in two locations compared to the baseline concentrations. Longer-term monitoring is necessary to evaluate the effectiveness of the pilot test because the results of the short-term pilot test indicate that the bioventing technology is not effective. Please provide a submission schedule for the required status reports in the revised Report (see Comment 4).

32. Section 4.2.6.3, [Soil Vapor Analytical Results] Post-Wet Respiration Sampling, page 4-4

Permittee Statement: "Data collected during the respiration tests will be used as baseline data to assess the biodegradation throughout the full-scale bioventing test."

NMED Comment: Currently, full-scale bioventing as a means to remediate vadose zone hydrocarbons is not recommended based on the analytical results of the short-term pilot tests. However, longer-term monitoring will be necessary to fully evaluate the effectiveness of the bioventing system for hydrocarbon removal from the vadose zone (see Comment 31).

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33. Table 3-18, Bioventing Respiration Pilot Test Water Injection Summary

NMED Comment: The September 2018 Procedure states that the water volume for the wet respiration test was designed to be 1% of the pore volume. However, it is not clear whether the design protocol was followed during water injection. For example, the length of screened intervals for wells SVMW-11-250 and SVMW-11-260 was identical at 2.5 feet; however, water injection volumes for these wells were 325 and 625 gallons, respectively, according to Table 3-18. In Table 3-14, *Bioventing Respiration Pilot Test Air Injection Summary – SVMW-11*, the pore volumes were estimated as 4,278 and 8,036 cubic feet, respectively. It is not clear how the volumes were so different even though the length of screened intervals was identical. Provide an explanation for the difference in the estimated pore volumes among the test cells in the revised Report.

34. Tables 4-2 through 4-13, Respiration Monitoring

NMED Comment: According to the tables, after the long-term bioventing pilot test was initiated, the oxygen levels in all monitoring locations increased and reached a plateau in less than one month. Since hydrocarbons are still abundant in all monitoring locations, microbes could have utilized oxygen to degrade hydrocarbons and produce carbon dioxide and water. However, the carbon dioxide concentrations decreased as oxygen concentrations increased. Similarly, relative humidity readings were lower than those of the baseline in most locations. The carbon dioxide and water production were not obvious at any location. It appears that air is diluting soil gas at the monitoring locations but is not utilized for biodegradation. It is possible that the high level of hydrocarbons may hinder microbial activity. Discuss the kinetics of aerobic biodegradation in comparison to the rate of dilution in the revised Report. Additionally, please propose additional analytical methods to verify biodegradation (e.g., isotope analysis) and evaluate the applicability of such methods during the long-term pilot test (see Comment 3).

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SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

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www.env.nm.gov



BUTCH TONGATE
Cabinet Secretary

J. C. BORREGO
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

April 6, 2018

Colonel Richard W. Gibbs
Base Commander
377 ABW/CC
2000 Wyoming Blvd SE
Kirtland AFB, NM 87117-5606

Mr. Chris Segura
Chief, Installation Support Section
AFCEC/CZOW
2050 Wyoming Blvd SE, Suite 124
Kirtland AFB, NM 87117-5270

**RE: WORK PLAN FOR BIOVENTING AND AIR-LIFT ENHANCED BIOREMEDIATION PILOT TESTS
BULK FUELS FACILITY
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE
EPA ID# NM9570024423, HWB-KAFB-13-MISC**

Dear Colonel Gibbs and Mr. Segura:

The New Mexico Environment Department ("NMED") is in receipt of the Kirtland Air Force Base ("KAFB") ("Permittee") *Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests* ("Work Plan"), dated November 2017. The objective of the Work Plan is to detail the activities to be implemented in performing treatability studies to support the future Corrective Measures Evaluation ("CME") for the Bulk Fuels Facility ("BFF") source area and groundwater solute plume.

As explained in the Work Plan, bioventing includes the delivery of oxygen to the contaminated vadose zone (unsaturated soils) via air injection to stimulate biodegradation. The bioventing pilot testing will include short-duration "dry" and "moist" respiration tests (approximately three weeks), followed by two longer-term (two years in duration) pilot tests conducted simultaneously. The goal of the bioventing pilot test is to measure the oxygen utilization rate by microbes in the subsurface. The rate of oxygen utilization is directly proportional to the aerobic biodegradation rate of fuel hydrocarbons in the subsurface, and is therefore an indication of the effectiveness of bioventing to achieve site cleanup in a timely manner. Contaminant mass

Col. Gibbs and Mr. Segura
April 6, 2018
Page 2

destruction rate, cleanup time, and cost of corrective measure implementation can be estimated to support the future CME.

Air-lift enhanced bioremediation includes stimulating microbes within the aquifer matrix by creating a circulation cell through the injection of air below the water table. The injected air forces entrained water out of the lower portion of the well screen and "lifts" it above the static water level where it flows outward into the capillary fringe and upper portion of the water table. While lifting, contaminants are stripped and the groundwater is oxygenated. This "aerated" water flows out into the upper portion of the water table, a zone of the solute plume typically with high solute and residual contamination, where it adds oxygen to enhance aerobic biodegradation. The air-lift enhanced bioremediation pilot test is scheduled to operate for a period of two years.

The Work Plan is hereby approved subject to the following conditions:

1. The Permittee shall replace (as a single page replacement) the original Figure 3-1 with a revised version showing the locations of groundwater monitoring wells in the vicinity of the pilot test areas.
2. It is acknowledged that the screened intervals for nested soil vapor wells KAFB-106V1 and KAFB-106V2 were selected based on the lithology and screened intervals of nearby soil vapor wells. If, during the installation of KAFB-106V1 and KAFB-106V2, substantially different lithology is encountered, the Permittee and NMED shall meet to discuss the need for possible adjustments to screened intervals.
3. During the course of the pilot tests, the Permittee shall identify the source(s) of water that will be used for soil moisture addition. If any water source to be used is disinfected with chlorine, the Permittee shall describe what measures will be taken to ensure that chlorine residual concentrations will not adversely affect the ability of soil bacteria to biodegrade fuel contaminants.

If you have any questions regarding this letter, please contact NMED Chief Scientist Dennis McQuillan at (505) 827-2140.

Sincerely,



Juan Carlos Borrego
Deputy Secretary
Environment Department

cc: Col. M. Harner, KAFB
K. Lynnes, KAFB
B. Renaghan, AFCEC
S. Clark, KAFB-AFCEC

Col. Gibbs and Mr. Segura
April 6, 2018
Page 3

H. O'Grady, KAFB-AFCEC
T. Simpler, USACE
B. Faris, AEHD
F. Shean, ABCWUA
L. King, EPA-Region 6 (6PD-N)
J. Kieling, NMED-HWB
B. Salem, NMED-HWB
A. Romero, NMED-GWQB
M. Hunter, NMED-GWQB
D. McQuillan, NMED-OOTS

File: KAFB 2018 Bulk Fuels Facility Spill



**MICHELLE LUJAN
GRISHAM**
Governor

HOWIE MORALES
Lieutenant Governor

**NEW MEXICO
ENVIRONMENT DEPARTMENT**

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313
Phone (505) 476-6000 Fax (505) 476-6030
www.env.nm.gov



JAMES C. KENNEY
Cabinet Secretary

JENNIFER J. PRUETT
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

February 25, 2019

Colonel Richard W. Gibbs
Base Commander
377 ABW/CC
2000 Wyoming Blvd SE
Kirtland AFB, NM 87117-5606

Mr. Chris Segura
Chief, Installation Support Section
AFCEC/CZOW
2050 Wyoming Blvd SE, Suite 124
Kirtland AFB, NM 87117-5270

**RE: BULK FUELS FACILITY SPILL;
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111
KIRTLAND AIR FORCE BASE
HWB-KAFB-19-MISC**

Dear Colonel Gibbs and Mr. Segura:

The New Mexico Environment Department (NMED) provides this letter to address several projects that Kirtland Air Force Base (Permittee) is undertaking as investigative or interim corrective measures related to the implementation of the Resource Conservation and Recovery Act (RCRA) *Hazardous Waste Treatment Facility Operating Permit EPA ID No. NM9570024423* dated July 2010.

Item 1

NMED received the Permittee's *Work Plan for Vadose Zone Coring, Vapor Monitoring, and Water Supply Sampling Bulk Fuels Facility, Solid Waste Management Unit (SWMU) ST-106/SS-111, Kirtland Air Force Base, New Mexico, Revision R1* dated December 15, 2017. The Work Plan proposed additional vadose zone and groundwater investigation and monitoring, and was approved by NMED on February 23, 2018. Well drilling and vadose zone coring activities are ongoing since 2018 and expected to be complete within several weeks. The Permittee shall submit a report to NMED summarizing the LNAPL investigation findings by November 1, 2019.

Col. Gibbs and Mr. Segura
February 25, 2019
Page 2

Item 2

The Permittee's *Risk Assessment Report, Bulk Fuels Facility Spill; Solid Waste Management Unit ST-106/SS-111* (Report), dated July 15, 2017 was received by NMED on July 21, 2017. The Report concluded that contaminant exposure via vapor intrusion into indoor air in buildings located off-Base was an incomplete pathway. However, off-Base soil vapor data are limited to nested vapor probes, the shallowest of which are approximately 25 feet below ground surface, and none of which are located in the residential area north of Ridgecrest or amid buildings on the Veteran Affairs (VA) hospital campus. The Permittee must confirm this conclusion by collecting additional data to demonstrate that there is no risk to off-site receptors located north of the Base. The Permittee shall send a work plan to NMED no later than May 30, 2019 that proposes to collect shallow soil vapor samples to evaluate for the presence of benzene, ethylene dibromide (EDB), and other volatile organic compounds (if present) in the residential area north of Ridgecrest, and on the campus of the VA Hospital.

The work plan shall select analytical methods for soil vapor analysis that comply with the requirements of Permit Section 6.5.18. (Laboratory Analyses Requirements for all Environmental Media). The work plan also shall include a schedule for at least two soil vapor sampling events, one in the summer and one in the winter, that shall be timed to verify that bioventing pilot testing is not causing an increase in shallow soil vapor contaminant levels in the residential and VA hospital areas.

Item 3

The Permittee has been conducting an EDB in-situ biodegradation pilot test in accordance with the work plan dated October 26, 2016, as most recently amended with NMED's August 7, 2018 approval letter. The Permittee shall submit a report summarizing the results of the in-situ biodegradation pilot test by May 1, 2019.

Item 4

The Permittee submitted a work plan for a bioventing pilot test that NMED approved by letter dated April 6, 2018. The Permittee submitted proposed bioventing respiration pilot testing procedures by letter dated September 7, 2018. The Permittee's proposed bioventing respiration pilot testing procedures are hereby approved subject to the following condition. Prior to the initiation of the dry and wet short-term pilot tests, the Permittee shall measure relative humidity (water activity) in the soil vapor probes that will be used for pilot testing in order to determine whether underlying groundwater caused relative humidity to increase following the 2015 shutdown of the soil vapor extraction system and subsequent biorespiration monitoring. Since the approved bioventing work plan involves delivering moisture to soil bacteria that were desiccated by 12 years of soil vapor extraction, the Permittee shall measure relative humidity prior to

Col. Gibbs and Mr. Segura
February 25, 2019
Page 3

initiation of bioventing pilot tests. The Permittee shall submit the results of the bioventing pilot tests by January 31, 2020.

Pursuant to the RCRA corrective action permit, the Permittee shall submit to NMED by certified mail or hand delivery all reports, notifications, or other submittals. The Permittee shall submit two hard (paper) copies and one electronic copy of such reports to:

John Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

The Permittee shall also submit one hard (paper) copy and one electronic copy of such reports to:

Jennifer J. Pruett, Deputy Secretary
New Mexico Environment Department
1190 St. Francis Drive, Room N-4050
Santa Fe, New Mexico 87505-6303

Pursuant to 40 C.F.R. § 270.11(d)(1), all corrective action documents, including those outlined in this letter, shall include a certification, signed by a responsible official, stating:

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 assure 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 and imprisonment for knowing violations.

Failure to submit any of the work plans, schedules, reports, and other deliverable documents described in this letter may be deemed a violation of the permit and subject the Permittee to enforcement action under § 74-4-10 of the Hazardous Waste Act (HWA), or other applicable provisions of law, which may include fines, civil penalties, or suspension or revocation of the Permit.

Any noncompliance with approved plans and schedules shall be noncompliance with this Permit. The Department may grant extensions of written requests for due dates for submittals of reports and other deliverables, provided that the Permittee includes a written justification showing good

Col. Gibbs and Mr. Segura
February 25, 2019
Page 4

cause and a proposed schedule for submittal.

If you have any questions regarding this letter, please contact me at 505-476-6035.

Sincerely,



John Kielling
Bureau Chief

JP:DM

cc: J. Kenney, NMED Cabinet Secretary
J. Pruet, NMED Deputy Secretary
Col. J. Alvarez, KAFB
K. Lynnes, KAFB
B. Renaghan, AFCEC
S. Clark, KAFB-AFCEC
B. Faris, AEHD
F. Shean, ABCWUA
L. King, EPA-Region 6 (6PD-N)
A. Romero, NMED-GWQB
M. Hunter, NMED-GWQB
D. McQuillan, NMED-OOTS

File: KAFB 2019 Bulk Fuels Facility Spill and Reading



DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)

JUL 23 2018

Colonel Richard W. Gibbs, USAF
Commander
377th Air Base Wing
2000 Wyoming Blvd SE
Kirtland AFB NM 87117

GROUND WATER

JUL 30 2018

BUREAU

Mr. John Kieling, Bureau Chief
Hazardous Waste Bureau (HWB)
New Mexico Environment Department (NMED)
2905 Rodeo Park Drive East, Building 1
Santa Fe NM 87505-6303

Dear Mr. Kieling

Kirtland Air Force Base (AFB) is requesting deferral of the air-lift enhanced bioremediation pilot test approved by NMED on April 6, 2018 in the *Work Plan for Bioventing and Air-lift Enhanced Bioremediation Pilot Test, Bulk Fuels Facility, Solid Waste Management Unit (SWMU) ST-106/SS-111, Kirtland Air Force Base, New Mexico, dated November 2017*. This request for deferral follows a meeting that was held between Kirtland Air Force Base and Mr. Dennis McQuillan on June 7, 2018, to discuss 1) the positive results coming from the anaerobic in situ bioremediation (ISB) pilot test 2) the technical issues have lead the Air Force to recommend placing the air-lift enhanced bioremediation pilot test on hold at this time. Some of the issues with the proposed air-lift technology were discussed at the meeting and include:

- a. The ground water in the pilot test location is currently anaerobic. Introduction of oxygen into groundwater with elevated ferrous iron concentrations (and possibly other minerals) caused by the strongly reducing condition near residual nonaqueous phase liquid (NAPL) will quickly foul and plug the pilot test well significantly impeding water flow.
- b. The mineral fouling will result in excessive maintenance and well rehabilitation, and after several redevelopment events, will result in wells that are typically of limited effectiveness.
- c. This technology relies on establishing a groundwater circulation pattern which has proven difficult to achieve on many sites. As a result, it is estimated the zone of influence for air-lift enhanced wells will be quite small, and it is unlikely that sufficient oxygen will be delivered to groundwater to have significant impact.
- d. Even if the air-lift pilot test proved technically feasible, because of the limited zone of influence of this technology, scaling-up the technology would require an inordinate number of wells to treat a residual NAPL zone measured in acres.

- e. Full-scale implementation of this technology at the BFF is infeasible due to limited zone of influence and highly unlikely for future selection in an alternatives analysis.

The general concurrence of meeting participants was that the air-lift pilot test should not be performed at this time. Kirtland Air Force Base (AFB) is hereby formally requesting deferral of the air-lift enhanced bioremediation pilot test until additional source zone information is collected during the coring program and final data are available from the ISB project. However, Kirtland AFB would like to proceed with coring the proposed air-lift well KAFB-106S1 location and installing a two-well nest design currently approved on February 28, 2018 under the *Work Plan for Data Gap Monitoring Well Installation, Bulk Fuels Facility, Solid Waste Management Unit (SWMU) ST-106/SS-111, Kirtland Air Force Base, New Mexico, dated December 2017*.

If you have any questions or concerns, please contact Mr. Scott Clark at (505) 846-9017 or at scott.clark@us.af.mil; or Mr. Sheen Kottkamp at (505) 846-7674 or at sheen.kottkamp.1@us.af.mil.

Sincerely



RICHARD W. GIBBS, Colonel, USAF
Commander

cc:

NMED (Borrego) letter

NMED-OOTS (McQuillan), letter and CD

NMED GWQB (Hunter), letter and CD

EPA Region 6 (King, Ellinger), letter and CD

SAF-IEE (Lynnes), electronic only

AFCEC/CZ (Renaghan, Clark, Kottkamp, Segura), electronic only

USACE-ABQ District Office (Moayyad, Phaneuf, Dreeland, Sanchez, Salazar), electronic only

Public Info Repository, Administrative Record/Information Repository (AR/IR) and File



DEPARTMENT OF THE AIR FORCE
377TH AIR BASE WING (AFGSC)

JUL 23 2018

Colonel Richard W. Gibbs, USAF
Commander
377th Air Base Wing
2000 Wyoming Blvd SE
Kirtland AFB NM 87117

Mr. John Kieling, Bureau Chief
Hazardous Waste Bureau (HWB)
New Mexico Environment Department (NMED)
2905 Rodeo Park Drive East, Building 1
Santa Fe NM 87505-6303

Dear Mr. Kieling

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- b. The mineral fouling will result in excessive maintenance and well rehabilitation, and after several redevelopment events, will result in wells that are typically of limited effectiveness.
- c. This technology relies on establishing a groundwater circulation pattern which has proven difficult to achieve on many sites. As a result, it is estimated the zone of influence for air-lift enhanced wells will be quite small, and it is unlikely that sufficient oxygen will be delivered to groundwater to have significant impact.
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- e. Full-scale implementation of this technology at the BFF is infeasible due to limited zone of influence and highly unlikely for future selection in an alternatives analysis.

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If you have any questions or concerns, please contact Mr. Scott Clark at (505) 846-9017 or at scott.clark@us.af.mil; or Mr. Sheen Kottkamp at (505) 846-7674 or at sheen.kottkamp.1@us.af.mil.

Sincerely



RICHARD W. GIBBS, Colonel, USAF
Commander

cc:

NMED (Borrego) letter

NMED-OOTS (McQuillan), letter and CD

NMED GWQB (Hunter), letter and CD

EPA Region 6 (King, Ellinger), letter and CD

SAF-IEE (Lynnes), electronic only

AFCEC/CZ (Renaghan, Clark, Kottkamp, Segura), electronic only

USACE-ABQ District Office (Moayyad, Phaneuf, Dreeland, Sanchez, Salazar), electronic only

Public Info Repository, Administrative Record/Information Repository (AR/IR) and File



APPENDIX A-2
REGULATORY PERMIT CROSS REFERENCE

Appendix A-2
RCRA Permit Cross Reference

RCRA Permit Part	Permit Requirement	Reference Location in Work Plan for Groundwater Monitoring
Part 6	Corrective Action	Section 3 Regulatory Criteria
6.2.2.2.5	Long-Term Reliability and Effectiveness	Section 7 Conclusions and Recommendations
6.5.1	Standard Operating Procedures	Executive Summary Section 3 Regulatory Criteria
Part 6.5.2	Documentation of Field Activities	Section 4 Scope of Activities Appendix B Field Forms
Part 6.5.4	Field Equipment Calibration Procedures	Section 4.3 Baseline Respirometry and Vapor Sampling Section 4.5 Long-Term Bioventing Pilot Test Appendix B Field Forms
Part 6.5.5	Sample Handling, Shipping, and Custody Requirements	Section 4.3 Baseline Respirometry and Vapor Sampling Section 4.5 Long-Term Bioventing Pilot Test
Part 6.5.6	In-Situ Testing and Other Tests	Executive Summary Section 3 Regulatory Criteria
Part 6.5.16	Requirements for Soil Vapor Monitoring	Section 4.3.1 Baseline Respirometry and Vapor Sampling
Part 6.5.18	Laboratory Analyses Requirements for all Environmental Media	Section 4.3 Baseline Respirometry and Vapor Sampling Section 4.5 Long-Term Bioventing Pilot Test Table 4-25

RCRA = Resource Conservation and Recovery Act

APPENDIX B

FIELD FORMS

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 10/7/19

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya Joe	EA - Site Manager/Supervisor
Josh Livingston	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1130	On site
1210	Calibrate Equipment
	Horiba
	O ₂ (20.8%) CO ₂ (13.0%) VOCs (1580ppm by vol)
	Pre 20.63 13.02 821
	Cal 20.80 13.00 822
	Post 20.88 12.88 807
1238	Begin Respiratory
1330	Flow meter at SVEU-02/03-160 damaged. Pending fix.
1351	Finish Respiratory
1400	Offsite 1

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 10/8/19

Team #

1. ONSITE PERSONNEL (including subcontractors and government employees)

[illegible]

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump	

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1100	On site
1137	Begin injection readings
1200	Finish injection readings
1201	Begin Calibrate. (Horizon O_2 (20.8%) CO_2 (13.00%) VOCs (1580 ppm Propane)
	Pre 20.73 13.16 834
	Cal 20.80 13.00 823
	Post 21.04 12.76 800
1215	Begin respiratory
1322	Finish respiratory
1350	Offsite

John Lutz

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 10/9/19

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JPL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1105	ONSITE
1115	Calibrate Horiba
	O ₂ (20.8%) CO ₂ (13.0%) VOCs (1580 ppm propane)
	Pre 20.31 13.20 834
	Cal 20.79 13.00 823
	Post 20.83 12.70 804
1200	Take injection readings
1201	Begin respiratory
1300	Finish respiratory
1330	Offsite

Josh Livingston

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 10/15/19

Team #

1. ONSITE PERSONNEL (including subcontractors and government employees)

[illegible]

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump	

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0800	On site			
	Heads. Calibrated by FVM team, bumps			
	O ₂ (20.8%) CO ₂ (13.0%) VOCs (1580 ppm propane)			
0900	Bump	20.99	12.36	767
0928	Samples and two readings of	KAPB	WGV1-102.1	
0942	"	"	"	" V1-112.6
1016	"	"	"	" V1-154.6 and DUP
1026	"	"	"	" V1-217.1
1040	"	"	"	" V1-252.1
1055	"	"	"	" V1-262.6
1140	"	"	"	" V2-102.2
1156	"	"	"	" V2-117.1 and DUP

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 10/31/19

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JRL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0720	Onsite
0745	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre	19.91 12.28 810
C-1	20.80 13.00 821
Post	21.10 13.52 812
0819	Sampled and took respiratory readings of KAFB-106VI 1021
0833	" " 1126
0850	" " 159.6 and BVP
0919	" " 217.1
0931	" " 252.1
0956	" " 262.6

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

DATE: 10/31/19

4. WORK PERFORMED (Continued)

1025	Sampled and took respirometry readings of ICAPB-106V2		102.2
1038	"	"	117.1 mDP
1104	"	"	159.9
1117	"	"	217.1
1132	"	"	252.2
1140	"	"	269.5
1150	Took injection readings		
	offsite		

5. **CONTRACTOR'S VERIFICATION:** I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications noted above.

Name _____

Signature _____

DQCR Page 2 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 11/5/19

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JRL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0730	ONSITE
0748	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre.	20.85 13.54 821
Cal	20.80 12.98 822
Post	20.80 12.96 816
0820	Samples and took injection readings of KAPB-10601 102.1
0832	" " 112.6
0846	" " 159.6 and DUP
0913	" " 217.1
0931	" " 252.1
0948	" " 262.6

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report - Non-Construction

DATE: 11/5/19

4. WORK PERFORMED (Continued)

1020	Samples and both respirometry readings of KAFB-106V2 102.2
1039	" " 117.1 and DVP
1059	" " 159.9
1106	" " 217.1
1117	" " 252.2
1129	" " 269.5
1138	Took injection readings
1210	offsite

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications noted above.

Name

JOSE LIVINGSTON

Signature

[Signature]

DQCR Page 2 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 01/13/2020

Team #				
1. ONSITE PERSONNEL (including subcontractors and government employees)				
Name		Organization		
Carlos Montoya - JRL		EA - Site Manager/Supervisor		
JOSE LIVINGSTON				
2. OPERATING EQUIPMENT				
Horiba	Sample System	Manometer	Vacuum Pump	
3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)				
4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)				
0800	Onsite			
0820	Calibrate Horiba			
	O ₂ (20.8%) CO ₂ (13.0%) VOCs (1580 ppb propane)			
	Pre	20.15	12.84	839
	Cal	20.80	13.00	821
	Post	21.05	13.04	815
0856	Sampled and took respirometry readings of KAFB-106V1-102-1			
0912	"			"-112.6
0925	"			"-159.8 and DUP
0947	"			"-217.1
1002	"			"-252.1
1015	"			"-262.6

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE:

DATE: _____

Team #

1. ONSITE PERSONNEL (including subcontractors and government employees)

[illegible]

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump	

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1100	Onsite
1120	Calibrate Horiba
	O ₂ (20.8%) CO ₂ (13.0%) VOCs (1580 ppm propane)
Pre	20.12 12.94 821
Cal	20.80 13.00 824
Post	20.90 13.08 824
1250	Took respiratory readings
1308	Took injection readings
1320	Offsite
	JRL

DQCR Page 1 of 2

Reviewed by:

Reviewed date:

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 3/13/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
<u>Carlos Montoya JRL</u>	EA - Site Manager/Supervisor
<u>JOSH LIVINGSTON</u>	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0735	Onsite
0736	Site inspection. All pumps operational and intact.
0740	Offsite

Josh Livingston

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

DATE: 3/25/2020

[illegible]

Organization	EA - Site Manager/Supervisor
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2. OPERATING EQUIPMENT

Vacuum Pump	
-------------	--

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1050 OPPOSITE

JOSHUA LIVINGSTON

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62736DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 3/30/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JRL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0940	Onsite
0950	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppb propane)
Pre	20.82 12.94 521
Cal	20.80 13.00 827
Post	21.09 12.90 807
1012	Took initial injection readings
1014	Completed injection operations
1123	Took respiratory readings
1145	Offsite
	JRL

John Livingston

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 3/31/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JRL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0720	Onsite
	Calibrate Horiba
Pre	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1500 ppb - pre-vue)
Enter Pre	19.53 12.94 820
Post	Cal 20.80 13.00 824
	Post 20.85 13.04 821
0900	Take respiratory readings
0910	Offsite
	JRL

Reviewed by: _____

DQCR Page 1 of 2

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 4/1/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya - JRL	EA - Site Manager/Supervisor
JOSE LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0720	Onsite
0740	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre	20.78 12.80 820
Cal	20.80 13.04 826
Post	20.85 13.20 840
0840	Take Respiratory readings
0900	Offsite
	JRL

[Signature]
Reviewed by: _____

DQCR Page 1 of 2

JOSE LIVINGSTON
Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 4/12/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya	JRL
JOSH LIVINGSTON	EA - Site Manager/Supervisor

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0725	Onsite
0735	Calibrate Horiba
	O ₂ (20.80%), CO ₂ (13.00%), VOCs (1580 ppm propane)
Pre	20.45 12.82 815
Cal	20.80 12.98 824
Post	20.88 12.78 811
0845	Take representative readings
0900	Offsite
	JRL

Josh Livingston
Reviewed by: _____

DQCR Page 1 of 2

JOSH LIVINGSTON
Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 4/3/2020

Team #

1. ONSITE PERSONNEL (including subcontractors and government employees)

[illegible]

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0720	On site		
0740	Calibrate Horiba		
	O ₂ (20.80%)	CO ₂ (13.00%)	VOCs (1580 ppm propane)
Pre.	20.50	13.00	826
Cal	20.80	13.00	826
Post	20.86	13.06	826
0852	Take respirometry readings		
0910	Off site		
	JRL		

Reviewed by: John L.

DQCR Page 1 of 2

Reviewed date:

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 4/6/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JRL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0710	On-site
	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre:	20.80 13.16 836
Cal:	20.80 13.00 826
Post:	20.85 13.16 828
0819	Took respiratory readings and samples at KAFB-106VI-102
0833	" " " - 113
0846	" " " - 160 and DUP
0913	" " " - 217
0925	" " " - 252
0944	" " " - 263

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

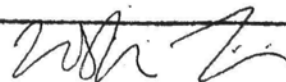
DATE: 4/7/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)				
Name	Organization			
Carlos Montoya	JRL			
	EA - Site Manager/Supervisor			
JOSH LIVINGSTON				
2. OPERATING EQUIPMENT				
Horiba	Sample System	Manometer	Vacuum Pump	
3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)				
4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)				
0840	Onsite			
0851	Inject 100 gallons of GWTS effluent water into SVMW-10-100			
0928	" SVMW-10-150			
1047	" SVMW-10-250			
1218	" SVMW-11-100			
1303	" SVMW-11-250			
1403	" SVMW-11-260			
1500	Took JRL Respirator injection, take injection readings			
1520	Offsite			
	JRL			

JOSH LIVINGSTON

DQCR Page 1 of 2



Reviewed by: _____

Reviewed date: _____

DATE: 4/16/2020

[illegible][illegible]

2. OPERATING EQUIPMENT

Team #1		Team #2		Spare	
YSI Professional Plus 15K101398	<input type="checkbox"/>	YSI Professional Plus 15K101396	<input type="checkbox"/>	YSI Professional Plus 15L100541	<input type="checkbox"/>
Wh0003	<input type="checkbox"/>	Wh0001	<input type="checkbox"/>	Wh0002	<input type="checkbox"/>
MiniRAE 3000 592-915778	<input type="checkbox"/>	MiniRAE 3000 592-915790	<input type="checkbox"/>	MiniRAE 3000 592-915579	<input type="checkbox"/>
Wh0005	<input type="checkbox"/>	Wh0004	<input type="checkbox"/>	Wh0006	<input type="checkbox"/>
Hach 2100Q 15100C045034	<input type="checkbox"/>	Hach 2100Q 15100C044633	<input type="checkbox"/>	Hach 2100Q 15100C045025	<input type="checkbox"/>
Wh0008	<input type="checkbox"/>	Wh0009	<input type="checkbox"/>	Wh0007	<input type="checkbox"/>
Solinst Water Level Meter 253054	<input type="checkbox"/>	Solinst Water Level Meter 253053	<input type="checkbox"/>	Solinst Water Level Meter 253066	<input type="checkbox"/>

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

[illegible]

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)	
0742	Onsite

ID	Location, time, and description of work performed by prime and/or subcontractors
0742	Onsite
0743	Checked pumps, yard. All operational.
0744	Offsite
	JRL

JOSEPH LIVINGSTON

DQCR Page 1 of 2

Reviewed by:

InHoler:

Reviewed date:

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: Divorced

DATE: 5/5/2020

Team #

[illegible][illegible]

2. OPERATING EQUIPMENT

[illegible]

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

	(Public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0705	On site		
0710	Calibrate Horiba		
	O ₂ (20.80%)	CO ₂ (13.00%)	VOCs (1580 ppm propane)
Poc.	20.79	13.04	830
C-1	20.80	13.00	826
P-5T	20.81	13.14	810
0911	Take injection + respiratory readings		
0920	offsite		
	JL		

JOSEPH LIVINGSTON

DQCR Page 1 of 2

Reviewed date: _____

DATE: 5/21/2020

1. ONSITE PERSONNEL (including subcontractors and government employees)

Personnel: Environmental (including subcontractors and government employees)	
Name	Organization
JOSEPH LIVINGSTON	EA - Site Manager/Supervisor
	EA - Site Health and Safety Office

2. OPERATING EQUIPMENT

Team #1	Team #2	Score
YSI Professional Plus 15K101398 Wh0003	YSI Professional Plus 15K101398 Wh0001	YSI Professional Plus 15L100541 Wh0002
MiniRAE 3000 592-915778 Wh0005	MiniRAE 3000 592-915790 Wh0004	MiniRAE 3000 592-915579 Wh0008
Hach 2100Q 15100C045034 Wh0008	Hach 2100Q 15100C044533 Wh0009	Hach 2100Q 15100C046025 Wh0007
Solinst Water Level Meter 253054	Solinst Water Level Meter 253053	Solinst Water Level Meter 253056

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)	
1130	Mobile

1130	Onsite
1131	Ensured all blowers running, intact and free from obstructions
1134	Offsite
	n

JOSEPH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Initiator: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 5/28/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0720	Onsite
0730	Calibrate Horiba
	02 (20.80%) CO2 (13.00%) VOCs (1580 ppm propane)
Pre	20.76 13.12 818
Cal	20.80 13.00 826
Post	20.91 13.16 817
0857	Take respirometry readings
0912	Take injection readings
0928	Take blower temps
	SVMW-10 SVMW-11 SVEW -01 -02/03 -04/05
IN	157 °F 175 °F 98 °F — — —
OUT	94 °F 97 °F — 94 °F 98 °F 94 °F

0934 Offsite

Reviewed by: [Signature]

DQCR Page 1 of 2

Reviewed date: 5/28/2020

DATE:

1. ONSITE PERSONNEL (including subcontractors and government employees)

Organization	<p>1. Organization</p> <p>2. Organization</p> <p>3. Organization</p> <p>4. Organization</p> <p>5. Organization</p> <p>6. Organization</p> <p>7. Organization</p> <p>8. Organization</p> <p>9. Organization</p> <p>10. Organization</p> <p>11. Organization</p> <p>12. Organization</p> <p>13. Organization</p> <p>14. Organization</p> <p>15. Organization</p> <p>16. Organization</p> <p>17. Organization</p> <p>18. Organization</p> <p>19. Organization</p> <p>20. Organization</p> <p>21. Organization</p> <p>22. Organization</p> <p>23. Organization</p> <p>24. Organization</p> <p>25. Organization</p> <p>26. Organization</p> <p>27. Organization</p> <p>28. Organization</p> <p>29. Organization</p> <p>30. Organization</p> <p>31. Organization</p> <p>32. Organization</p> <p>33. Organization</p> <p>34. Organization</p> <p>35. Organization</p> <p>36. Organization</p> <p>37. Organization</p> <p>38. Organization</p> <p>39. Organization</p> <p>40. Organization</p> <p>41. Organization</p> <p>42. Organization</p> <p>43. Organization</p> <p>44. Organization</p> <p>45. Organization</p> <p>46. Organization</p> <p>47. Organization</p> <p>48. Organization</p> <p>49. Organization</p> <p>50. Organization</p> <p>51. Organization</p> <p>52. Organization</p> <p>53. Organization</p> <p>54. Organization</p> <p>55. Organization</p> <p>56. Organization</p> <p>57. Organization</p> <p>58. Organization</p> <p>59. Organization</p> <p>60. Organization</p> <p>61. Organization</p> <p>62. Organization</p> <p>63. Organization</p> <p>64. Organization</p> <p>65. Organization</p> <p>66. Organization</p> <p>67. Organization</p> <p>68. Organization</p> <p>69. Organization</p> <p>70. Organization</p> <p>71. Organization</p> <p>72. Organization</p> <p>73. Organization</p> <p>74. Organization</p> <p>75. Organization</p> <p>76. Organization</p> <p>77. Organization</p> <p>78. Organization</p> <p>79. Organization</p> <p>80. Organization</p> <p>81. Organization</p> <p>82. Organization</p> <p>83. Organization</p> <p>84. Organization</p> <p>85. Organization</p> <p>86. Organization</p> <p>87. Organization</p> <p>88. Organization</p> <p>89. Organization</p> <p>90. Organization</p> <p>91. Organization</p> <p>92. Organization</p> <p>93. Organization</p> <p>94. Organization</p> <p>95. Organization</p> <p>96. Organization</p> <p>97. Organization</p> <p>98. Organization</p> <p>99. Organization</p> <p>100. Organization</p>
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EA - Site Manager/Supervisor

EA - Site Health and Safety Office

2. OPERATING EQUIPMENT

Team #1

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Team #2

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1

Spare

7

1

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7

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

0751	Onsite
------	--------

0752	Engine	all blowers	operational, site intact
0753	Offsite:		

22

DQCR Page 1 of 2

Initials:

Reviewed date:

Provenly

DATE: 6/11/2020

[illegible]

2. OPERATING EQUIPMENT

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

JOSEPH LIVINGSTON

Die Z

Reviewed date: _____

ROLE:

DATE: 6/19/2020

Team #

[illegible]

2. OPERATING EQUIPMENT

2.3. TESTING EQUIPMENT				
Horiba	Sample System	Manometer	Vacuum Pump	

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

[illegible]

4. **WORK PERFORMED** (Indicate location, time, and description of work performed by prime and/or subcontractors)

[illegible]

JOSEPH LIVINGSTON

DQGR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 6/22/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Onsite					
	Calibrate Horiba					
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)					
Pre	20.67	13.14	821			
Cal	20.80	13.00	825			
Post	20.85	13.06	827			
0740	SVEW, SVMW air injection stopped					
0741	Take respiratory readings					
0850	SVMW-10	SVMW-11	SVEW	-01	-02/03	-04/05
IN	OF	OF	OF	—	—	—
OUT	OF	OF	—	OF	OF	OF
0856	Offsite					

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 6/23/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya - JC	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Onsite
0715	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre	20.66 12.82 822
Cal	20.80 13.00 826
Post	20.83 13.10 826
0725	Take respiratory readings
0900	Offsite
	JLC

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 6/29/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)				
Name	Organization			
Carlos Montoya JL	EA - Site Manager/Supervisor			
JOSH LIVINGSTON				
2. OPERATING EQUIPMENT				
Horiba	Sample System	Manometer	Vacuum Pump	
3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)				
4. WORK PERFORMED (indicate location, time, and description of work performed by prime and/or subcontractors)				
0700	Onsite			
	Calibrate Horiba			
Pre-JL	O ₂ (20.80%)	CO ₂ (13.00%)	VOCs (1580 ppm)	Propane
Pre:	20.54	12.86	826	
Cal	20.79	12.94	826	
Post	20.87	13.16	824	
0849	take respirometry readings			
0900	offsite			
	JRL			

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 6/26/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Onsite
0720	Calibrate Horiba
	O ₂ (20.50%) CO ₂ (13.00%) VOCs (1550 ppm propane)
Pre	20.78 12.94 821
Cal	20.80 13.00 824
Post	20.89 13.24 830
0745	Take Respiratory readings
0900	Offsite
	JRL

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 6/30/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)				
Name	Organization			
Carlos Montoya JL	EA - Site Manager/Supervisor			
J LIVINGSTON				
G REGAYE				
2. OPERATING EQUIPMENT				
Horiba	Sample System	Manometer	Vacuum Pump	
3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)				
4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)				
0710	Onsite			
0730	Calibrate Horiba			
	O ₂ (20.80%) < O ₂ (13.00%) VOCs (1580 ppm propane)			
Pre	20.75	13.04	820	
Cal	20.80	13.00	823	
Post	20.90	13.48	838	
0811	Take respiratory and samples on KAFB-10061-102			
0827	"	"	"	"-113
0842	"	"	"	"-160 and DUP
0907	"	"	"	"-217
0920	"	"	"	"-252
0935	"	"	"	"-263

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

4. WORK PERFORMED (Continued)		DATE: 8/30/2020
0953	Take respirometry and samples on KAFB-106v2-102	
1005	" "	" -117 and DV1
1034	" "	" -160
1047	" "	" -217
1058	" "	" -252
1118	" "	" -270
1200	Offsite	

JFL

5. **CONTRACTOR'S VERIFICATION:** I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications noted above.

EA Engineering, Science and Technology Inc., PBC

Reviewed by: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 7/1/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
J Livingston	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0800	Onsite
0810	Inject 100 gallons of GWTs effluent water into SVMW-10-100
0850	Inject 100 gallons of GWTs effluent water into SVMW-10-150
0930	Inject 100 gallons of GWTs effluent water into SVMW-10-250
1030	Inject 100 gallons of GWTs effluent water into SVMW-11-100
1420	Inject 100 gallons of GWTs effluent water into SVMW-11-250
1500	Inject 100 gallons of GWTs effluent water into SVMW-11-260
1600	Offsite

JOSH LIVINGSTON

DOOR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 7/8/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JC	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1330	Onsite
1331	check status of blowers — SVEW blower is broken off at the PVC nipple — PVC fittings are replaced with steel and reattached.
1500	Offsite

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

DATE: 7/15/2020

[illegible]

Team #1		Team #2		Spare	
YSI Professional Plus 18L100378 WH0003	<input type="checkbox"/>	YSI Professional Plus 15K101396 WH0001	<input type="checkbox"/>	YSI Professional Plus 15L100541 WH0002	<input type="checkbox"/>
MiniRAE 3000 592-915778 WH0005	<input type="checkbox"/>	MiniRAE 3000 592-915790 WH0004	<input type="checkbox"/>	MiniRAE 3000 592-915579 WH0006	<input type="checkbox"/>
Geotech Turbidimeter 18081855	<input type="checkbox"/>	Hach 2100Q 15100C04633 WH0009	<input type="checkbox"/>	Hach 2100Q 15100C045025 WH0007	<input type="checkbox"/>
Solinst Water Level Meter 253056	<input type="checkbox"/>	Solinst Water Level Meter 253053 WH0012	<input type="checkbox"/>	Geotech Interface Probe 0001	<input type="checkbox"/>

[illegible]

1000	Onsite
1001	Ensure all pumps operational and intact
1002	Offsite

Reviewed date:

DATE: 7/22/2020

[illegible]

24/11/20

JOSIAH LIVINGSTON

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 7/31/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)				
Name	Organization			
Carlos Montoya - JL	EA - Site Manager/Supervisor			
JOSH LIVINGSTON				
2. OPERATING EQUIPMENT				
Horiba	Sample System	Manometer	Vacuum Pump	
3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)				
4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)				
0720	Onsite			
0740	Replaced O ₂ sensor on Horiba (EA2)			
0811	Calibrate Horiba			
Pres	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)			
Pre	19.68	13.24	826	
Post	20.80	13.00	826	
Post	20.90	13.12	828	
0815	Take respiratory and injection readings			
1000	offsite			
	JL			

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

ROLE: _____

DATE: 8/3/2020

1. ONSITE PERSONNEL (including subcontractors and government employees)

[illegible]

2. OPERATING EQUIPMENT

[illegible]

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

[illegible]

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0801	Onsite
0802	Ensure pumps are operational and intact.
0803	Offsite
J.R.L.	

Reviewed by: _____

DQGR Page 1 of 2

Reviewed date: _____

ROLE: _____

DATE: 8/13/2020

[illegible][illegible]

2. OPERATING EQUIPMENT

[illegible]

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

[illegible]

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1000	Onsite
1001	Check pumps: Intact and operational
1005	Offsite

JOSEPH LIVINGSTON

DQGR Page 1 of 2

Reviewed date: _____

ROLE: _____

DATE: 8/18/2020

[illegible]

Name	Organization
-Carlos Montoya JL	EA - Site Manager/Supervisor

JUST LIVINGSTON

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump
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3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)	

1000	Onsite
1001	Verify pumps are operational, intact
1002	Offsite

26

JOSH LIVINGSTON

DQGR Page 1 of 2

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 8/31/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0650	Onsite
0720	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre	20.63 13.00 823
Cal	20.80 13.00 826
Post	20.84 13.04 825
0730	Take respirometry and injection readings
0930	Offsite

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility – 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 09/09/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya — JL	EA - Site Manager/Supervisor
JOSE LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0655	Onsite
0656	Verify integrity of pumps + covers
0700	Offsite

JOSE LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

DATE: _____

[illegible]

Team #1	Team #2	Spare
YSI Professional Plus 18L100378 WH0003	YSI Professional Plus 15K101396 WH0001	YSI Professional Plus 15L100541 WH0002
MiniRAE 3000 592-915778 WH0005	MiniRAE 3000 592-915790 WH0004	MiniRAE 3000 592-915579 WH0006
Geotech Turbidimeter 18081855	Hach 2100Q 15100C044633 WH0009	Hach 2100Q 15100C045025 WH0007
Solinst Water Level Meter 253056	Solinst Water Level Meter 253053 WH0012	Geotech Interface Probe 0001

1000	Onsite
1001	Ensure integrity of pumps, operations
1002	Offsite

HL

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 9/22/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (indicate location, time, and description of work performed by prime and/or subcontractors)

0700	On-site
0730	Calibrate Horiba
	O ₂ (20.50%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre.	20.58 13.00 821
Cal.	20.79 13.00 826
Post	20.86 13.02 821
0800	Take respiratory readings
1000	Off-site
	JL

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62736DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 9/23/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (Include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0720	Onsite
0750	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre	20.52% 12.80 826
Cal	20.80 13.00 826
Post	20.85 12.85 820
0805	Take respiratory readings
1000	Offsite

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 82736DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 9/24/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Onsite
0730	Calibrate Horiba
	O ₂ (20.80%), CO ₂ (13.00%), VOCs (1580 ppm propane)
Pre.	20.49 13.14 824
Cal	20.80 13.00 826
Post	20.87 13.08 834
0745	Take respirometry readings
1010	Offsite

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 6273SDM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 9/25/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Onsite
0730	Calibrate Horiba
	02 (20.807) (02 (13.007) V.O.C.s (1580 ppm propane)
Pre	20.51 12.84 825
Cal	20.79 13.00 826
Post	20.80 13.00 830
0740	Take veryometry readings
1003	Offsite
	JRL

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 9/29/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
<u>Carlos Montoya Jr.</u>	EA - Site Manager/Supervisor
<u>JOSEPH LIVINGSTON</u>	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0730	On site
	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1500ppm propane)
Pre	20.57 12.90 826
Cal	20.80 12.98 826
Post	20.95 12.80 780
0826	Take respiratory readiness and sample KAFB-106V1-102
0843	" " " -113
0856	" " " -160 and DUP
0919	" " " -217
0931	" " " -252
0944	" " " -263

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 9/29/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya - JL	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1018	Take respirometry readings and sample KAPB-106V2 - 102
1031	" " " -11.7 and DUP
1052	" " " -160
1109	" " " -217
1122	" " " -252
1135	" " " -270
1230	offsite

JRL

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62736DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 9/30/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JC	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (indicate location, time, and description of work performed by prime and/or subcontractors)

0730	Onsite
0757	Inject 100 gal of stain 1 GWTS effluent water into SVMW-10-100
0810	" SVMW-10-150
0915	" SVMW-10-250
1034	" SVMW-11-100
1114	" SVMW-11-250
1156	" SVMW-11-260
1245	Turn pumps back on, take injection readings
1300	Offsite
	JRC

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuel Facility - 62736DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 9/21/2020

Team # _____

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
Carlos Montoya JC	EA - Site Manager/Supervisor
JOSH LIVINGSTON	

2. OPERATING EQUIPMENT

Horiba	Sample System	Manometer	Vacuum Pump

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

0700	Onsite
0730	Calibrate Horiba
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)
Pre:	20.84% 12.98 825
Cal:	20.80% 13.00 826
Post:	20.85 13.06 820
0755	Shut off pumps
0800	Take initial respiratory readings
1000	Offsite
	JRL

Josh Livingston

DQCR Page 1 of 2

Reviewed by: _____

Reviewed date: _____

Bioventing 62735DM02
 Kirtland AFB Bulk Fuels Facility GWTS Expansion/Monitoring -- 62599DM01-JC
 Daily Quality Control Report – Non-Construction

ROLE: _____

DATE: 10/15/2020

WEATHER:

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
JOSH LIVINGSTON	EA - Site Manager/Supervisor
	EA - Site Health and Safety Office

2. OPERATING EQUIPMENT

Team #1	Team #2	Spare
YSI Professional Plus 15K101398 <input type="checkbox"/>	YSI Professional Plus 15K101396 <input type="checkbox"/>	YSI Professional Plus 15L100541 <input type="checkbox"/>
Wh0003	Wh0001	Wh0002
MiniRAE 3000 592-915778 <input type="checkbox"/>	MiniRAE 3000 592-915790 <input type="checkbox"/>	MiniRAE 3000 592-915579 <input type="checkbox"/>
Wh0005	Wh0004	Wh0006
Hach 2100Q 15100C045034 <input type="checkbox"/>	Hach 2100Q 15100C044633 <input type="checkbox"/>	Hach 2100Q 15100C045025 <input type="checkbox"/>
Wh0008	Wh0009	Wh0007
Solinst Water Level Meter 253054 <input type="checkbox"/>	Solinst Water Level Meter 253053 <input type="checkbox"/>	Solinst Water Level Meter 253056 <input type="checkbox"/>

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1330	Onsite
1331	Verify that all pumps are operational
1334	Offsite

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Initials: _____

Reviewed date: _____

Bioventilation 62735D mo 2
 Kirtland AFB Bulk Fuels Facility GWTS-Expansion/Monitoring - 62599DM04-JL
 Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 10/29/2020

WEATHER:

1. ONSITE PERSONNEL (including subcontractors and government employees)

Name	Organization
JOSH LIVINGSTON	EA - Site Manager/Supervisor
	EA - Site Health and Safety Office

2. OPERATING EQUIPMENT

Team #1	Team #2	Spare
YSI Professional Plus 15K101398 Wh0003 <input type="checkbox"/>	YSI Professional Plus 15K101396 Wh0001 <input type="checkbox"/>	YSI Professional Plus 15L100541 Wh0002 <input type="checkbox"/>
MiniRAE 3000 592-915778 Wh0005 <input type="checkbox"/>	MiniRAE 3000 592-915790 Wh0004 <input type="checkbox"/>	MiniRAE 3000 592-915579 Wh0006 <input type="checkbox"/>
Hach 2100Q 15100C045034 Wh0008 <input type="checkbox"/>	Hach 2100Q 15100C044633 Wh0009 <input type="checkbox"/>	Hach 2100Q 15100C045025 Wh0007 <input type="checkbox"/>
Solinst Water Level Meter 253054 <input type="checkbox"/>	Solinst Water Level Meter 253053 <input type="checkbox"/>	Solinst Water Level Meter 253056 <input type="checkbox"/>

3. DAILY SUMMARY (include QC samples collected, deviations from planning documents, conversations with the public and governmental employees, and problems encountered and remedies applied)

0750	Onsite		
0810	Calibrate Hach		
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580 ppm propane)		
Pre	19.16	13.02	829
Cal	20.80	13.00	831
Post	20.92	12.52	790
0830	Take respiratory readings		
Temps	SVMW-10	SVMW-11	SUEW
°F	65.1	75.2	70.2

4. WORK PERFORMED (Indicate location, time, and description of work performed by prime and/or subcontractors)

1015	Offsite
	JAL

JOSH LIVINGSTON

DQCR Page 1 of 2

Reviewed by: _____

Initials: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: Engineer I

DATE: 11/5/2020

WEATHER: Clear

1. ONSITE PERSONNEL (including subcontractors and government employees)			
Name		Organization	
Bernie Bockisch		EA - Site Manager/Supervisor	
Josh Livingston		EA - Engineer I	
2. OPERATING EQUIPMENT			
Horiba	Sample System	Manometer	Vacuum Pump
3. DAILY SUMMARY (include QC samples collected, deviations from plans, conversations with the public and government employees, and problems encountered and remedies applied)			
4. WORK PERFORMED (Indicate time, and description of work performed by prime and/or subcontractors)			
0830	Onsite		
0831	Verify all pumps operational and intact		
0835	Offsite		

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report – Non-Construction

DATE: 11/5/2020

4. WORK PERFORMED (Continued)

[illegible]

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications noted above.

Josh Livingston

Name

John Light

Signature

EA Engineering, Science and Technology Inc., PBC

DQCR Page 2 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report – Non-Construction

ROLE: Engineer I

DATE: 11/12/2020

WEATHER: Clear

1. ONSITE PERSONNEL (including subcontractors and government employees)			
Name		Organization	
Bernie Bockisch		EA - Site Manager/Supervisor	
Josh Livingston		EA - Engineer I	
2. OPERATING EQUIPMENT			
Horiba	Sample System	Manometer	Vacuum Pump
3. DAILY SUMMARY (include QC samples collected, deviations from plans, conversations with the public and government employees, and problems encountered and remedies applied)			
4. WORK PERFORMED (Indicate time, and description of work performed by prime and/or subcontractors)			
1003	Onsite		
1004	Verify all pumps operational and intact		
1007	Offsite		

Kirtland AFB Bulk Fuels Facility - 62735DM02
Daily Quality Control Report – Non-Construction

DATE: 11/12/2020

[illegible]

5. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications noted above.

Josh Livingston

Name


Signature

EA Engineering, Science and Technology Inc., PBC

DQCR Page 2 of 2

Reviewed by: _____

Reviewed date: _____

Kirtland AFB BFF
Bioventilation Pilot Testing Report
SWMUs ST-106/SS-111

October 2021

Kirtland AFB Bulk Fuels Facility - Data Gaps Drilling Project -- 62735DM02
Daily Quality Control Report -- Non-Construction

ROLE: _____

DATE: 11/19/2020

WEATHER: _____

WELL ID: _____

1. ONSITE PERSONNEL (including subcontractors and government employees)			
Name	Organization		
JOSH LIVINGSTON	EA - Site Manager/Supervisor		
	EA - Site Health and Safety Office		
2. OPERATING EQUIPMENT			
3. DAILY SUMMARY (include QC samples collected, deviations from plans, conversations with the public and government employees, and problems encountered and remedies applied)			
0730	Onsite		
0810	Calibrate Meter		
	O ₂ (20.80%) CO ₂ (13.00%) VOCs (1580ppm propane)		
Pre	20.57	13.78	832
Cal	20.80	12.98	832
Post	20.92	12.74	806
0841	Took respiratory and injection data		
1020	Offsite Swapped intake filters on vent pumps		
1040	Offsite		
4. WORK PERFORMED (Indicate time, and description of work performed by prime and/or subcontractors)			
	SVMW-10	SVMW-11	SVEW
Temp	17.2°C	12.3°C	17.4°C
(°C)	(63°F)	(54°F)	(63°F)

JOSH LIVINGSTON

DQCR Page 1 of 2

John E

Reviewed by: _____

Reviewed date: _____

Kirtland AFB Bulk Fuels Facility - Data Gaps Drilling Project -- 62735DM02
Daily Quality Control Report - Non-Construction

ROLE: _____

DATE: 11/25/2020

WEATHER: _____

WELL ID: _____

1. ONSITE PERSONNEL (including subcontractors and government employees)			
Name	Organization		
JOSH LIVINGSTON	EA - Site Manager/Supervisor		
	EA - Site Health and Safety Office		
2. OPERATING EQUIPMENT			
3. DAILY SUMMARY (include QC samples collected, deviations from plans, conversations with the public and government employees, and problems encountered and remedies applied)			
0700	Onsite		
0730	Calibrate Humidor		
	O ₂ (10.80%) CO ₂ (13.00%) VOCs (1580 ppb propane)		
Pre	20.34	12.96	828
Cal	20.80	13.00	833
Post	20.94	12.88	821
0831	Take respiratory readings		
0840	Offsite		
4. WORK PERFORMED (Indicate time, and description of work performed by prime and/or subcontractors)			

JOSH LIVINGSTON

DQCR Page 1 of 2


Reviewed date: _____

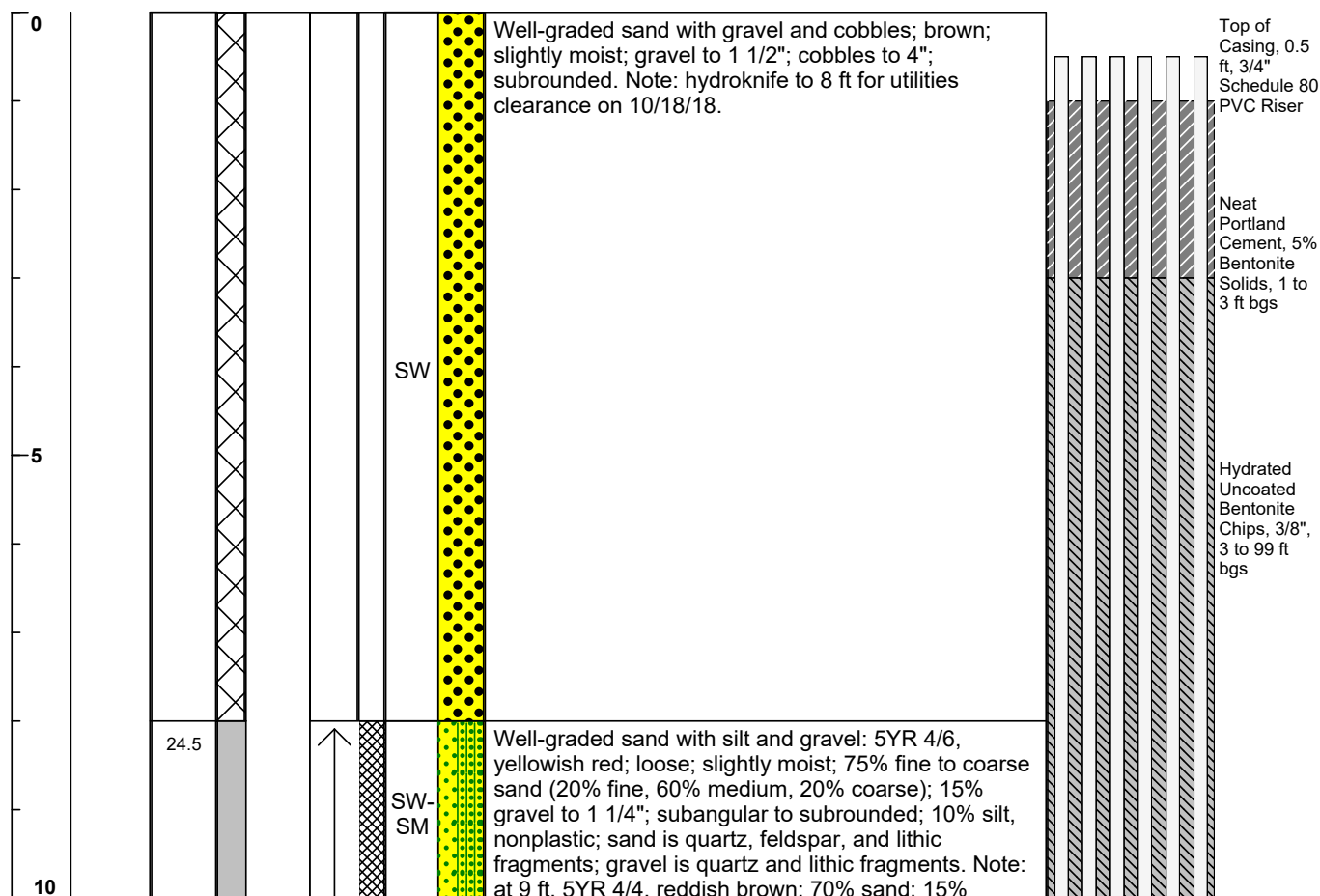
Reviewed by: _____

APPENDIX C

**LITHOLOGIC BORING LOGS AND WELL COMPLETION
DIAGRAMS FOR SOIL VAPOR MONITORING
WELLS KAFB-106V1 AND KAFB-106V2**

LITHOLOGIC BORING LOGS

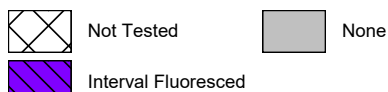
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 1 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand								
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



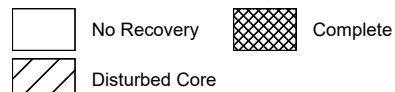
Notes:

UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test



Core Recovery



Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.



Project: 62735DM02.1017

Location: **Kirtland AFB, New Mexico**

Start Date: 12/16/2018

Completion Date: 1/24/2019

WELL LOG

Well ID: **KAFB-106V1**

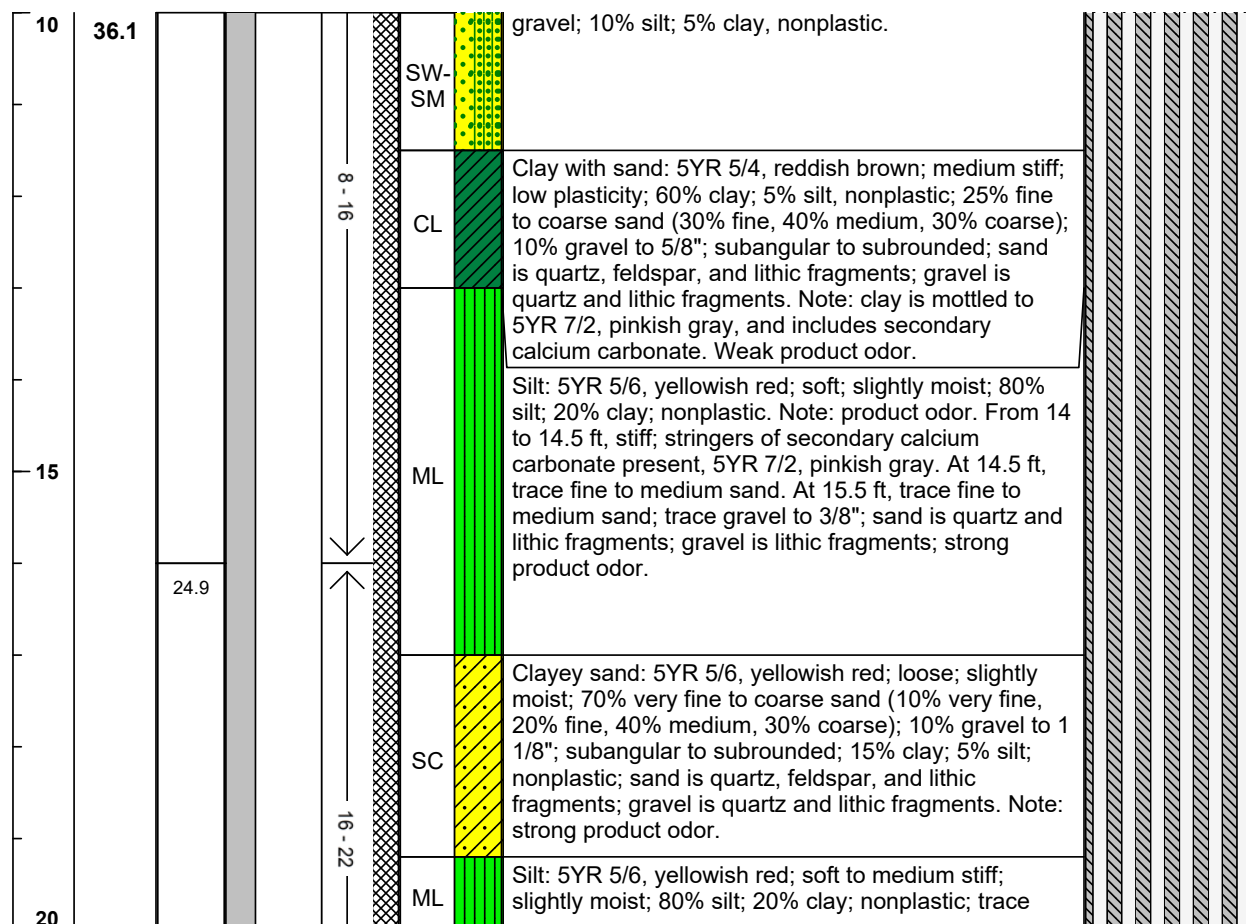
Page: 2 of 29

Drilling Company: **Cascade**
Drilling Method: **Sonic Coring**
Drill Bit: **Sonic Core Barrel, 6" ID**
Driller: **Roger Rodriquez**
Geologist: **J. Messenger**

Boring Depth (ft): **285 ft**
Boring Diameter (in): **7"**
Well Diameter: **3/4" ID**
DTW After Completion (ft bgs): **N/A**
Riser Material: **3/4" Sch. 80 PVC**

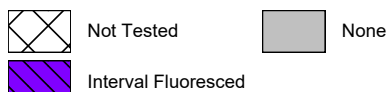
Screen Material: **3/4" Sch. 80 PVC**
0.010" Slot Screen
Seal Material(s): **Cement, Bentonite,**
High Solids Bentonite Grout
Filter Pack: **10/20 Silica Sand**

Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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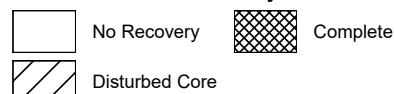


Notes: UV = ultraviolet fluorescence
NA = Not Applicable
bgs = below ground surface
ft = feet
ID = inner diameter
ppmv = parts per million by volume
USCS = Unified Soil Classification System

UV Fluorescence Field Test



Core Recovery



Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
T = thermal conductivity

There is a 0.4 ft sump underlying each screen.



Project: **62735DM02.1017**
Location: **Kirtland AFB, New Mexico**
Start Date: **12/16/2018**
Completion Date: **1/24/2019**

WELL LOG

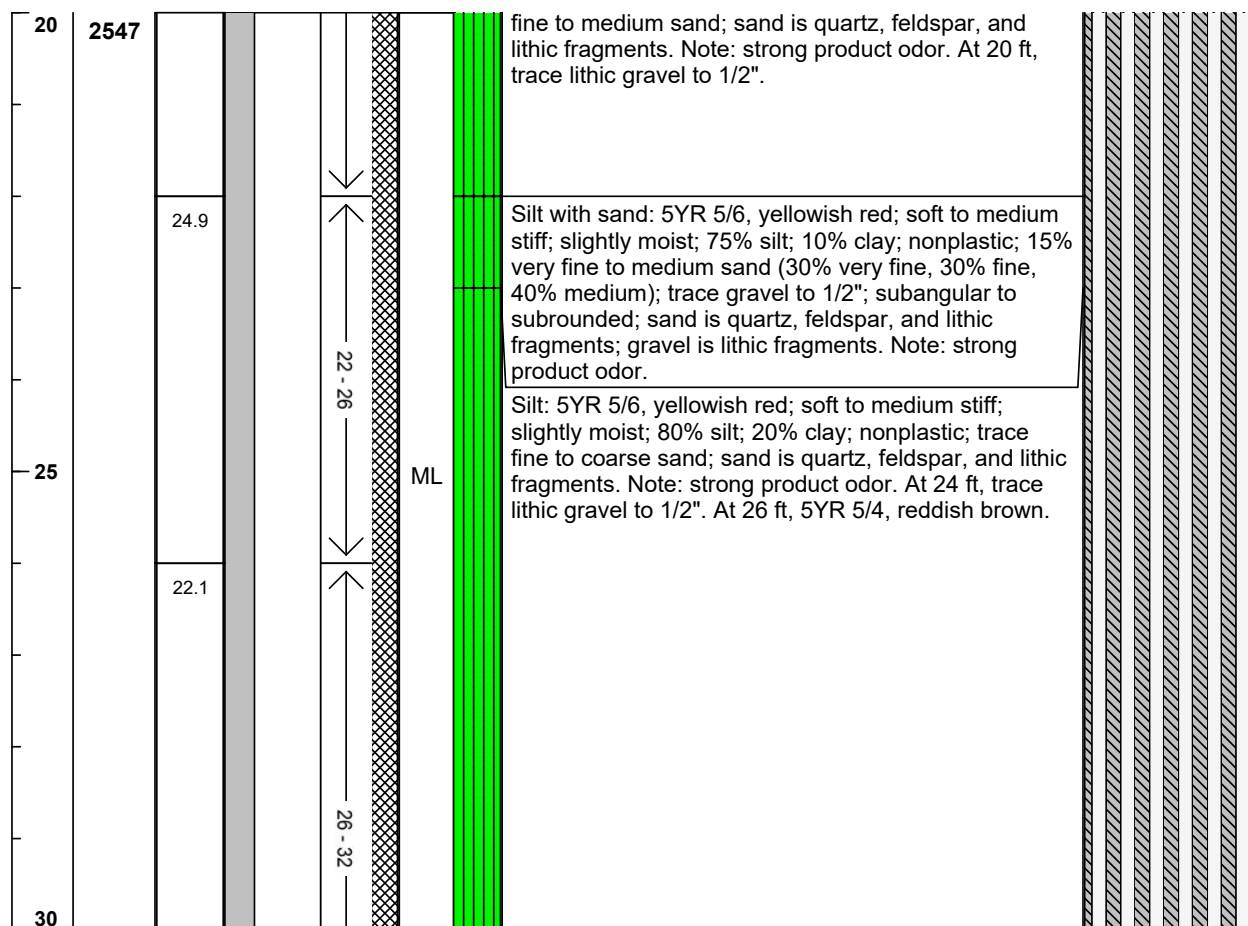
Well ID: **KAFB-106V1**
Page: **3 of 29**

Drilling Company: **Cascade**
Drilling Method: **Sonic Coring**
Drill Bit: **Sonic Core Barrel, 6" ID**
Driller: **Roger Rodriquez**
Geologist: **J. Messenger**

Boring Depth (ft): **285 ft**
Boring Diameter (in): **7"**
Well Diameter: **3/4" ID**
DTW After Completion (ft bgs): **N/A**
Riser Material: **3/4" Sch. 80 PVC**

Screen Material: **3/4" Sch. 80 PVC**
0.010" Slot Screen
Seal Material(s): **Cement, Bentonite,**
High Solids Bentonite Grout
Filter Pack: **10/20 Silica Sand**

Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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Notes: UV = ultraviolet fluorescence
NA = Not Applicable
bgs = below ground surface
ft = feet
ID = inner diameter
ppmv = parts per million by volume
USCS = Unified Soil Classification System

UV Fluorescence Field Test



Not Tested



Interval Fluoresced



None

Core Recovery



No Recovery



Disturbed Core




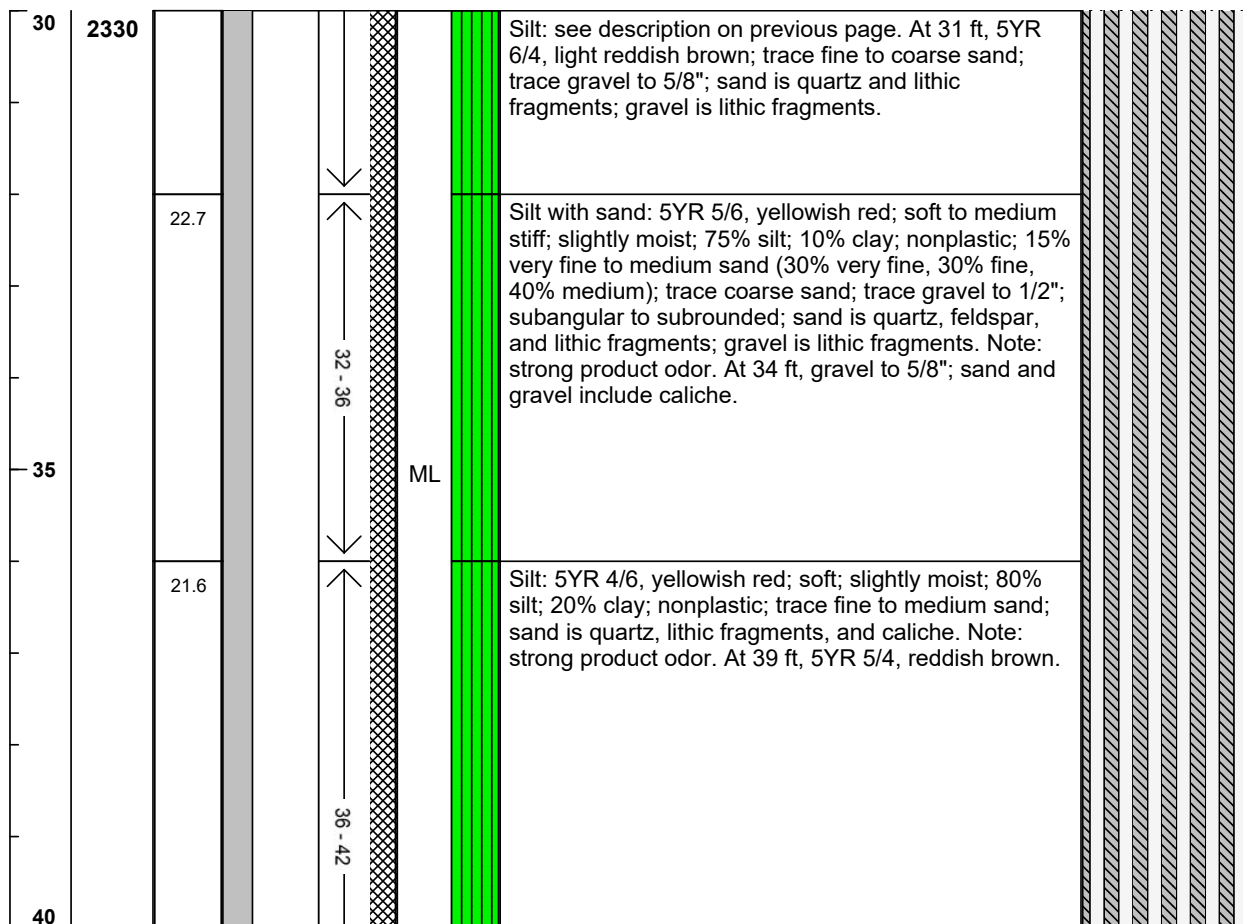
Complete

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

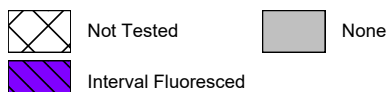
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	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



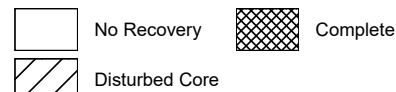
Notes:

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 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

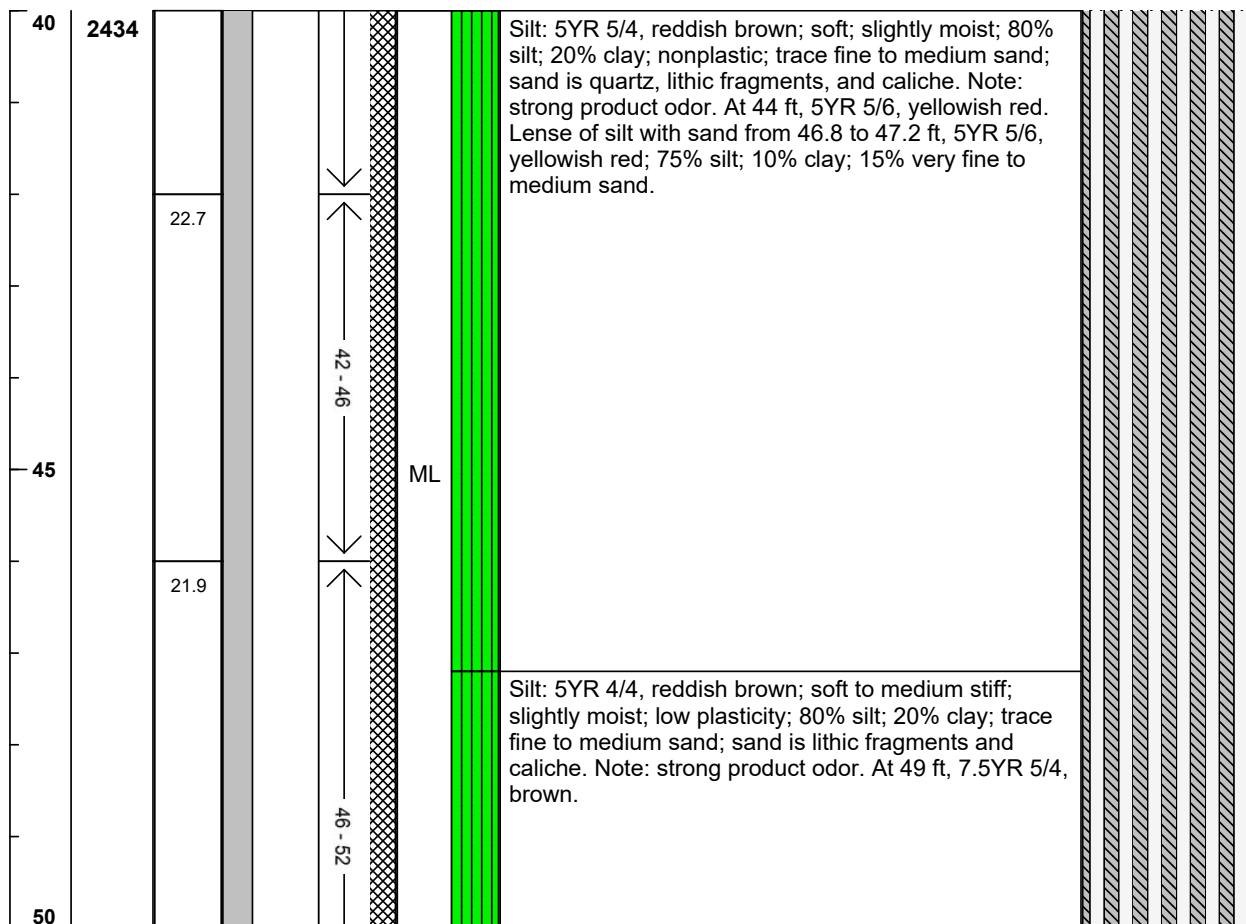


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

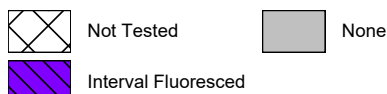
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		Location: Kirtland AFB, New Mexico								
Start Date: 12/16/2018		Well ID: KAFB-106V1		Page: 5 of 29						
Completion Date: 1/24/2019										
Drilling Company: Cascade		Boring Depth (ft): 285 ft	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" Slot Screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement, Bentonite,							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



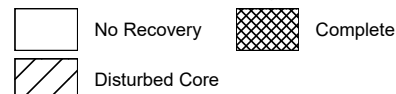
Notes:

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 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

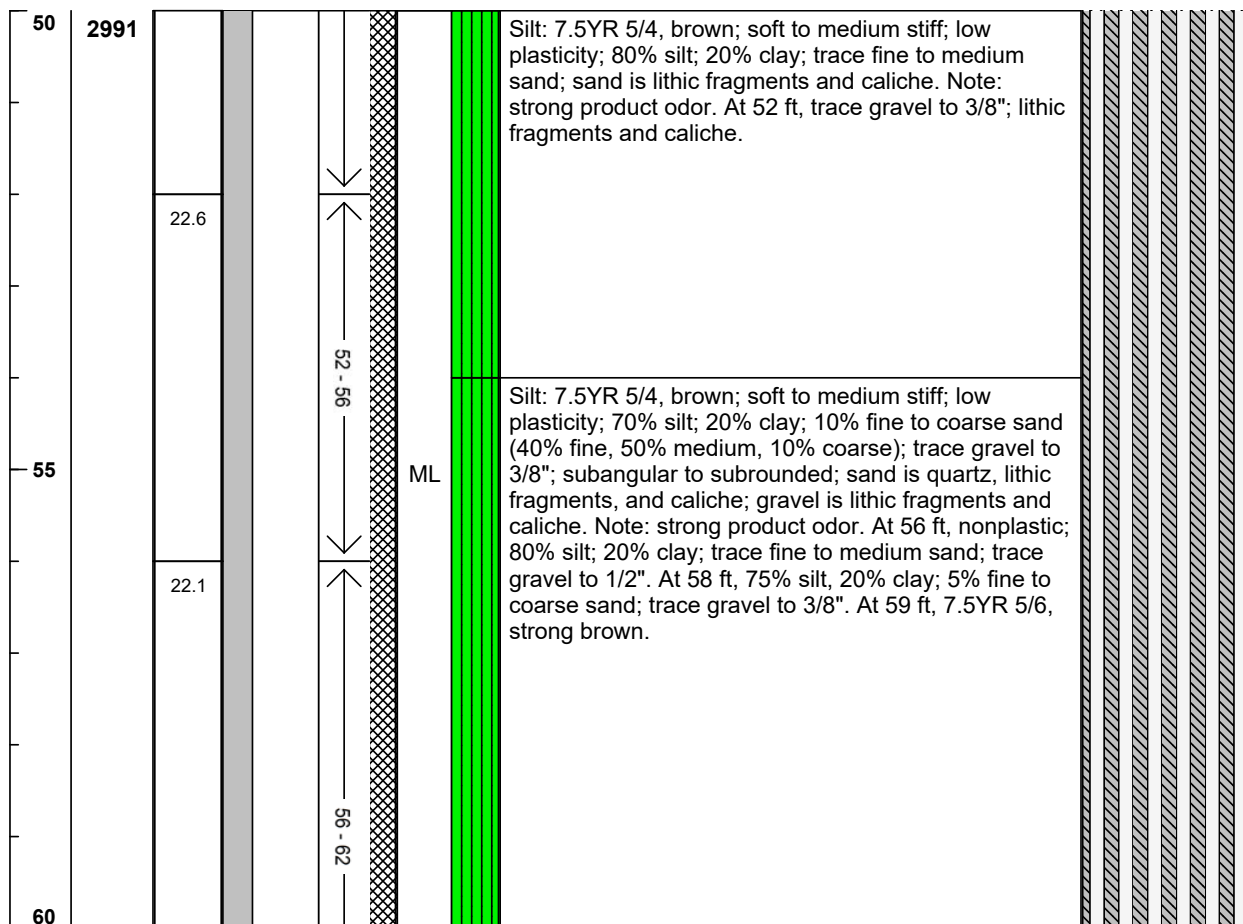


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

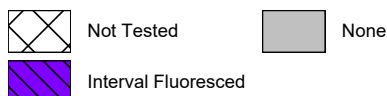
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	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand								
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



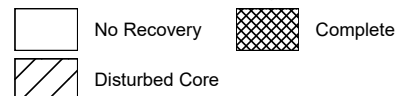
Notes:

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 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

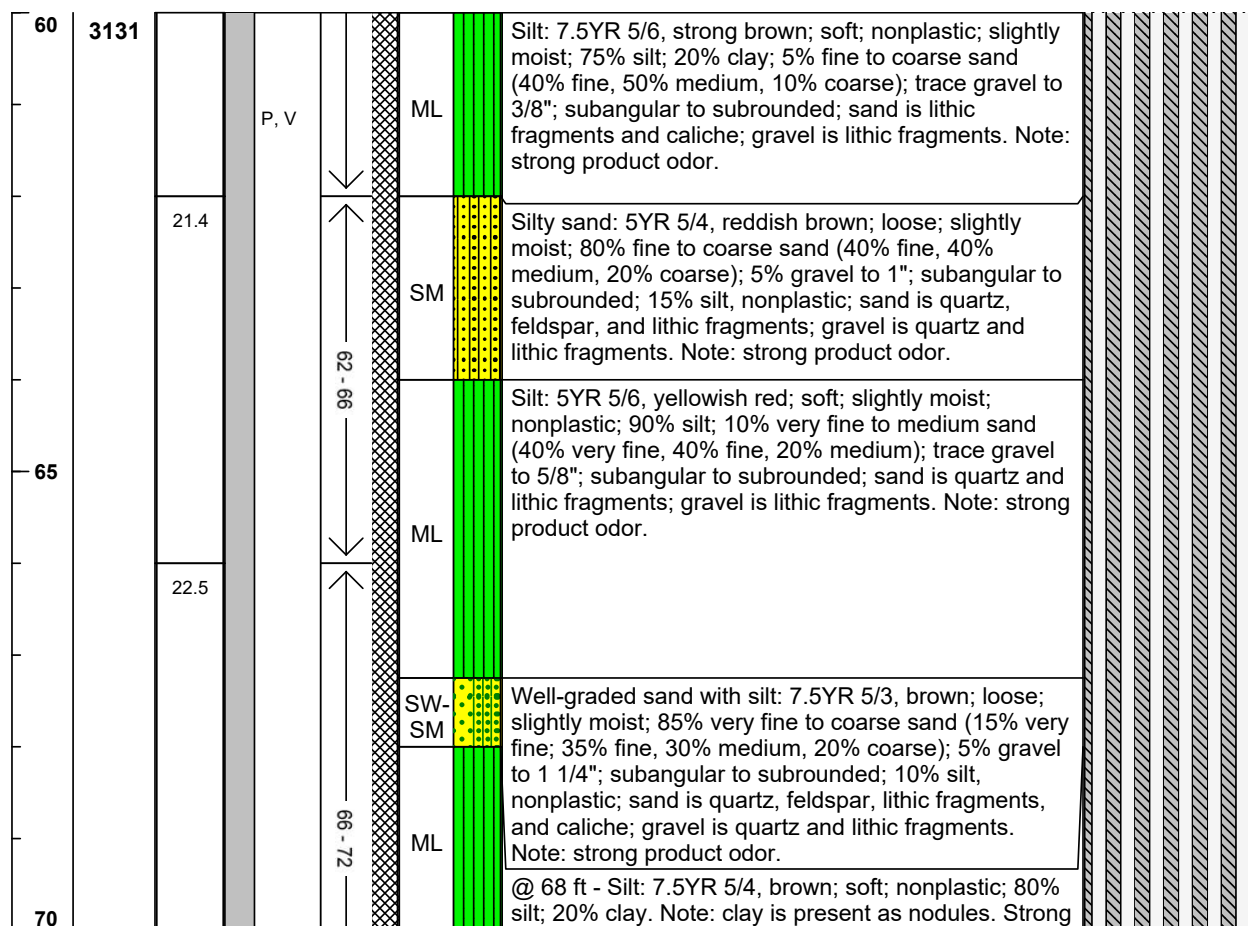


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

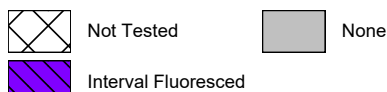
	Project: 62735DM02.1017	WELL LOG Well ID: KAFB-106V1 Page: 7 of 29
	Location: Kirtland AFB, New Mexico	
	Start Date: 12/16/2018	
	Completion Date: 1/24/2019	
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger	Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand
Depth (ft) PID (ppmv) Temp (°C) Field UV Samples Collected Core Run (ft) Recovery USCS Lithology	Sample Description	
Completion Details		



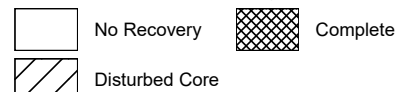
Notes:

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 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

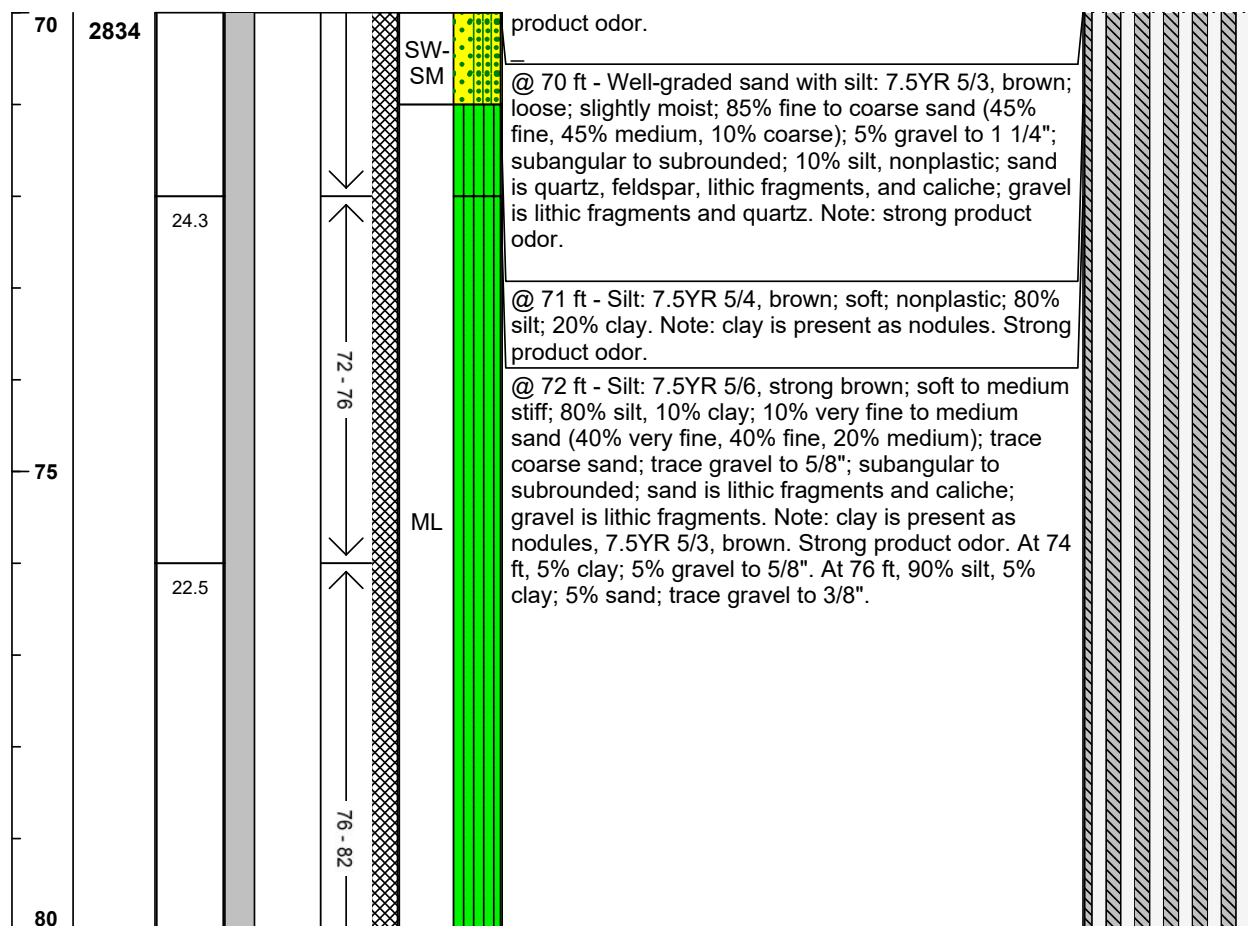


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

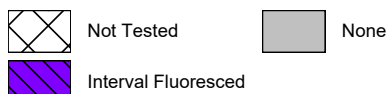
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		Location: Kirtland AFB, New Mexico								
Start Date: 12/16/2018		Well ID: KAFB-106V1		Page: 8 of 29						
Completion Date: 1/24/2019										
Drilling Company: Cascade		Boring Depth (ft): 285 ft		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand						
Drilling Method: Sonic Coring		Boring Diameter (in): 7"								
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID								
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A								
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC								
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



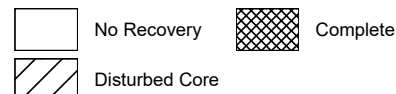
Notes:

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bgs = below ground surface
ft = feet
ID = inner diameter
ppmv = parts per million by volume
USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

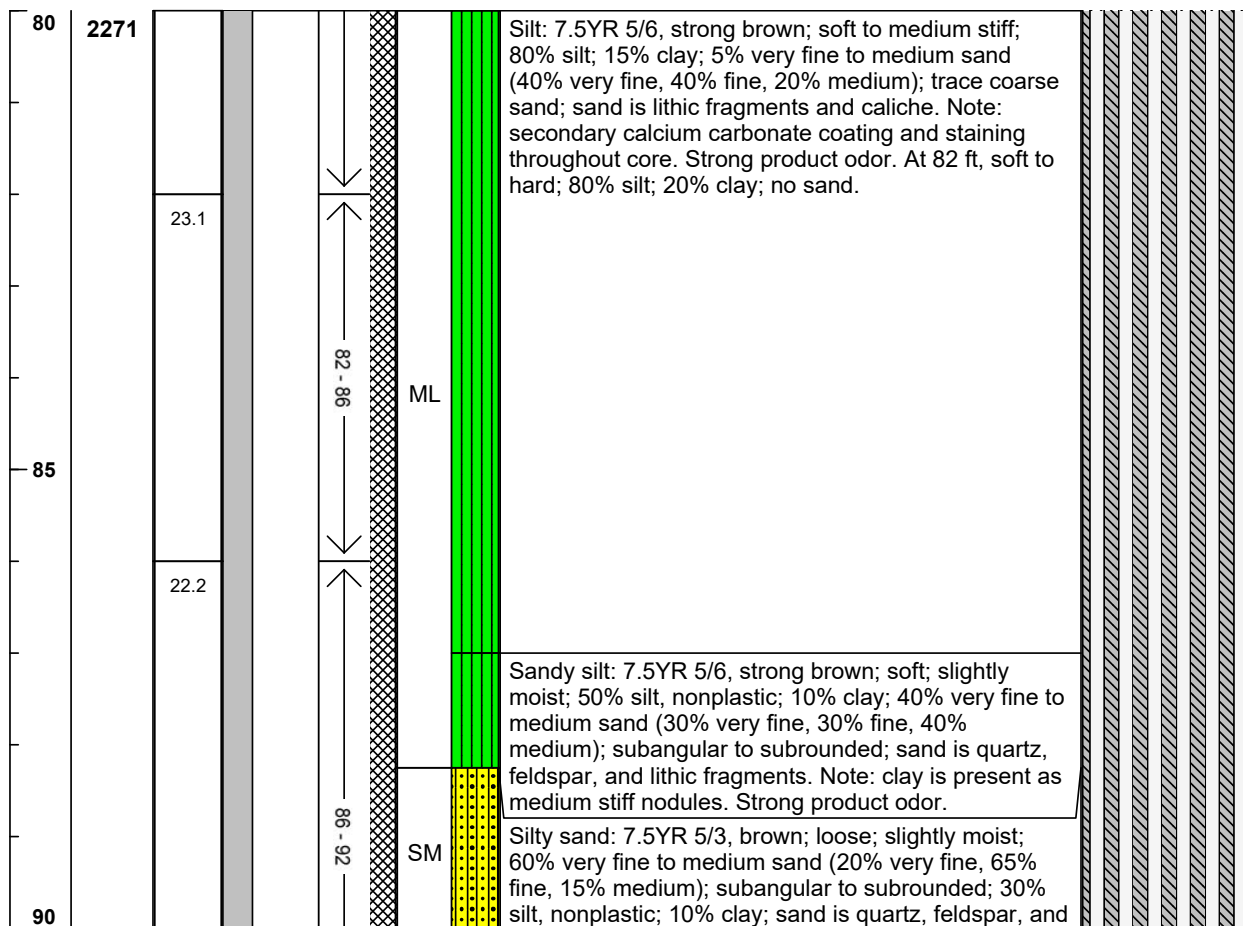


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

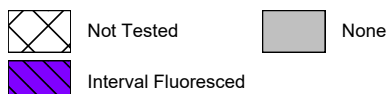
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 9 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



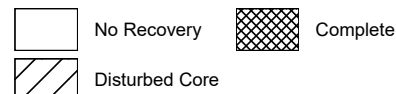
Notes:

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 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery



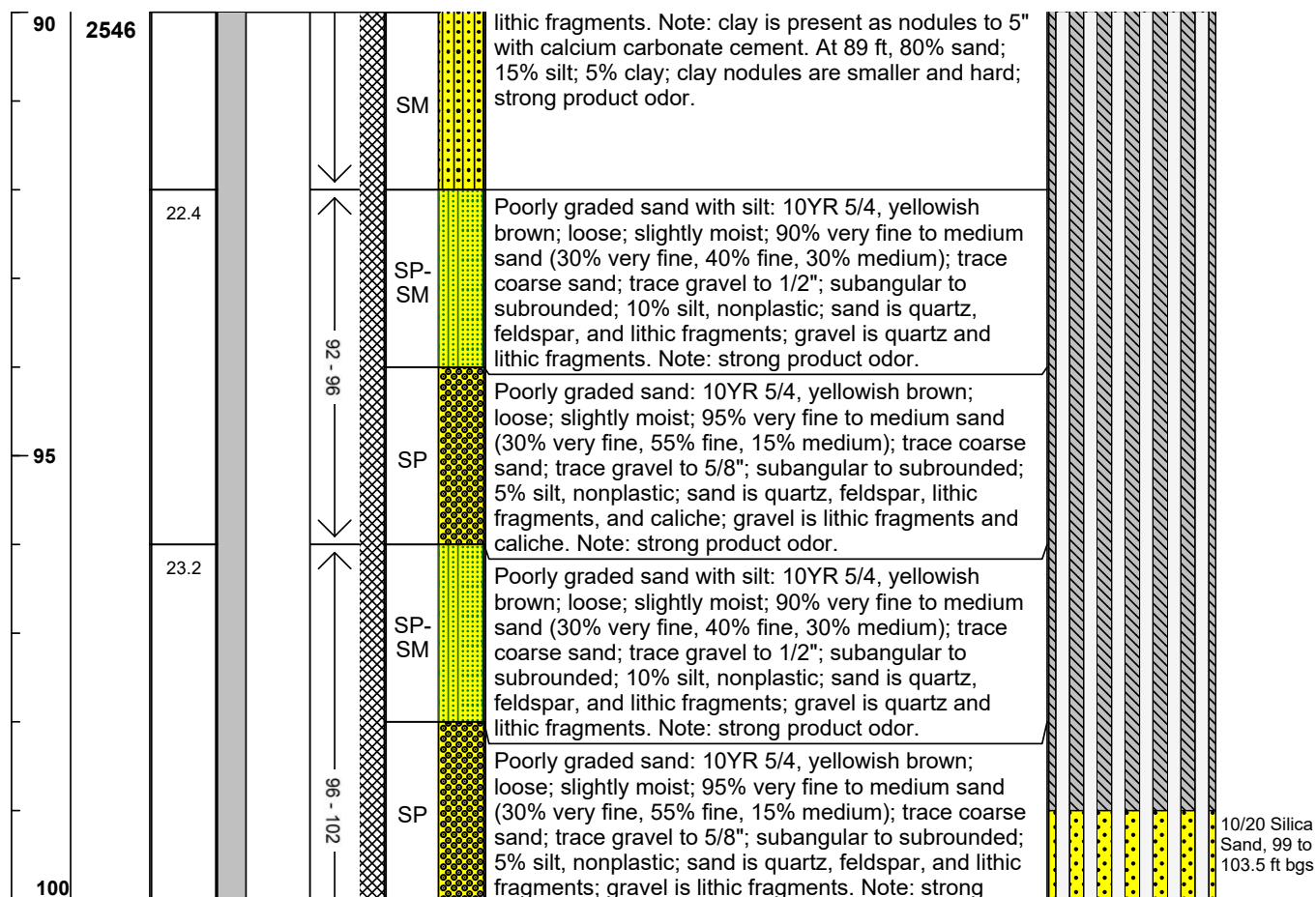
Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 10 of 29	
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	
Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand				

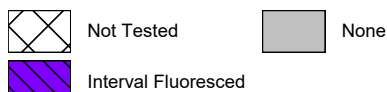
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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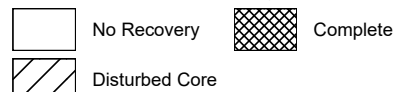
Notes:

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UV Fluorescence Field Test




Core Recovery

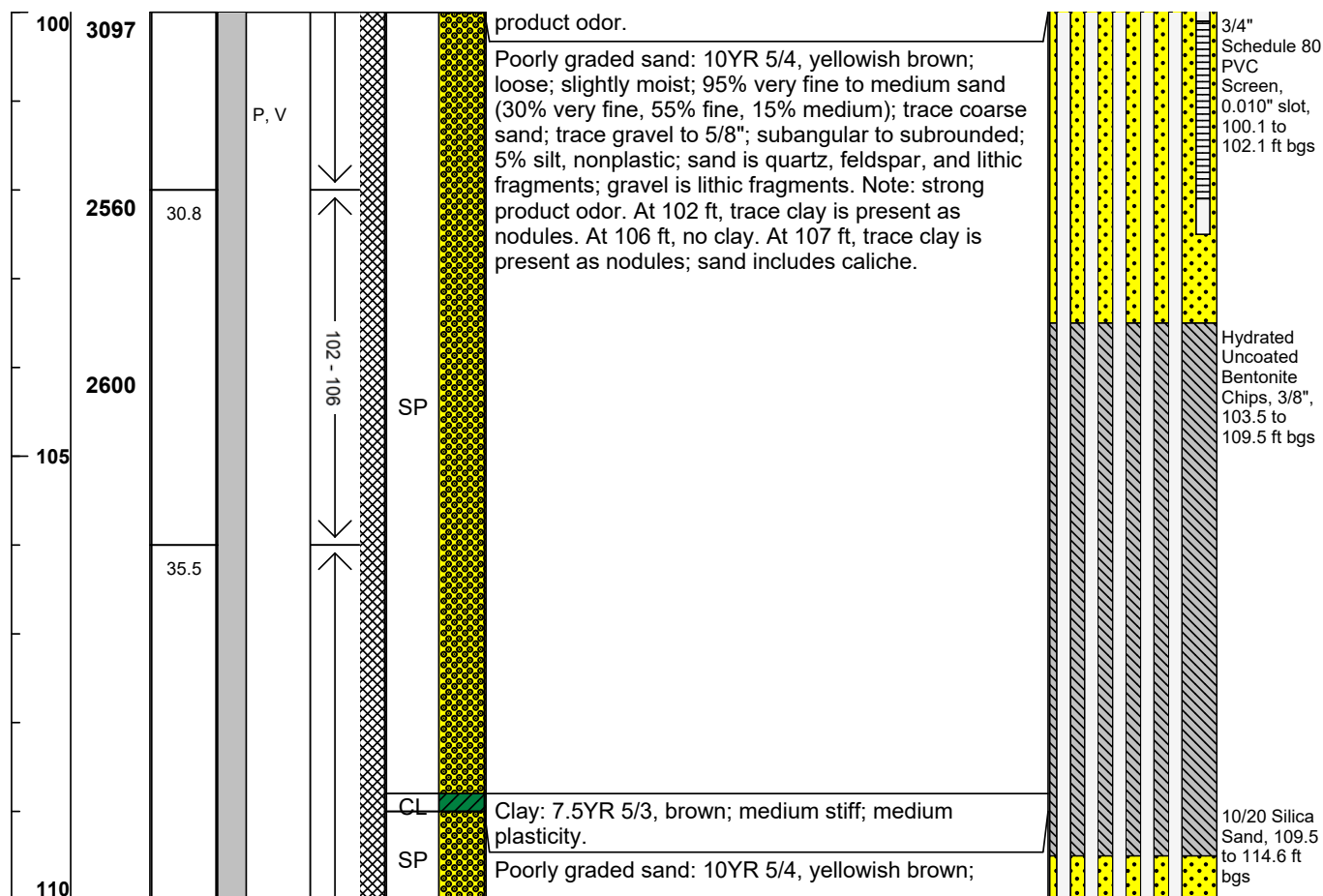


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

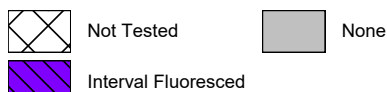
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 11 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand										
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



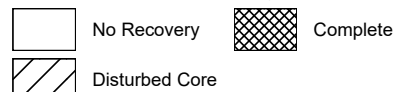
Notes:

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UV Fluorescence Field Test




Core Recovery

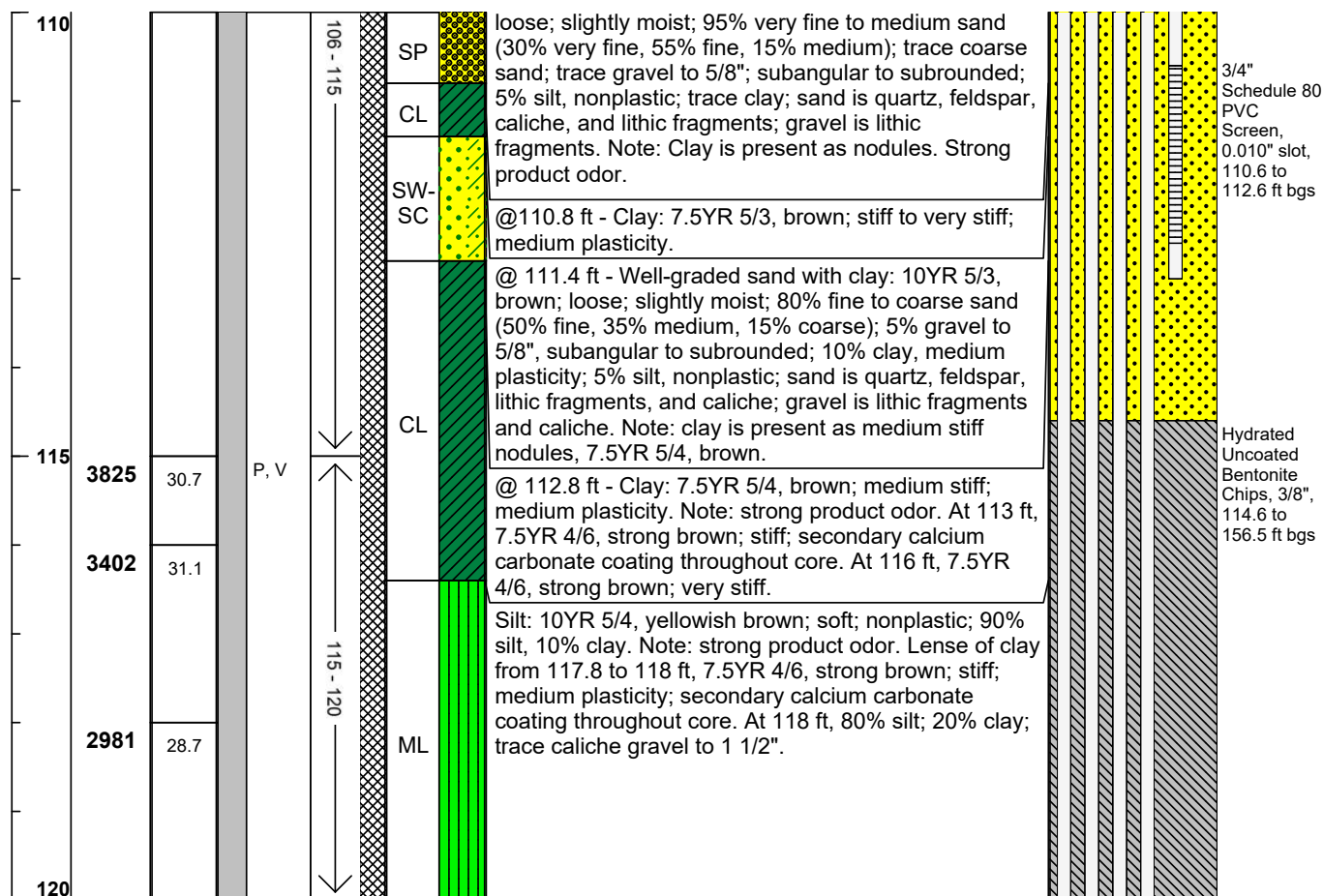


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

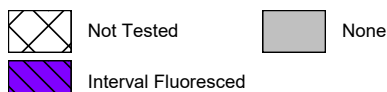
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	Location: Kirtland AFB, New Mexico									
	Start Date: 12/16/2018									
	Completion Date: 1/24/2019									
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



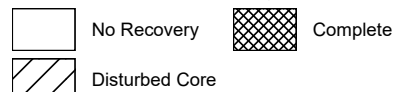
Notes:

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UV Fluorescence Field Test




Core Recovery

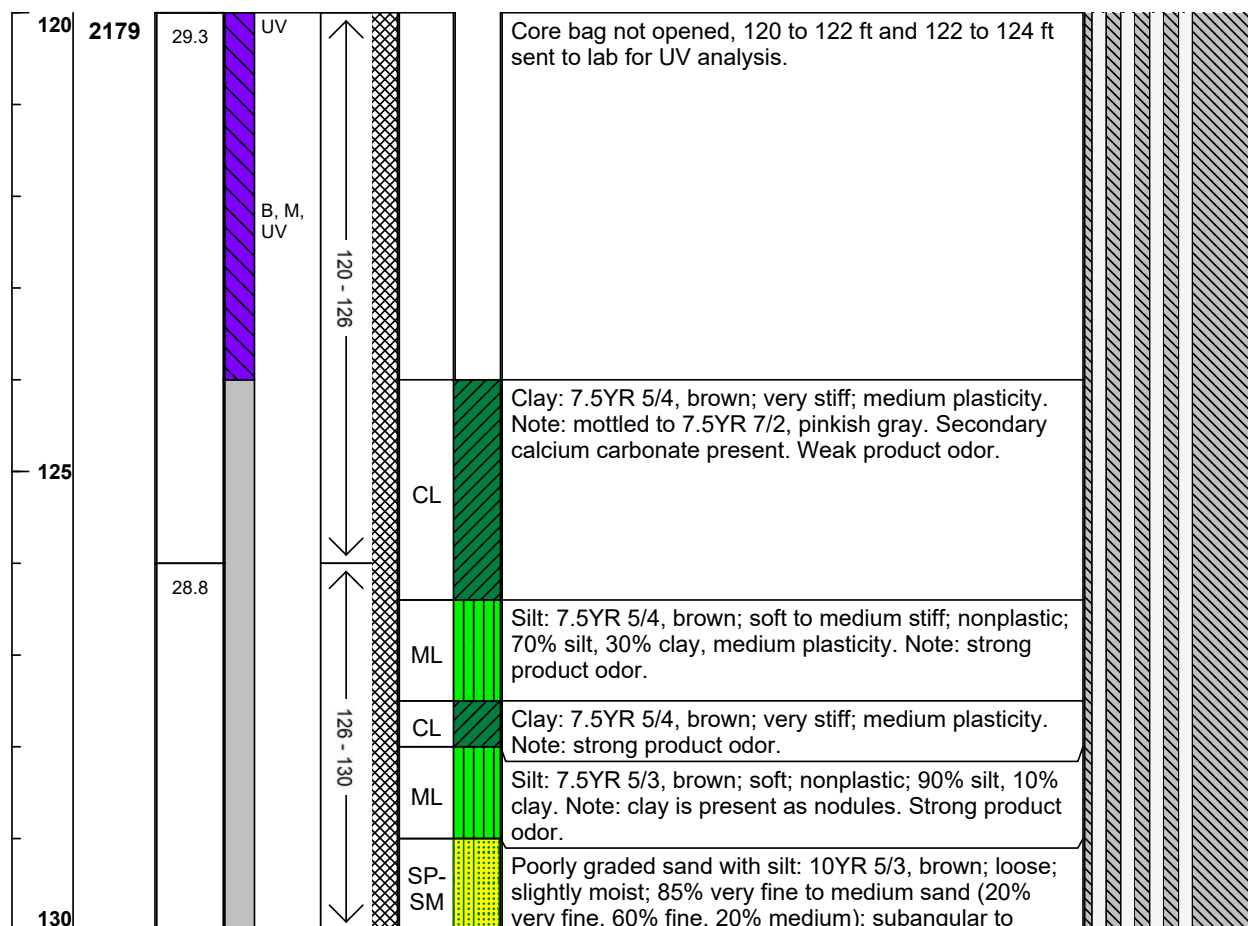


Following coring, the borehole was overdrilled using ARCH for well installation




Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity




There is a 0.4 ft sump underlying each screen.

	Project: 62735DM02.1017	WELL LOG Well ID: KAFB-106V1 Page: 13 of 29
	Location: Kirtland AFB, New Mexico	
Start Date: 12/16/2018	Completion Date: 1/24/2019	
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger	Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand
Depth (ft) PID (ppmv) Temp (°C) Field UV Samples Collected Core Run (ft) Recovery USCS Lithology	Sample Description	
Completion Details		



Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System


UV Fluorescence Field Test	
	Not Tested
	Interval Fluoresced
	None

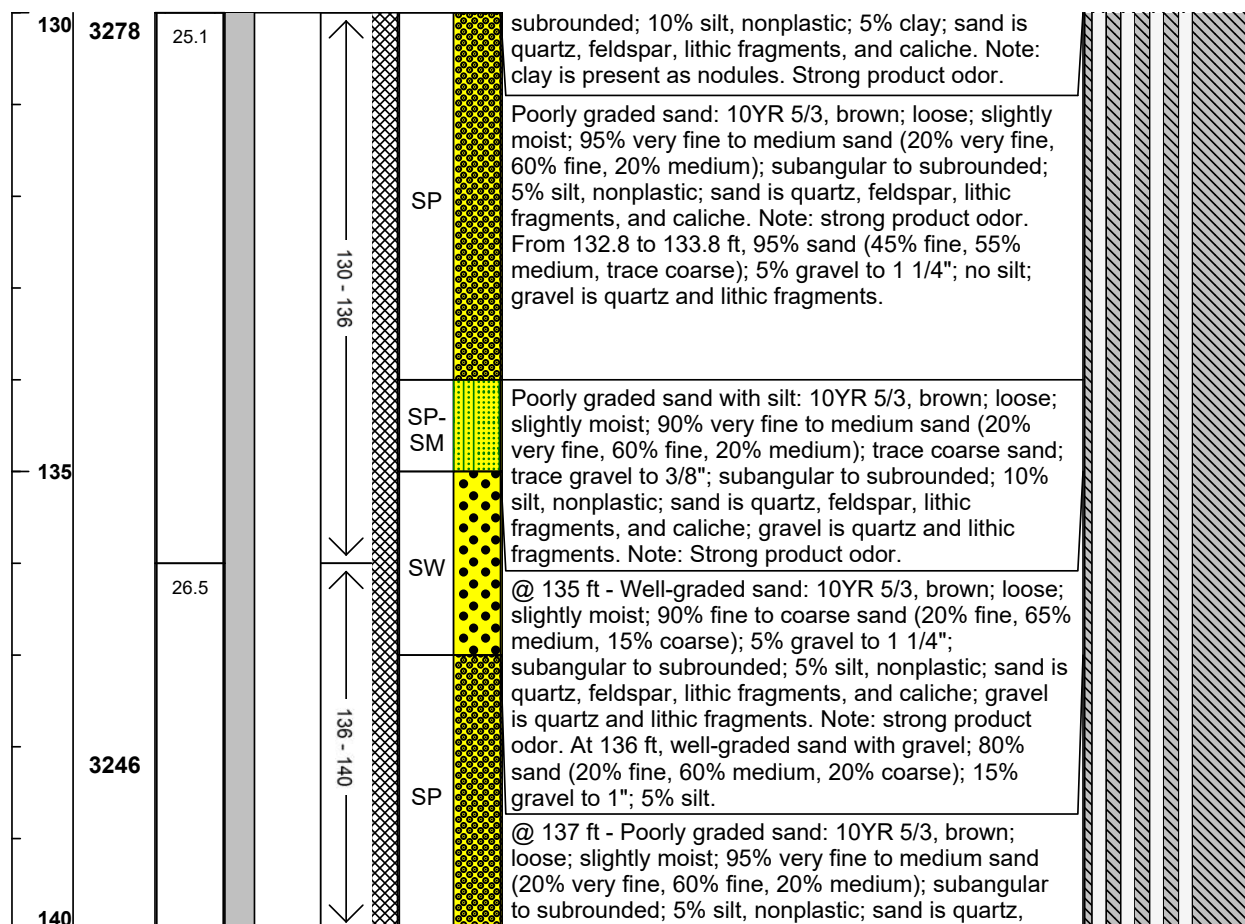
Core Recovery	
	No Recovery
	Disturbed Core
	Complete

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

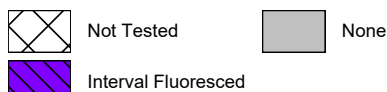
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/16/2018		Well ID: KAFB-106V1		Page: 14 of 29						
Completion Date: 1/24/2019										
Drilling Company: Cascade		Boring Depth (ft): 285 ft		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen						
Drilling Method: Sonic Coring		Boring Diameter (in): 7"								
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID		Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout						
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A								
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC		Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



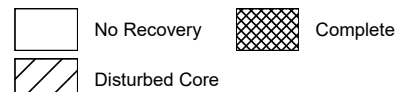
Notes:

UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

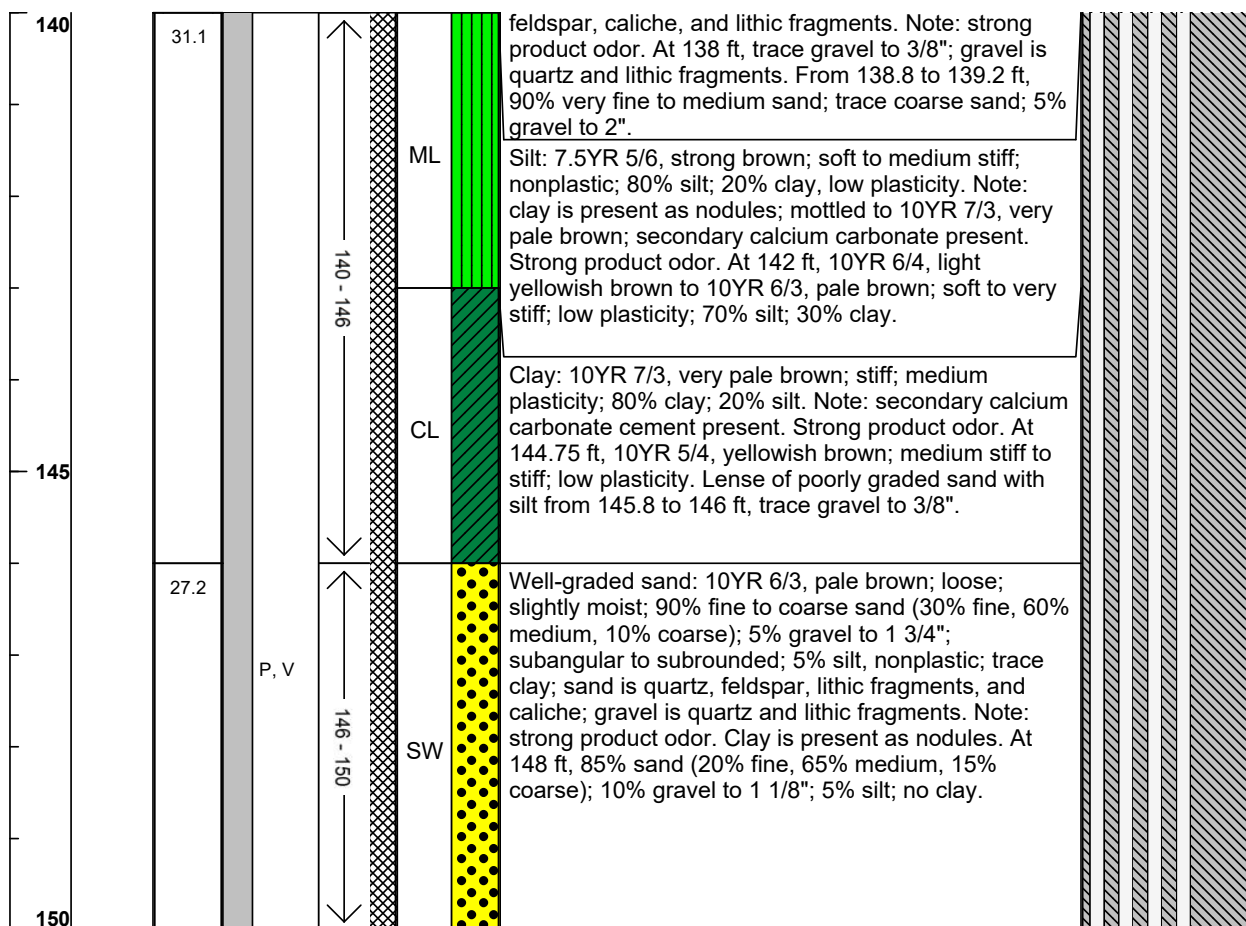


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

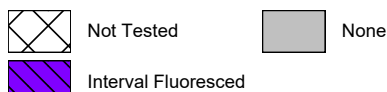
		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 15 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



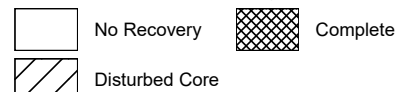
Notes:

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 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

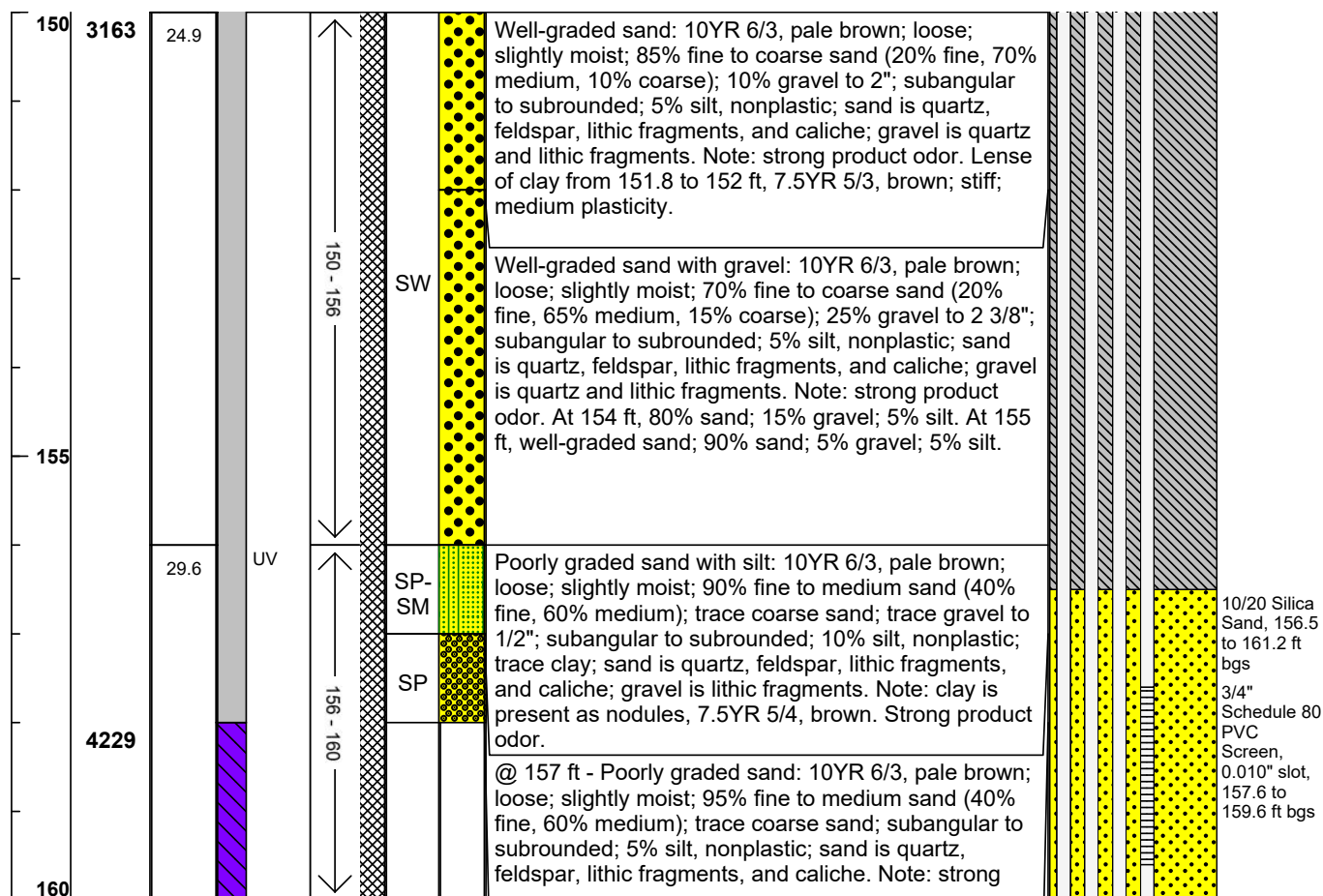


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

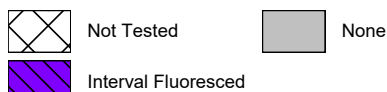
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 16 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand								
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



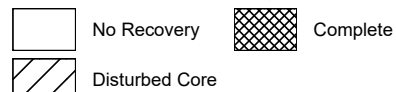
Notes:

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 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

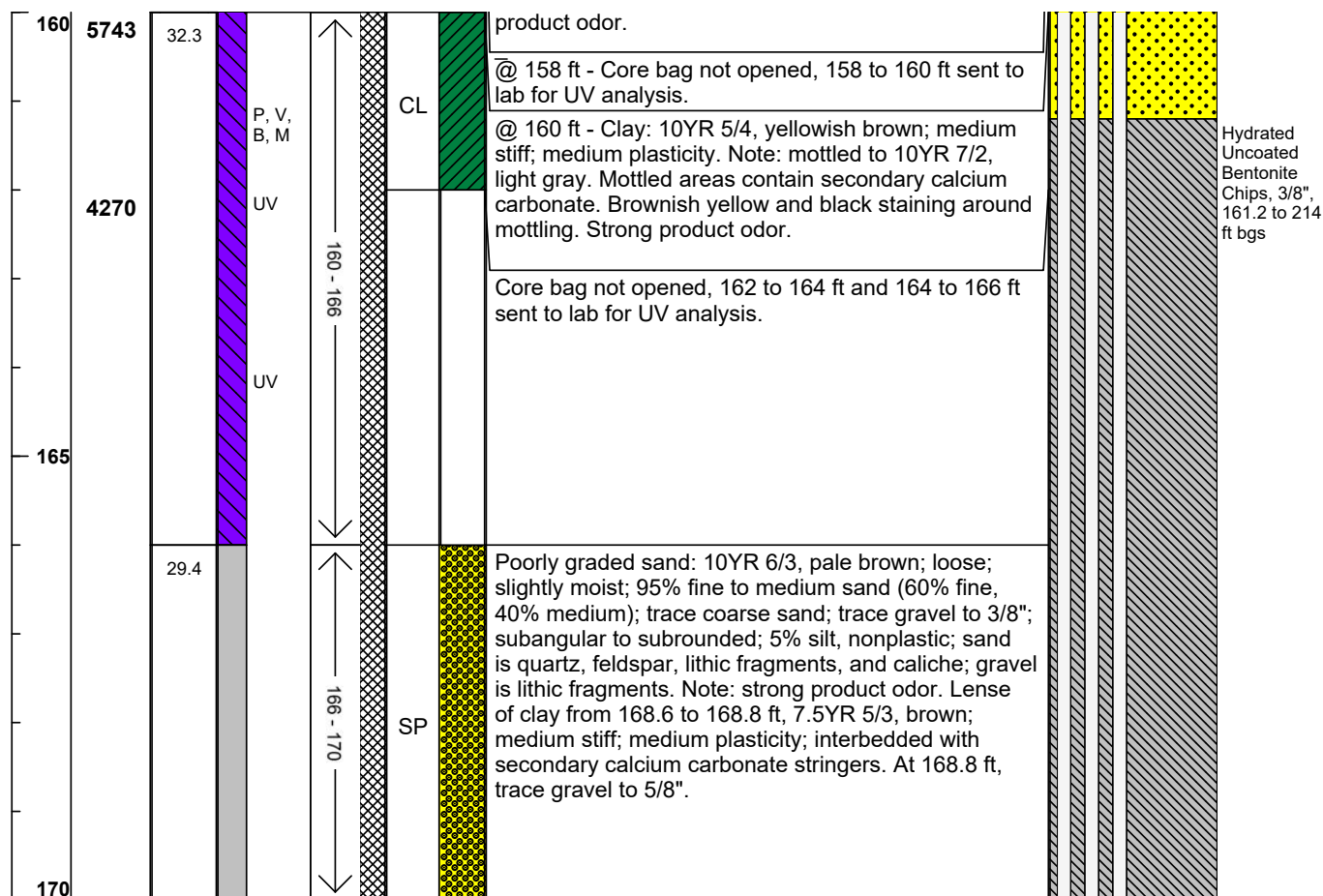


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

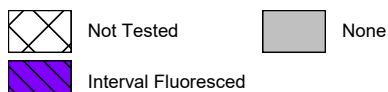
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V1						
Start Date: 12/16/2018		Completion Date: 1/24/2019		Page: 17 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger			Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

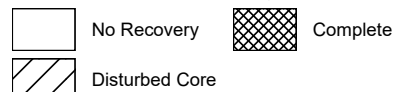


Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

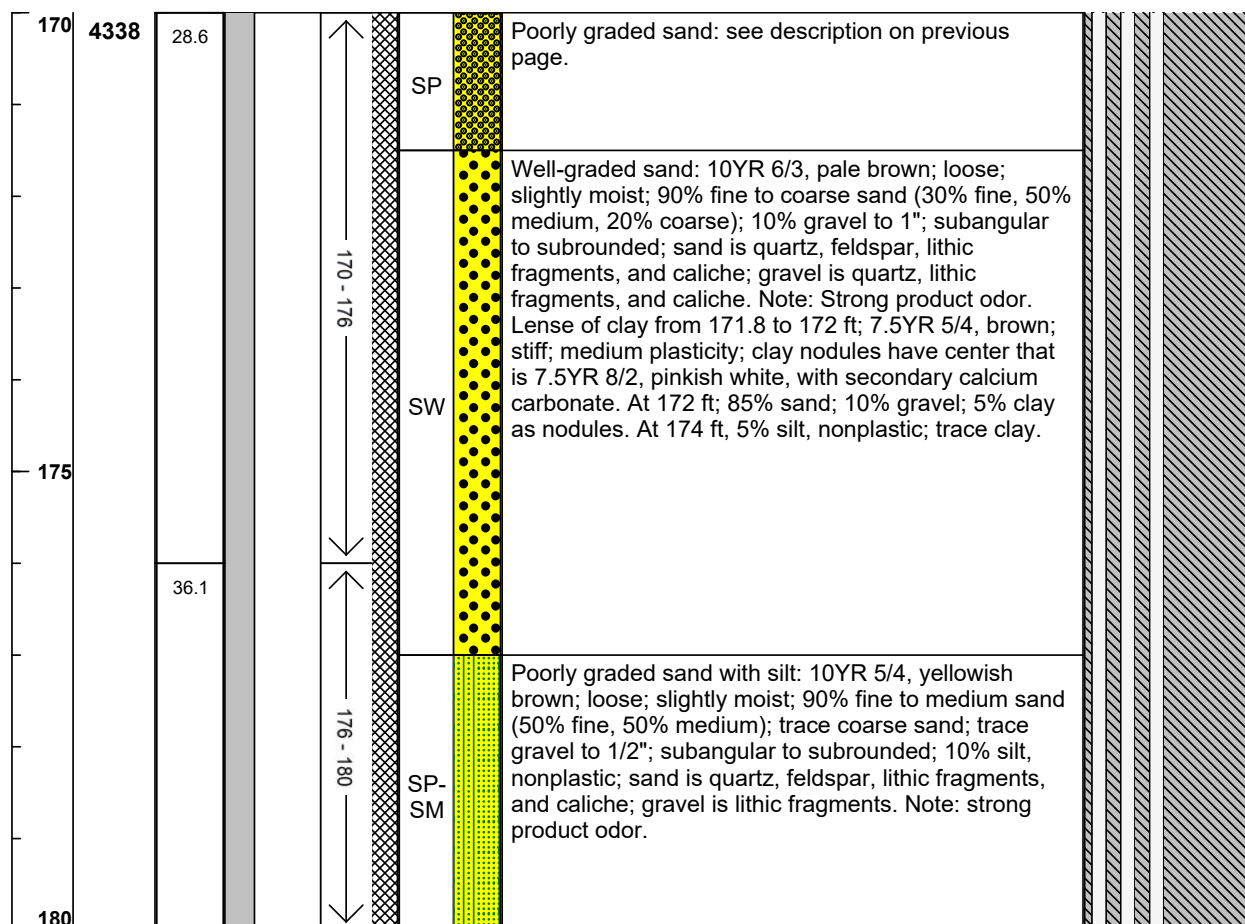


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

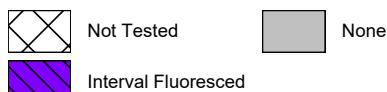
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/16/2018		Well ID: KAFB-106V1		Page: 18 of 29						
Completion Date: 1/24/2019										
Drilling Company: Cascade		Boring Depth (ft): 285 ft	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" Slot Screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement, Bentonite,							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



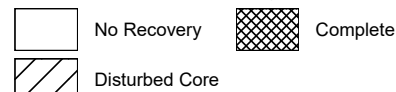
Notes:

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 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

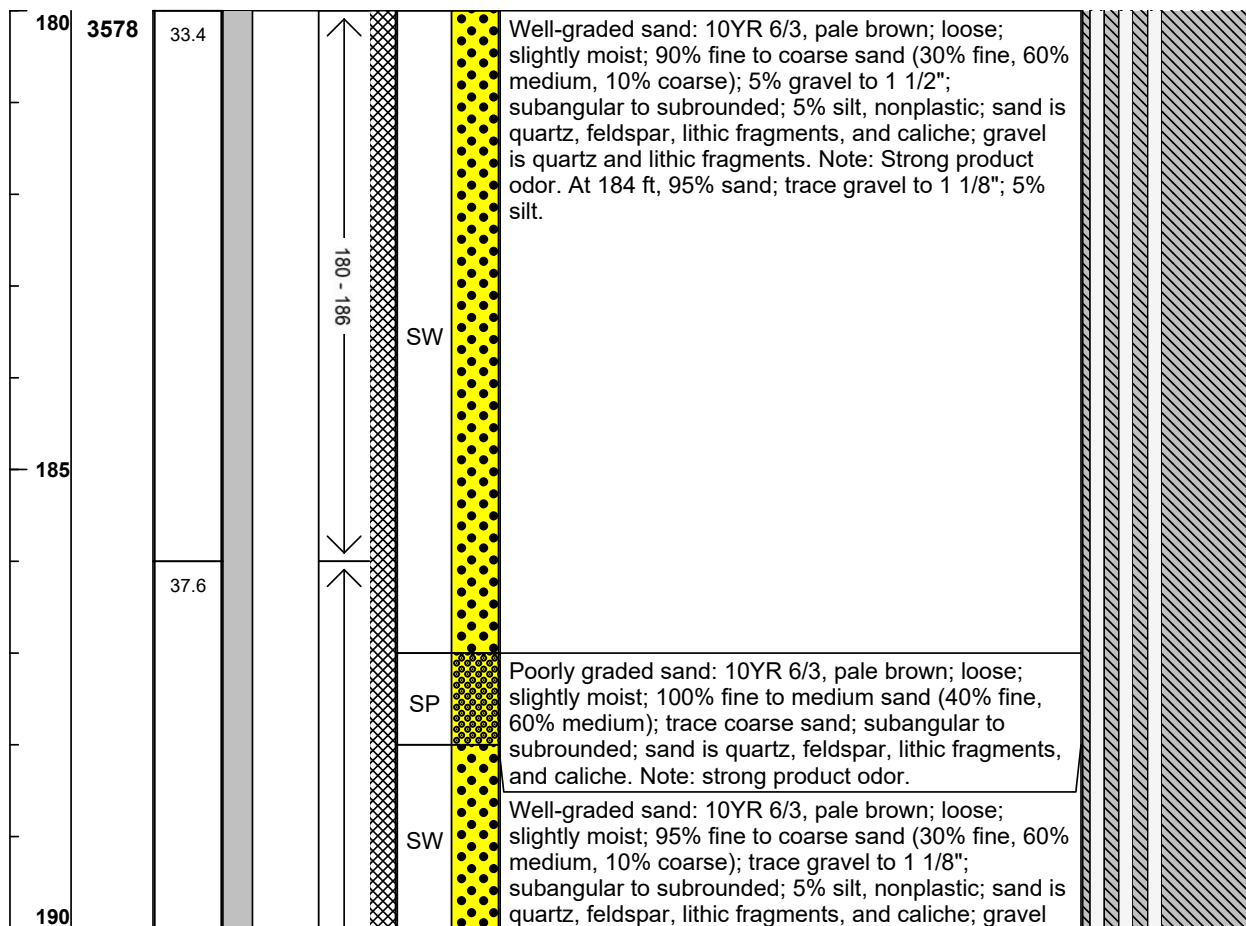


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

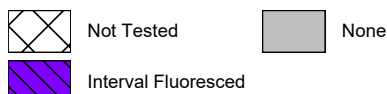
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/16/2018		Well ID: KAFB-106V1		Page: 19 of 29						
Completion Date: 1/24/2019										
Drilling Company: Cascade		Boring Depth (ft): 285 ft	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" Slot Screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement, Bentonite,							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



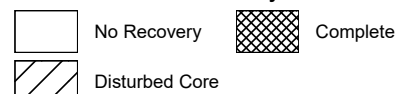
Notes:

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 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

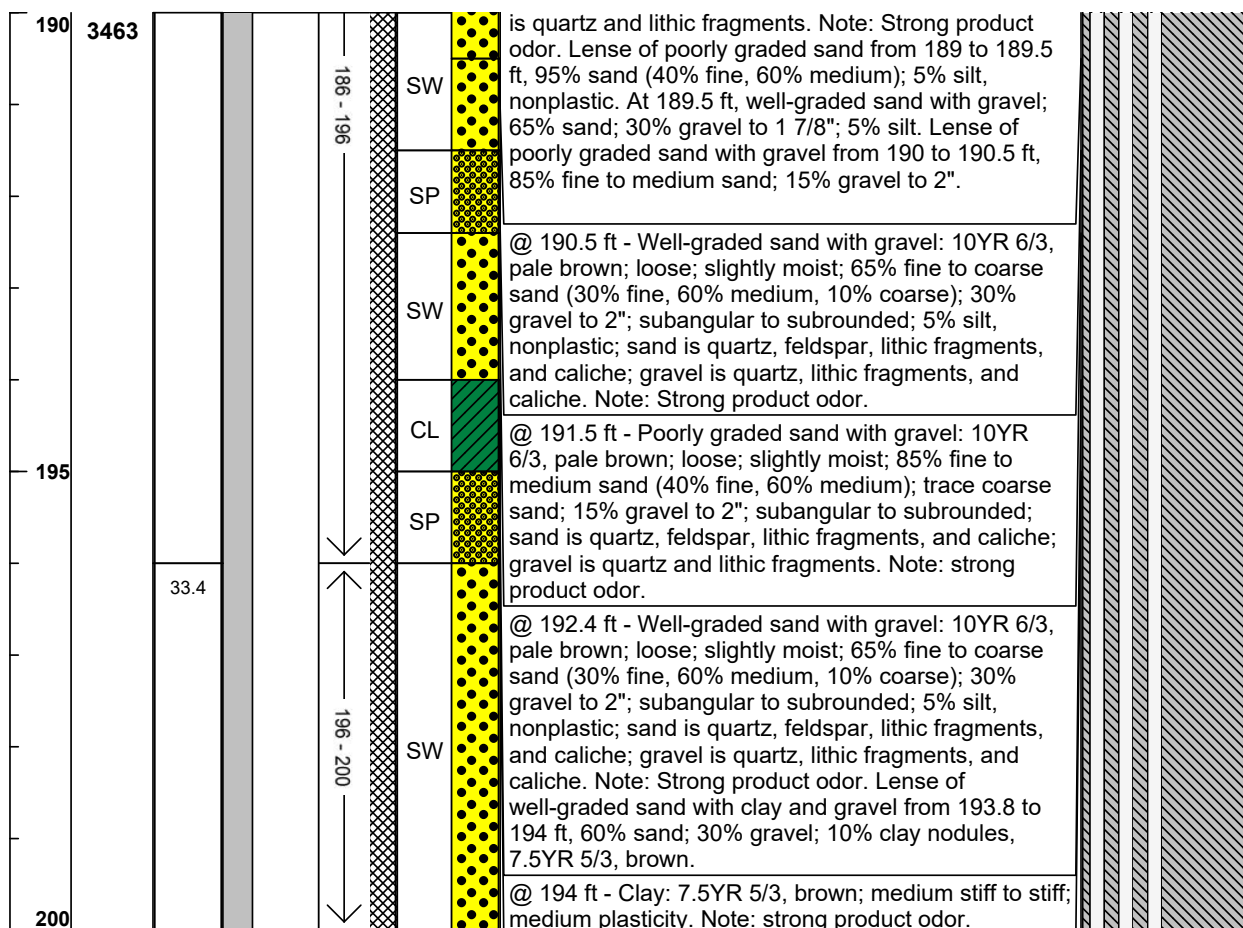


Following coring, the borehole was overdrilled using ARCH for well installation




Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity




There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 20 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System


UV Fluorescence Field Test	
	Not Tested
	Interval Fluoresced
	None

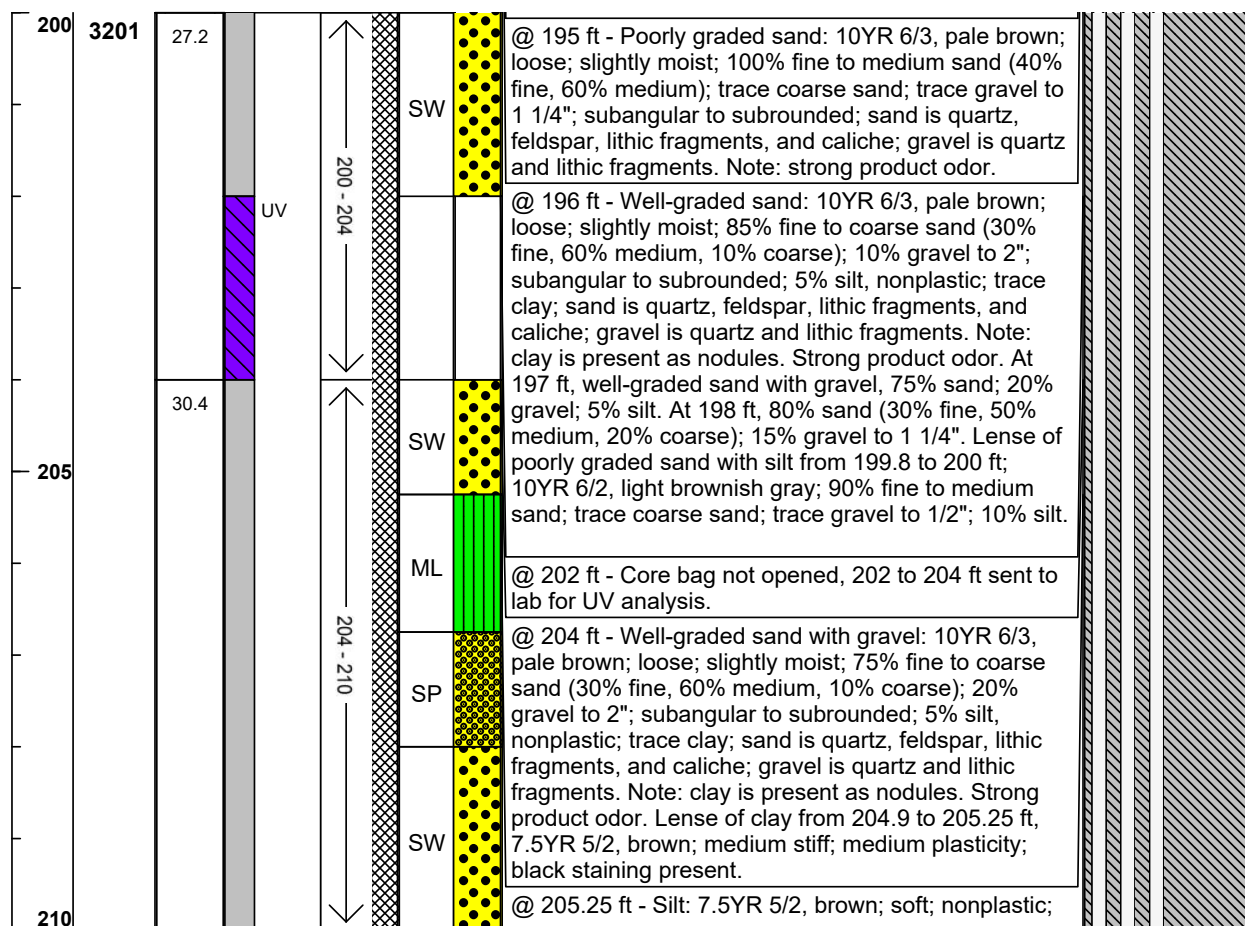
Core Recovery	
	No Recovery
	Disturbed Core
	Complete

Following coring, the borehole was overdrilled using ARCH for well installation




Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity




There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 21 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System


UV Fluorescence Field Test	
	Not Tested
	Interval Fluoresced
	None

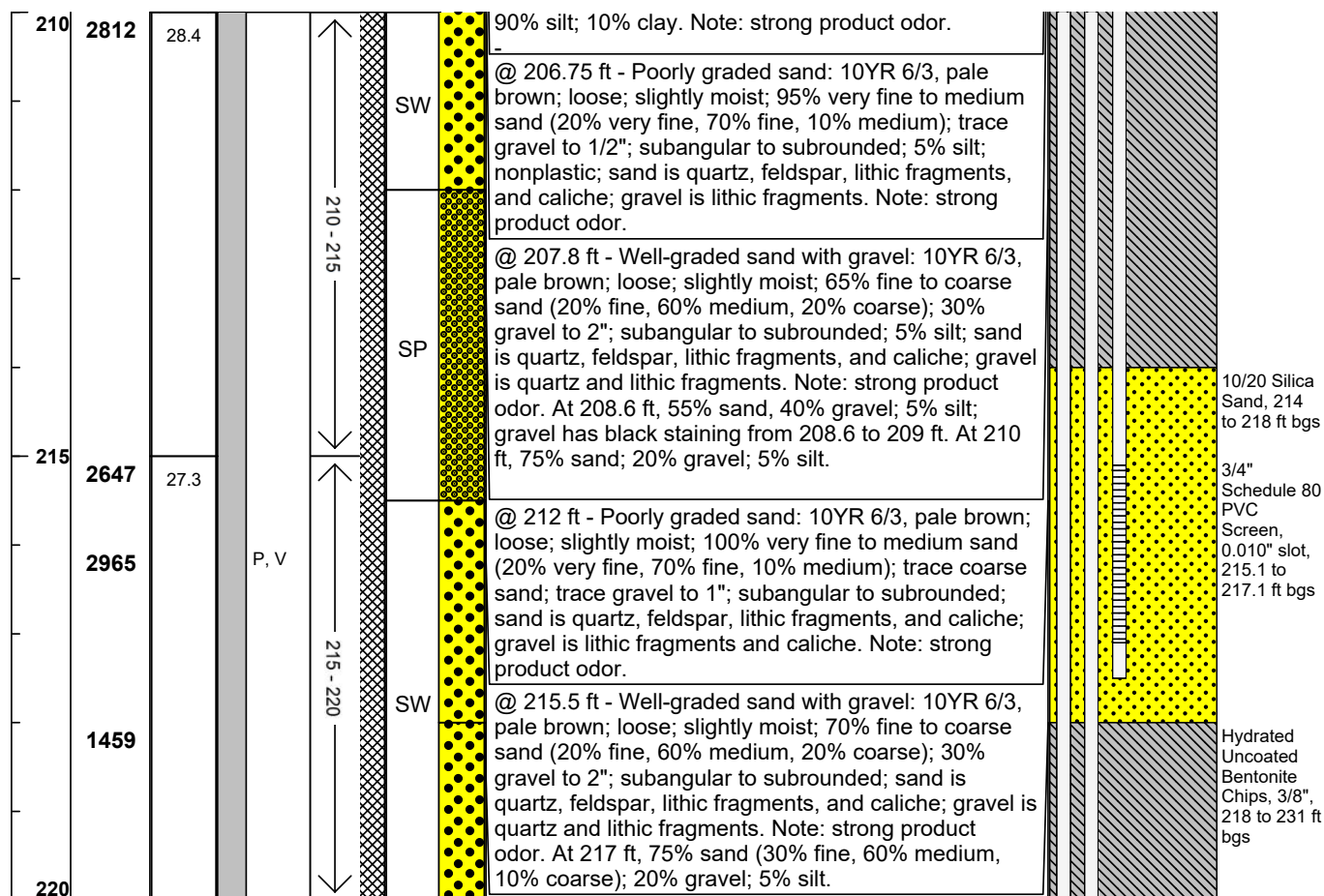
Core Recovery	
	No Recovery
	Complete
	Disturbed Core

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

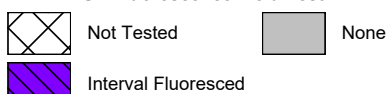
There is a 0.4 ft sump underlying each screen.

	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 22 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand								
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

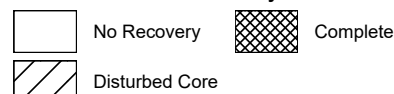


Notes: UV = ultraviolet fluorescence
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 bgs = below ground surface
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 ID = inner diameter
 ppmv = parts per million by volume
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UV Fluorescence Field Test




Core Recovery

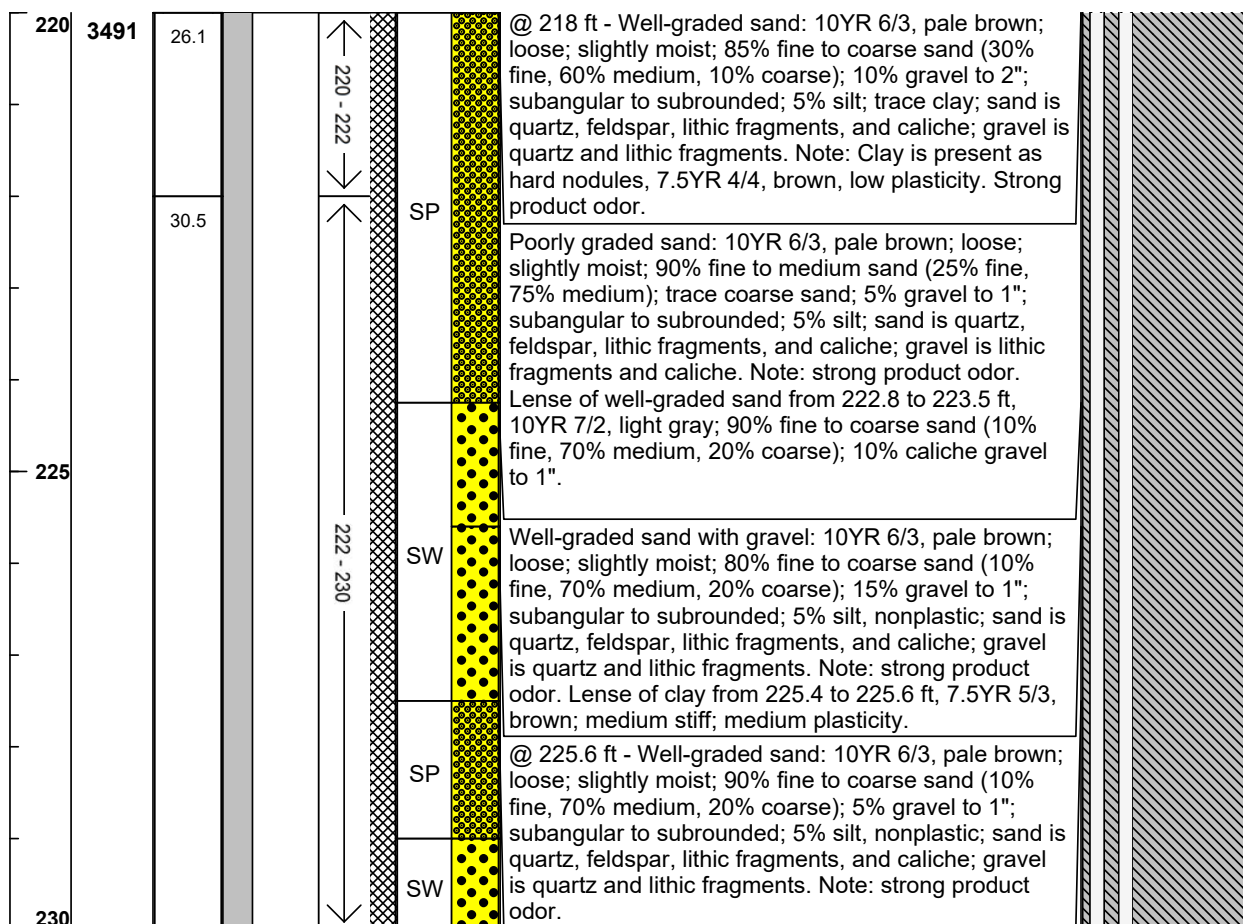


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

	Project: 62735DM02.1017	WELL LOG Well ID: KAFB-106V1 Page: 23 of 29
	Location: Kirtland AFB, New Mexico	
	Start Date: 12/16/2018	
	Completion Date: 1/24/2019	
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger	Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand
Depth (ft) PID (ppmv) Temp (°C) Field UV Samples Collected Core Run (ft) Recovery USCS Lithology	Sample Description	
		Completion Details



Notes:

UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test



Not Tested



None



Interval Fluoresced

Core Recovery



No Recovery



Complete




Disturbed Core

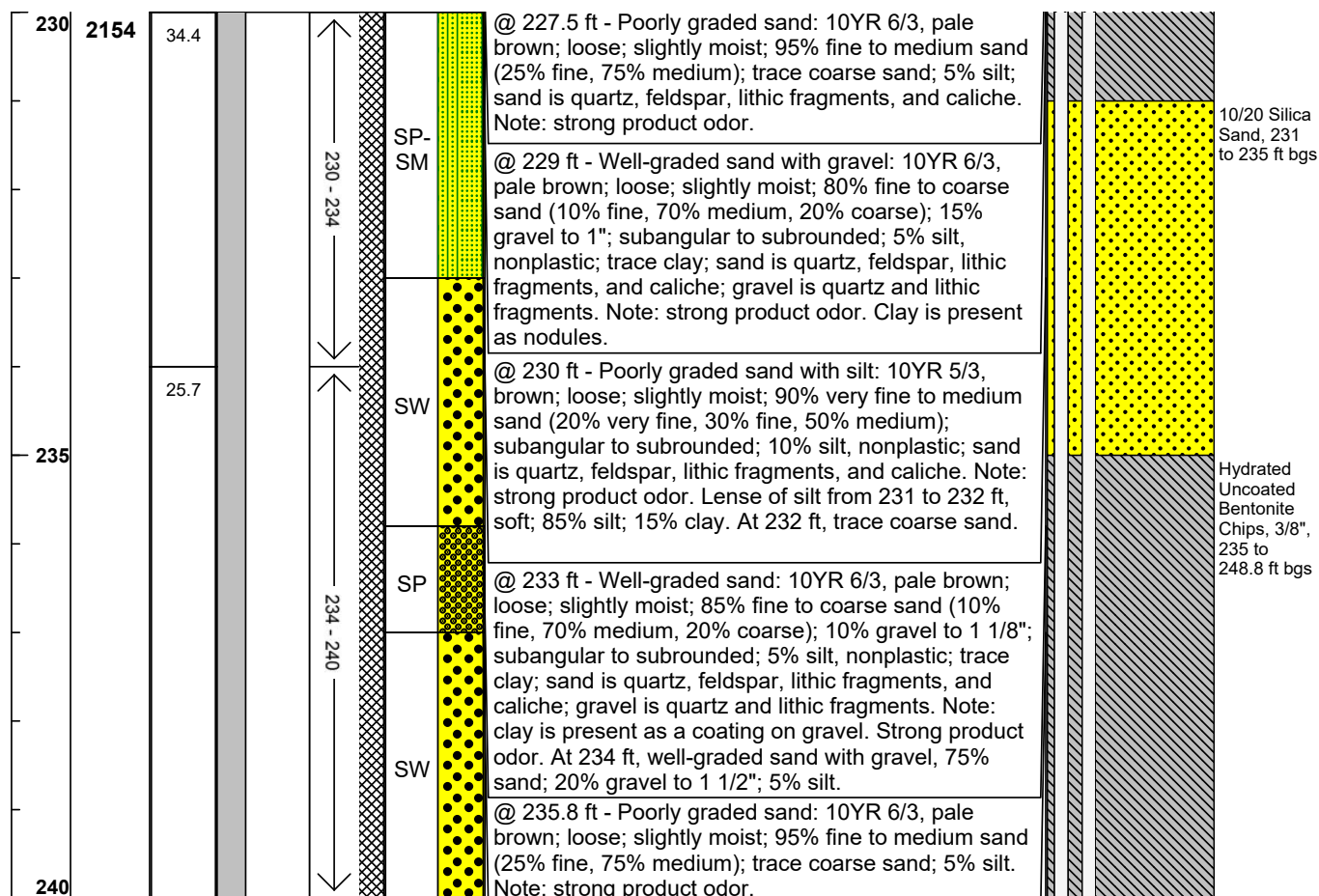
Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;

T = thermal conductivity

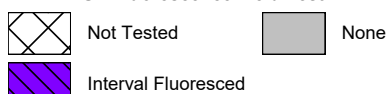
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 24 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

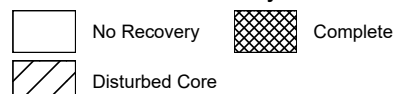


Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

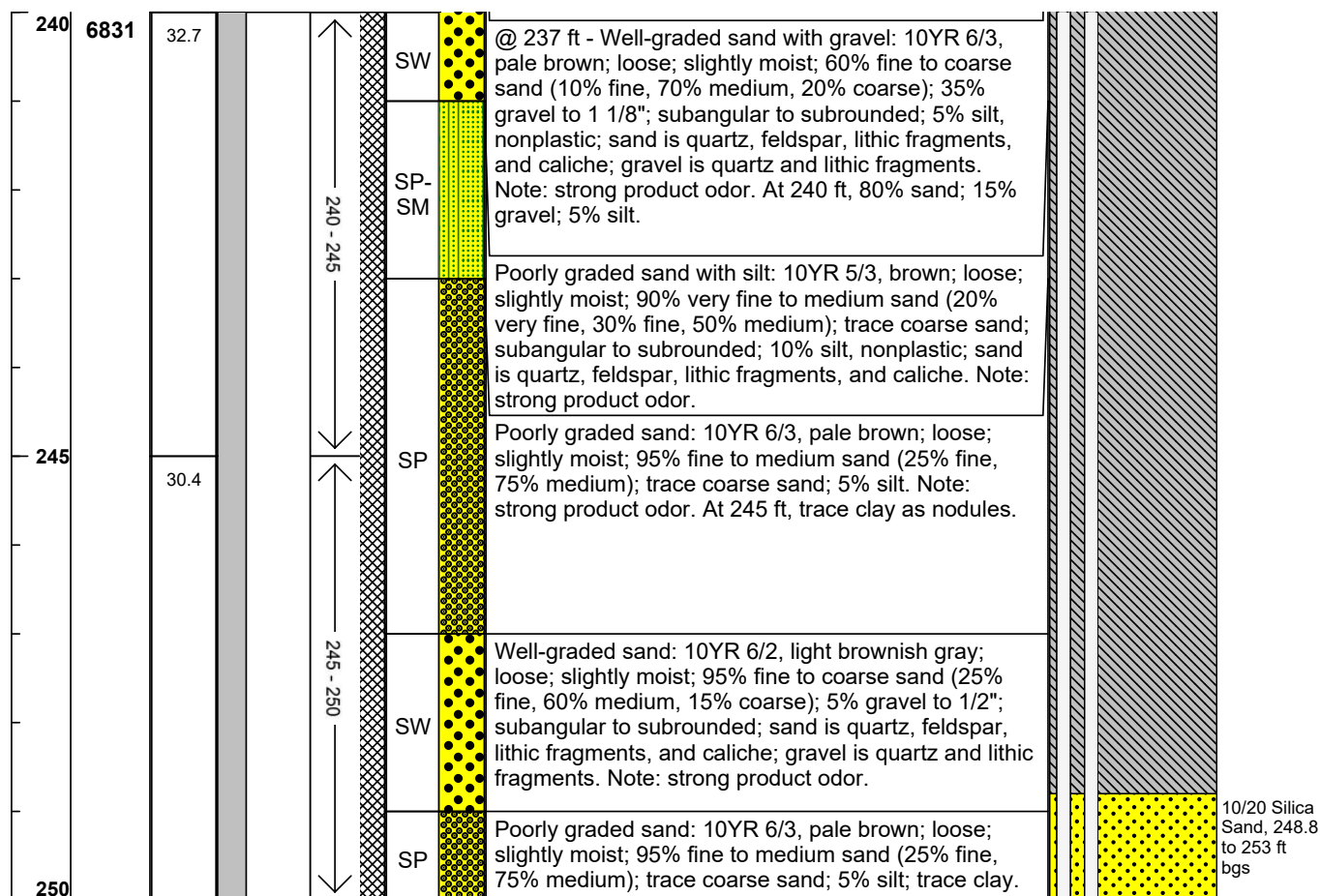


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

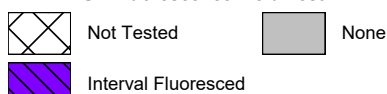
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 25 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



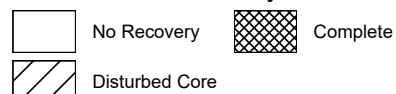
Notes:

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UV Fluorescence Field Test




Core Recovery

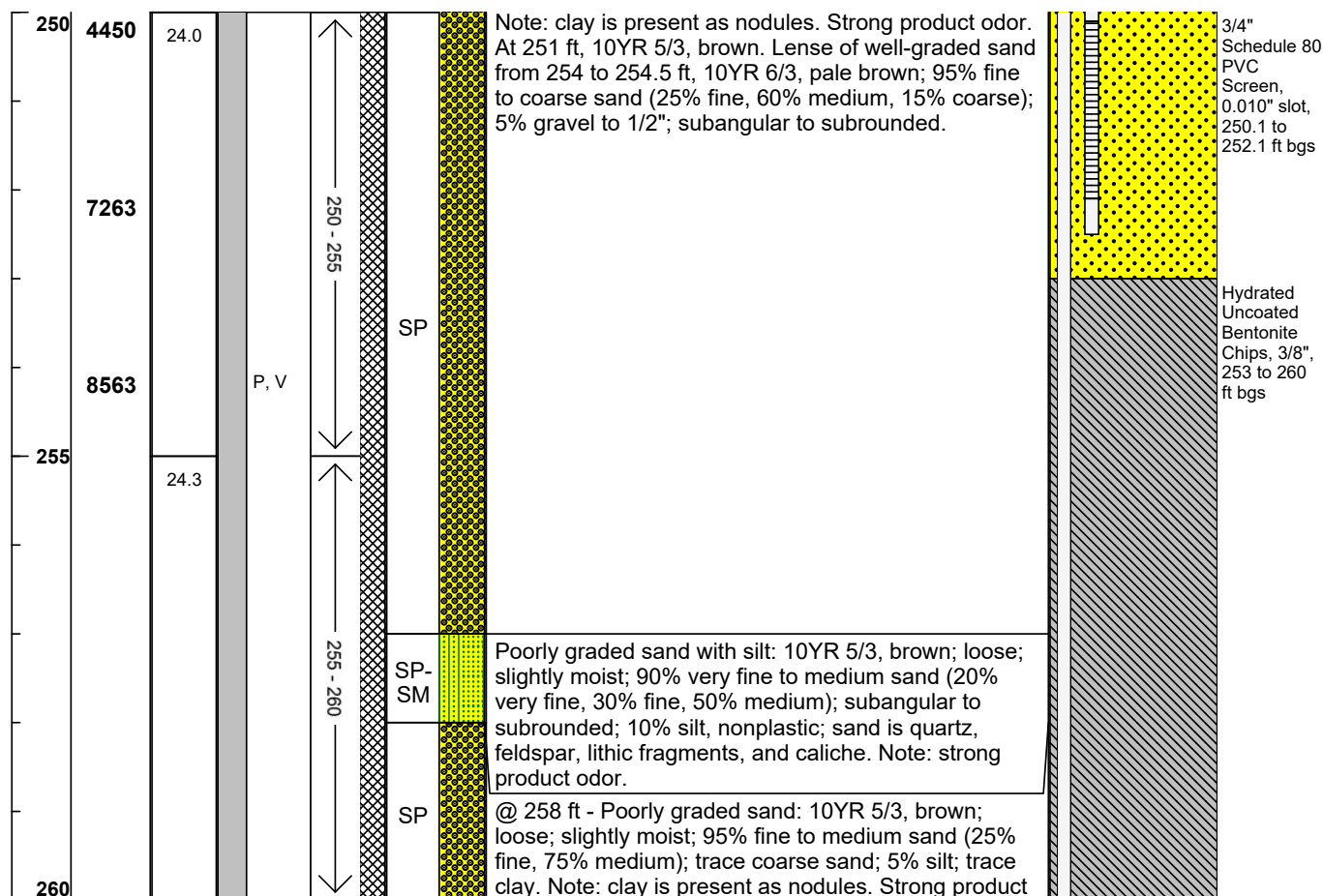


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

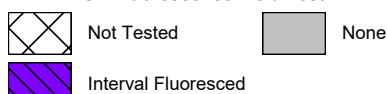
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V1						
		Start Date: 12/16/2018		Page: 26 of 29						
		Completion Date: 1/24/2019								
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

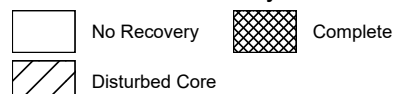


Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

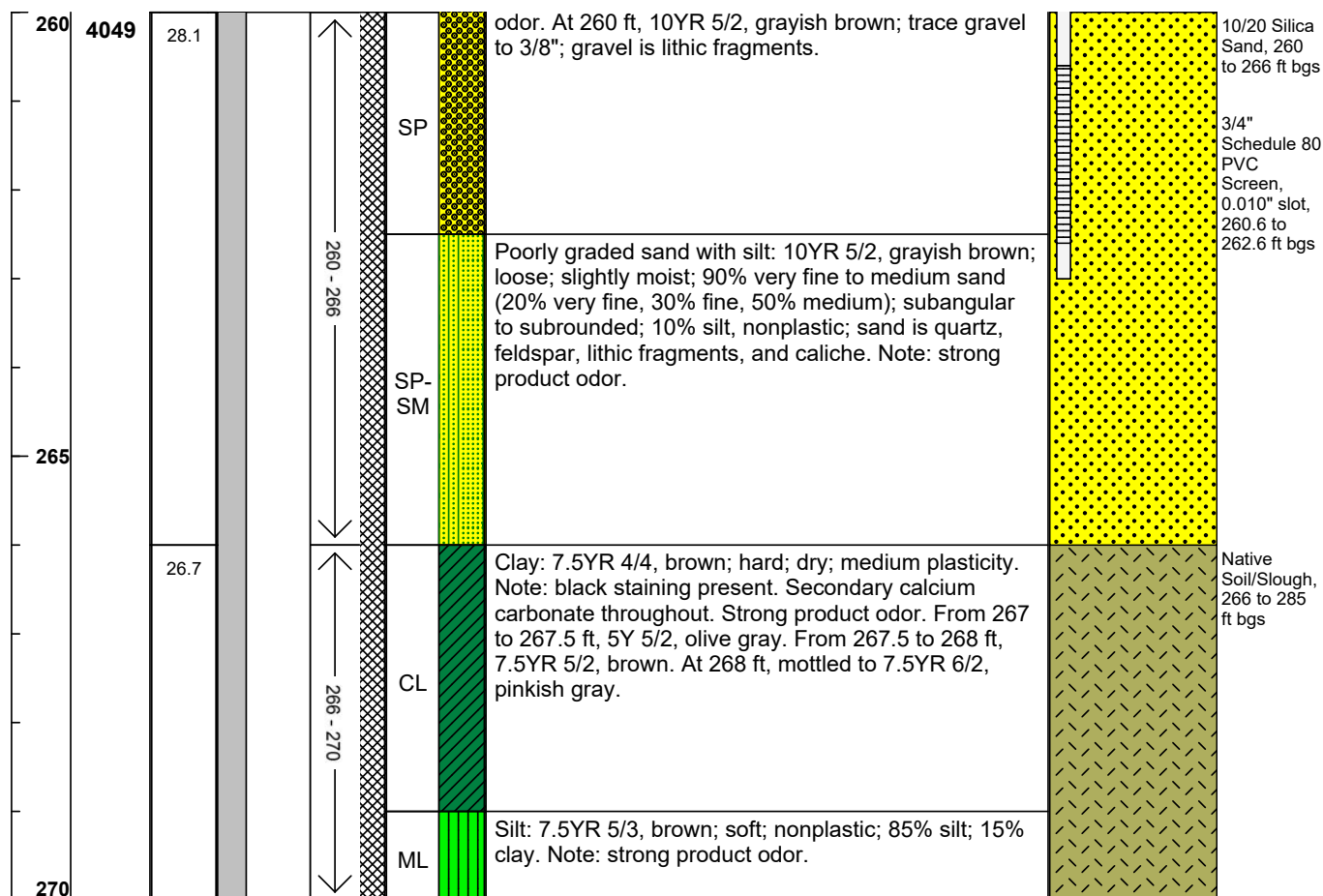


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

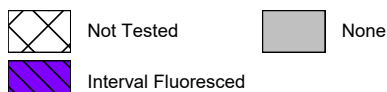
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V1						
Start Date: 12/16/2018		Completion Date: 1/24/2019		Page: 27 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



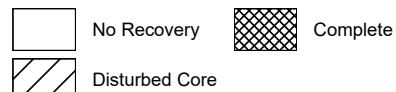
Notes:

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 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

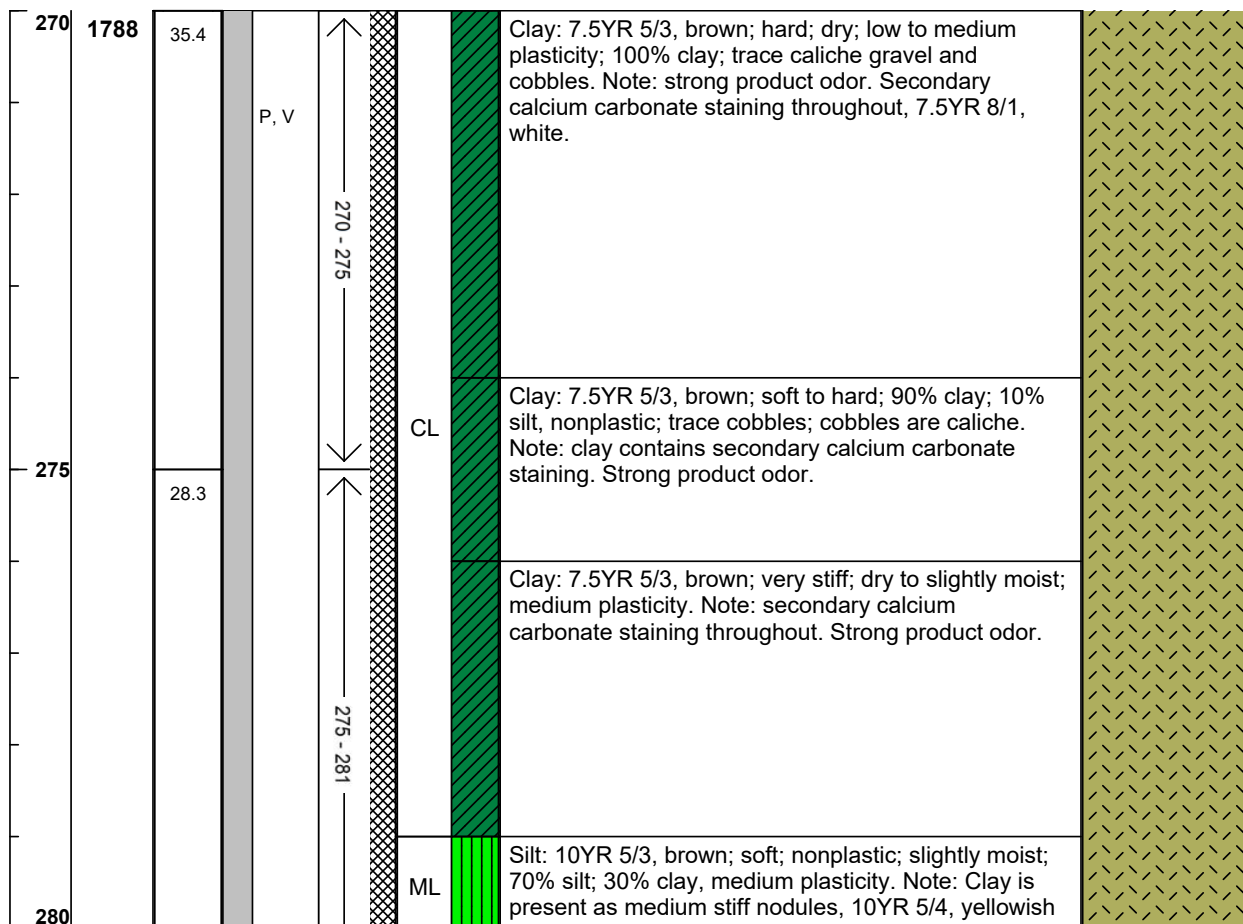


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

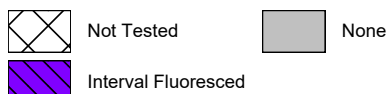
		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 28 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



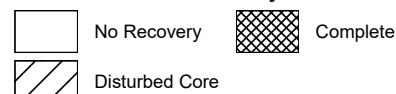
Notes:

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 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

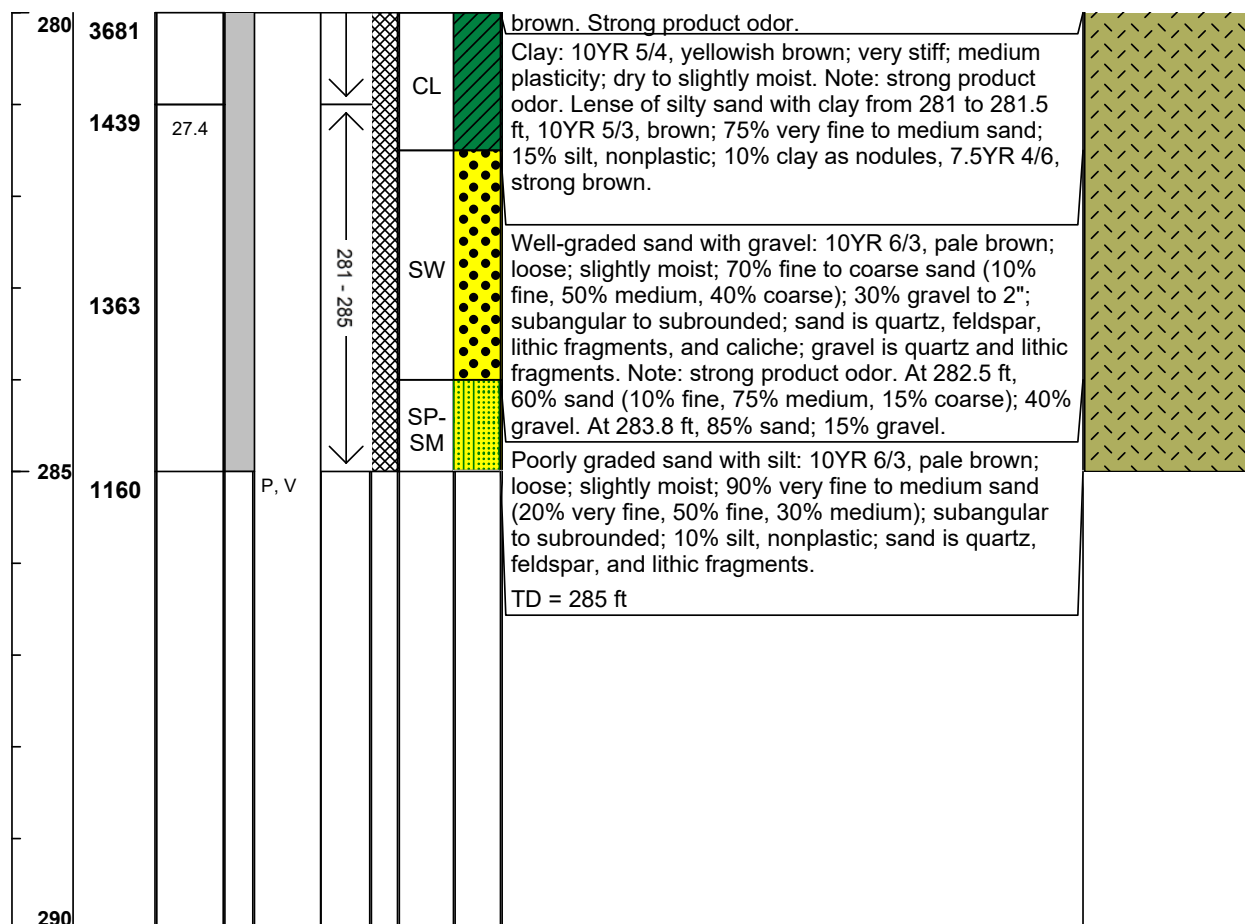


Following coring, the borehole was overdrilled using ARCH for well installation




Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity




There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/16/2018 Completion Date: 1/24/2019		WELL LOG Well ID: KAFB-106V1 Page: 29 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 285 ft Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" Slot Screen Seal Material(s): Cement, Bentonite, High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System


UV Fluorescence Field Test	
	Not Tested
	Interval Fluoresced
	None

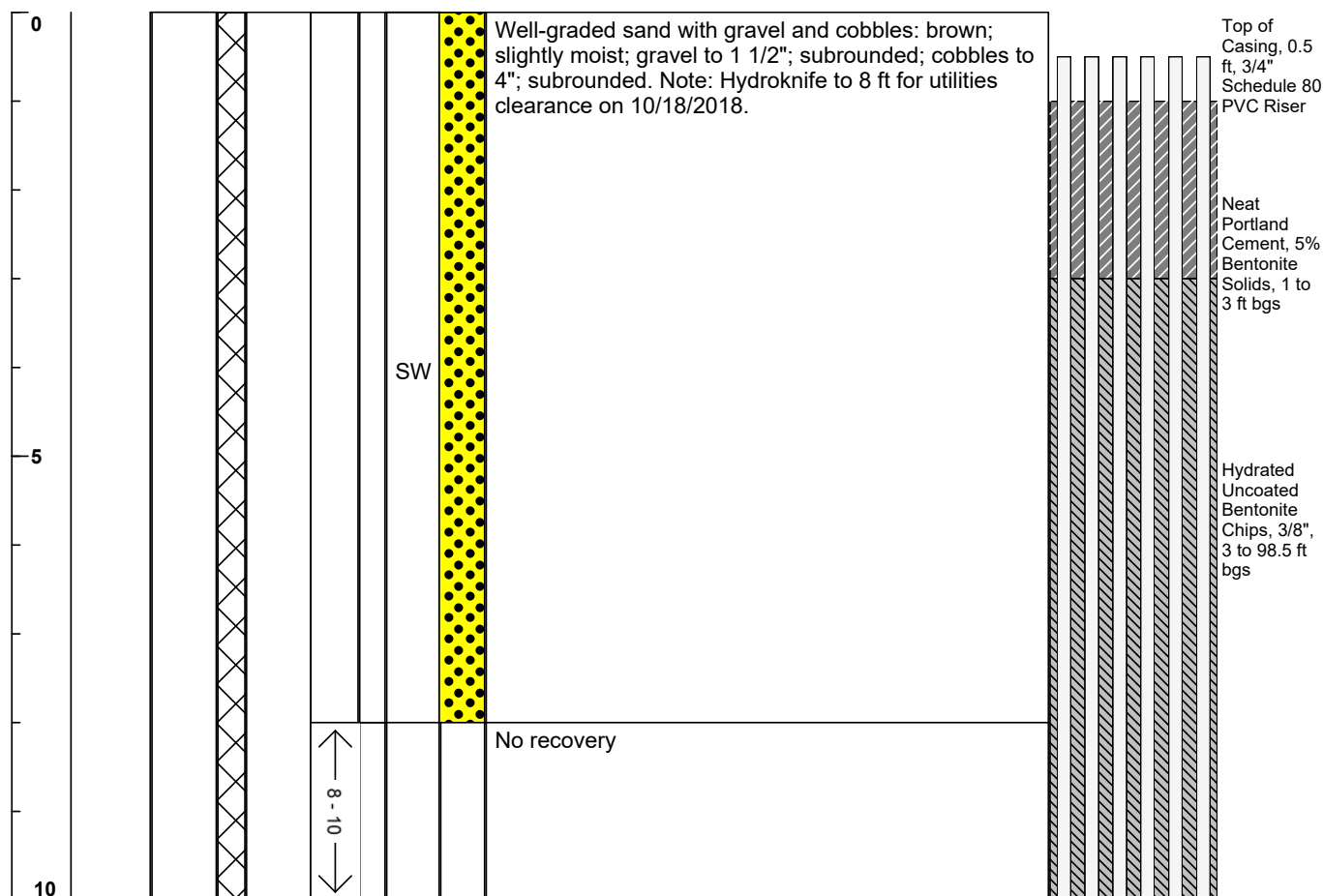
Core Recovery	
	No Recovery
	Disturbed Core
	Complete

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

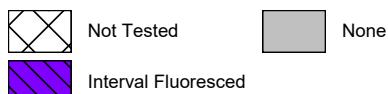
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V2						
Start Date: 12/11/2018		Completion Date: 1/24/19		Page: 1 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

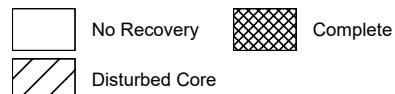


Notes: UV = ultraviolet fluorescence
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 bgs = below ground surface
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 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

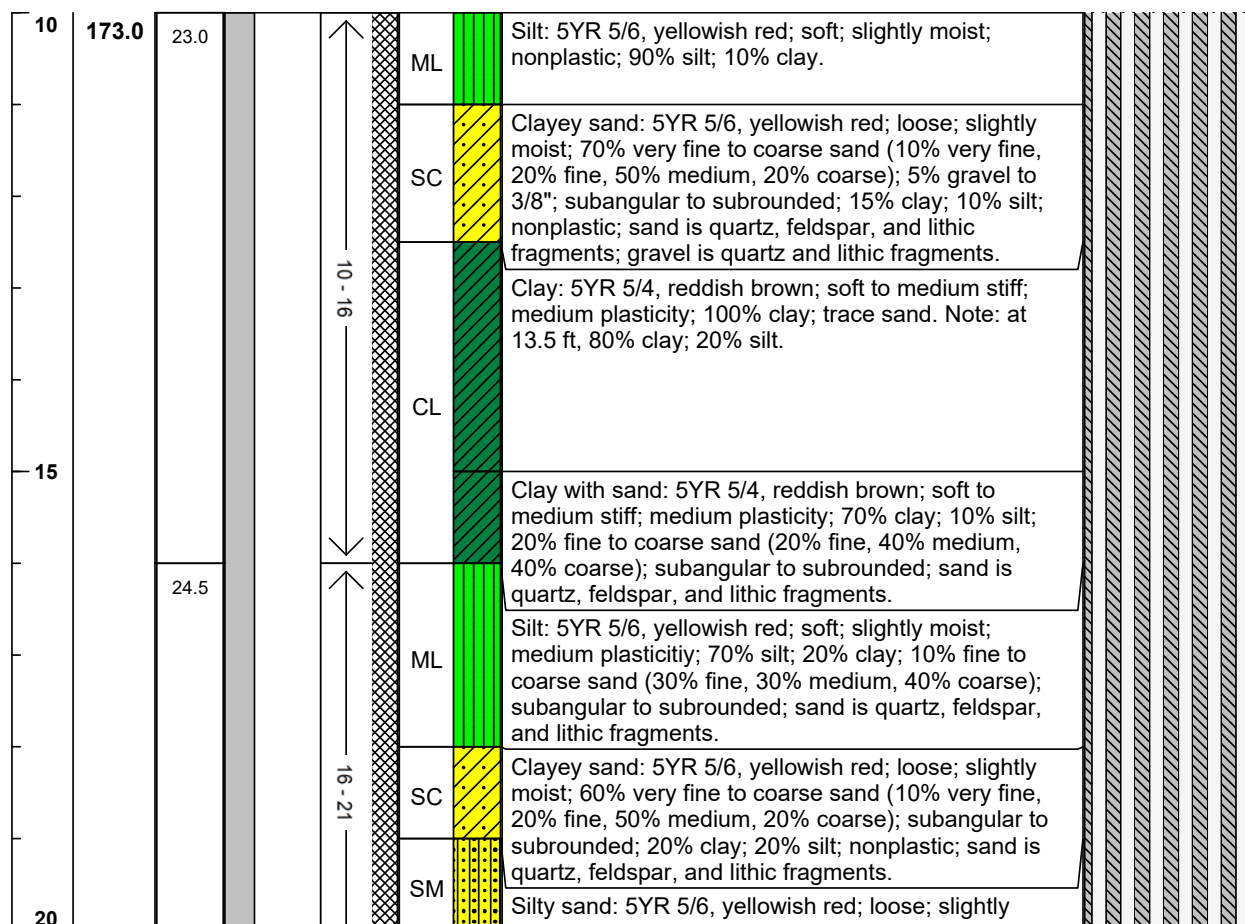


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

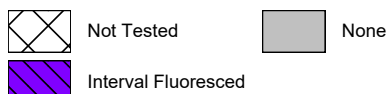
	Project: 62735DM02.1017	WELL LOG Well ID: KAFB-106V2 Page: 2 of 29
	Location: Kirtland AFB, New Mexico	
Start Date: 12/11/2018	Completion Date: 1/24/19	
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger	Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand
Depth (ft) PID (ppmv) Temp (°C) Field UV Samples Collected Core Run (ft) Recovery USCS Lithology	Sample Description	
Completion Details		



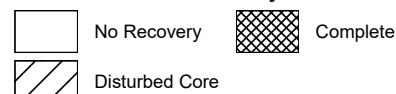
Notes:

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 ID = inner diameter
 ppmv = parts per million by volume
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UV Fluorescence Field Test



Core Recovery



Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.



Project: 62735DM02.1017

Location: **Kirtland AFB, New Mexico**

Start Date: 12/11/2018

Completion Date: 1/24/19

WELL LOG

Well ID: **KAFB-106V2**

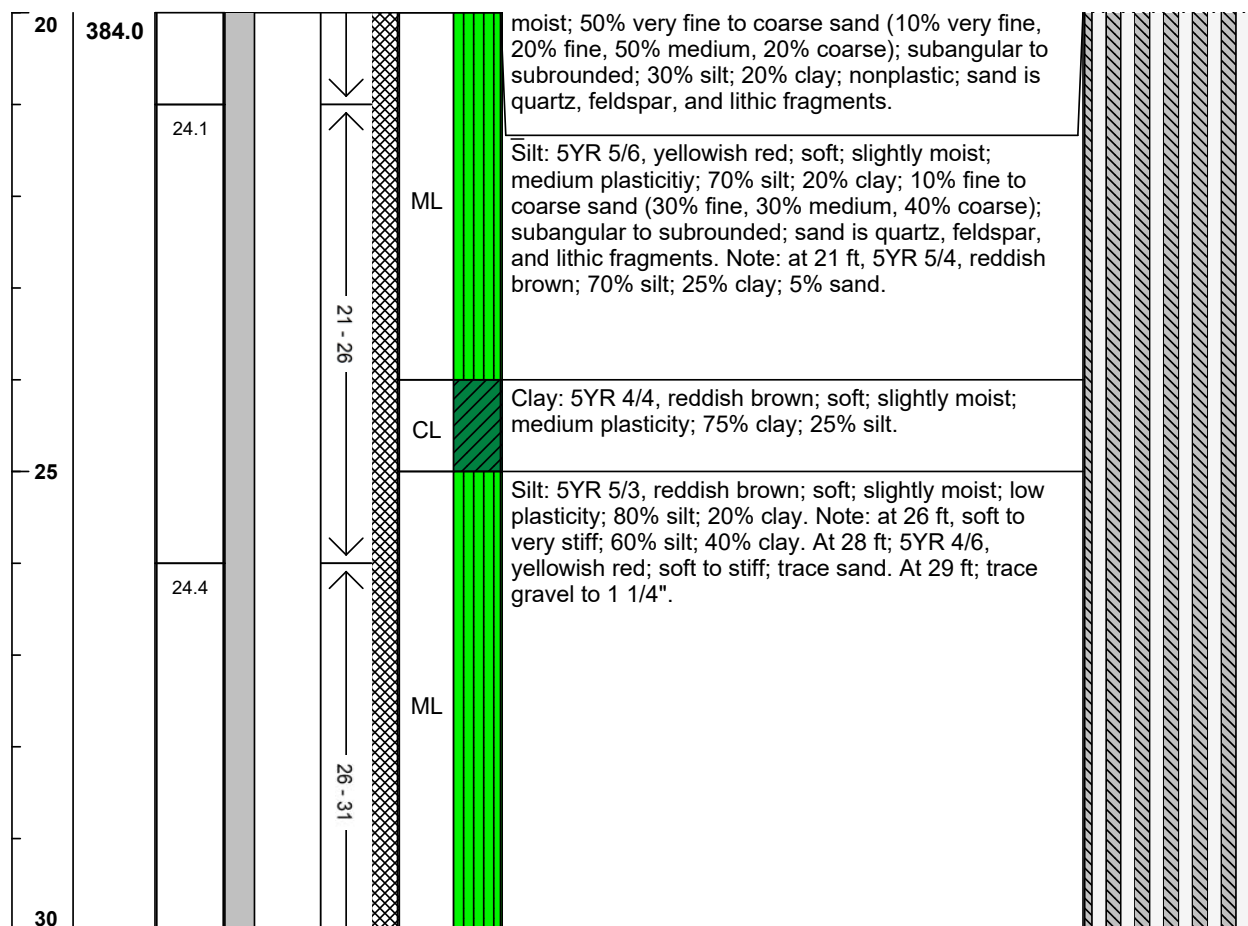
Page: 3 of 29

Drilling Company: **Cascade**
Drilling Method: **Sonic Coring**
Drill Bit: **Sonic Core Barrel, 6" ID**
Driller: **Roger Rodriquez**
Geologist: **J. Messenger**

Boring Depth (ft): **287**
Boring Diameter (in): **7"**
Well Diameter: **3/4" ID**
DTW After Completion (ft bgs): **N/A**
Riser Material: **3/4" Sch. 80 PVC**

Screen Material: **3/4" Sch. 80 PVC**
0.010" slot screen
Seal Material(s): **Cement; Bentonite;**
High Solids Bentonite Grout
Filter Pack: **10/20 Silica Sand**

Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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Notes:

UV = ultraviolet fluorescence

NA = Not Applicable

bgs = below ground surface

ft = feet

ID = inner diameter

ppmv = parts per million by volume

USCS = Unified Soil Classification System

UV Fluorescence Field Test



Not Tested



None



Interval Fluoresced

Core Recovery



No Recovery



Complete




Disturbed Core

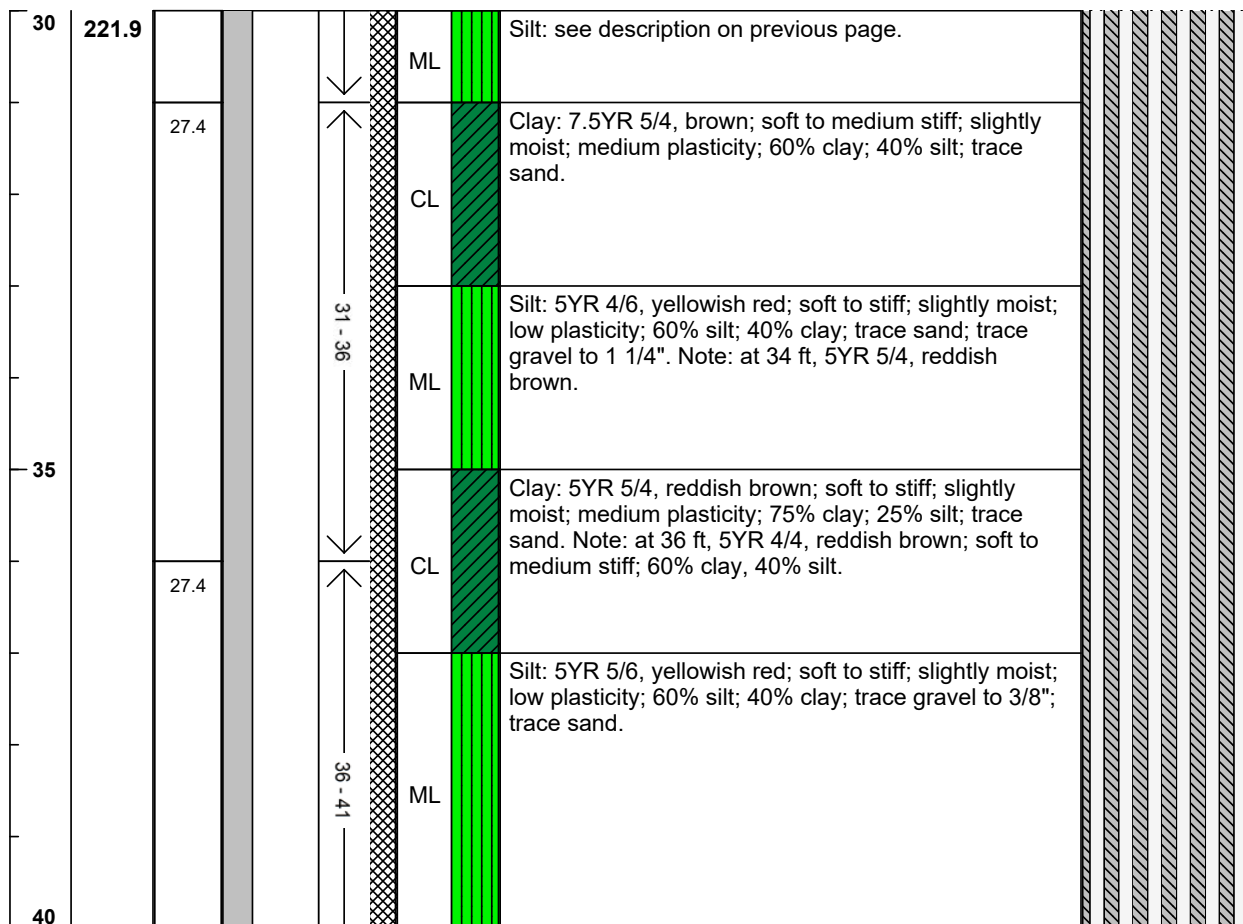
Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB: P = TPH: M = mineralogy: B = biologic: W = moisture analysis: G = geotechnical: UV = ultraviolet:

T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

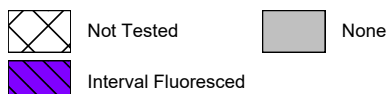
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 4 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



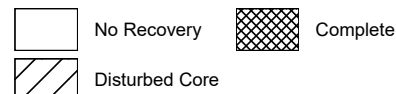
Notes:

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 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

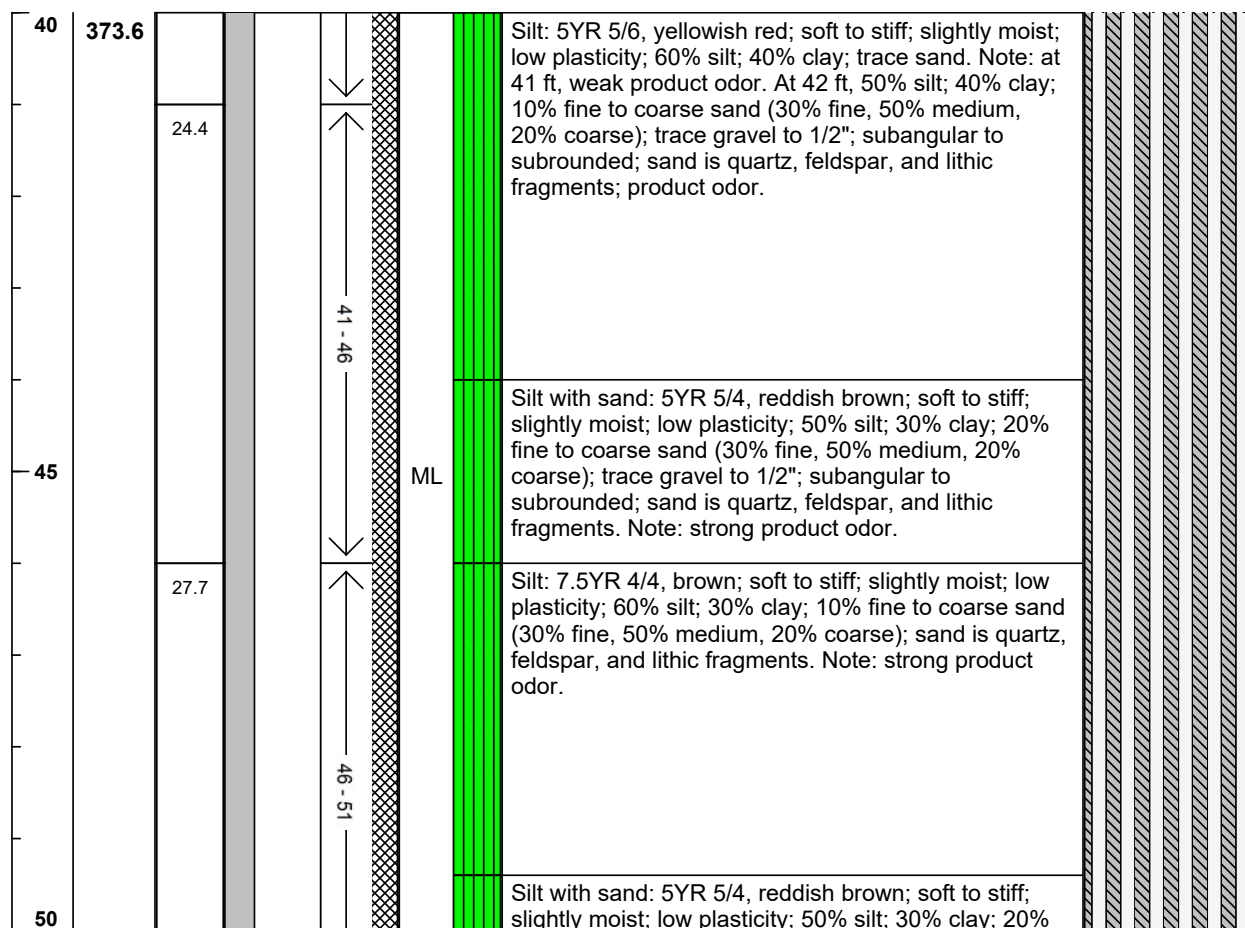


Following coring, the borehole was overdrilled using ARCH for well installation




Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity




There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG Well ID: KAFB-106V2 Page: 5 of 29						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Completion Date: 1/24/19								
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test	
	Not Tested
	Interval Fluoresced
	None

Core Recovery	
	No Recovery
	Disturbed Core
	Complete

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

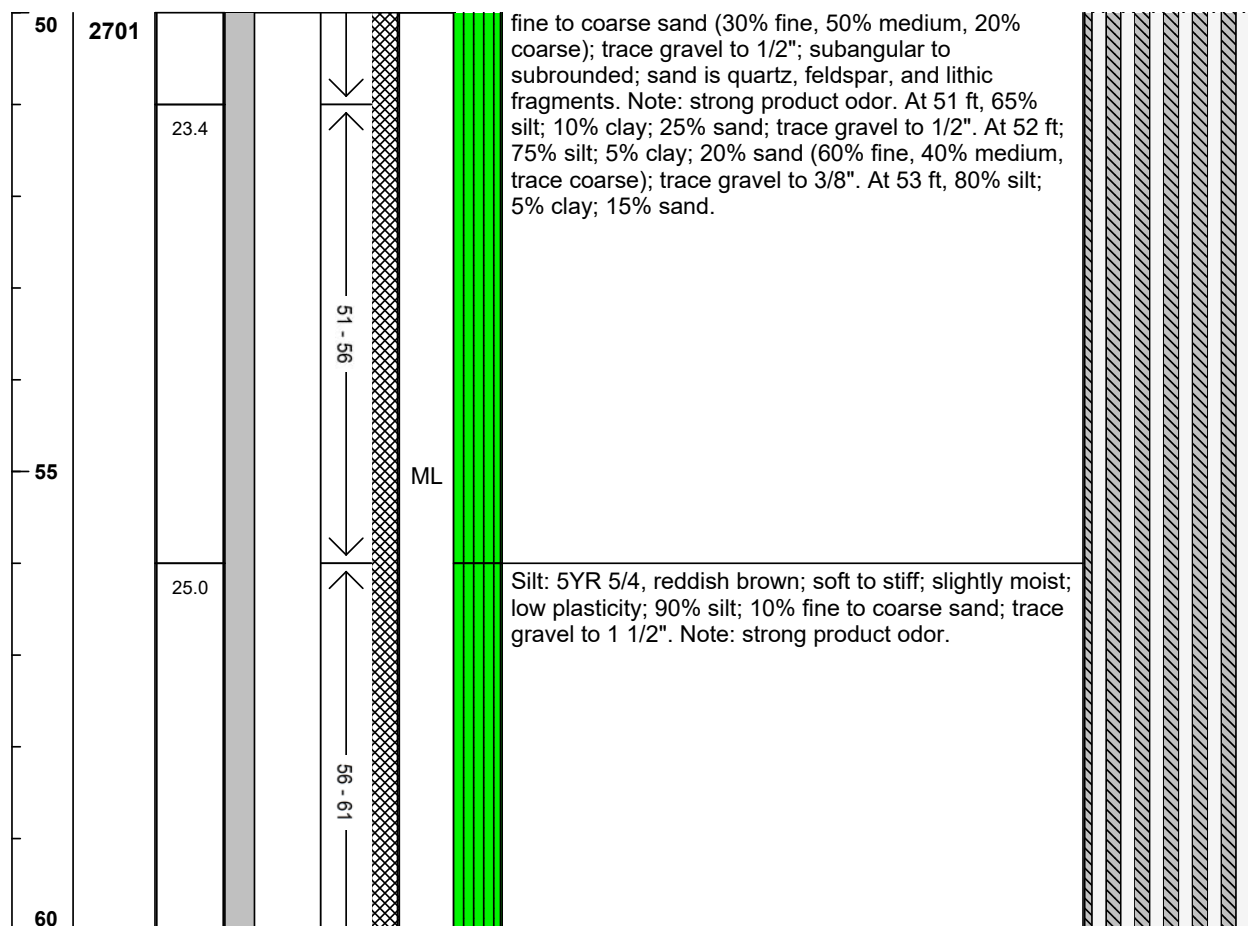
There is a 0.4 ft sump underlying each screen.



Completion Date: 1/24/19


Page: 6 of 29



Screen Material: **3/4" Sch. 80 PVC**
0.010" slot screen
Seal Material(s): **Cement; Bentonite;**
High Solids Bentonite Grout
Filter Pack: **10/20 Silica Sand**


Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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 Not Tested
  None

 Interval Fluoresced

 No Recovery
  Complete

 Disturbed Core

There is a 0.4 ft sump underlying each screen.

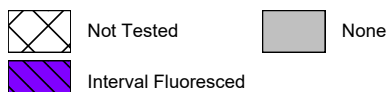
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 7 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen						
Drilling Method: Sonic Coring		Boring Diameter (in): 7"								
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID		Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout						
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A								
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC		Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

60	3239							ML	Silt: see description on previous page.	
		25.1						SM	Silty sand: 7.5YR 4/4, brown; loose; slightly moist; 80% fine to coarse sand (20% fine, 60% medium, 20% coarse); 5% gravel to 1 1/4"; subangular to subrounded; 15% silt, nonplastic; sand is quartz, feldspar, and lithic fragments; gravel is quartz and lithic fragments. Note: strong product odor.	
					61 - 66			SW-SM	Well-graded sand with silt: 7.5YR 5/4, brown; loose; slightly moist; 80% fine to coarse sand (10% fine, 70% medium, 20% coarse); 10% gravel to 1"; subangular to subrounded; 10% silt, nonplastic; sand is quartz, feldspar, and lithic fragments; gravel is quartz and lithic fragments. Note: strong product odor.	
65								ML	Silt: 5YR 5/4, reddish brown; soft to hard; 90% silt; 10% clay. Note: strong product odor.	
		23.2						SW-SM	Well-graded sand with silt: 7.5YR 5/4, brown; loose; slightly moist; 80% fine to coarse sand (10% fine, 70% medium, 20% coarse); 10% gravel to 1"; subangular to subrounded; 10% silt, nonplastic; sand is quartz, feldspar, and lithic fragments; gravel is quartz and lithic fragments. Note: strong product odor.	
					66 - 71			ML	Silt: 5YR 5/4, reddish brown; soft; nonplastic; 90% silt; 10% clay. Note: strong product odor.	
70									Sandy silt: 5YR 5/4, reddish brown; soft; slightly moist; 60% silt, nonplastic; 40% very fine to coarse sand (30% very fine, 30% fine, 30% medium, 10% coarse);	

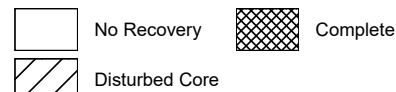
Notes:

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 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test



Core Recovery



Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.



Project: **62735DM02.1017**
Location: **Kirtland AFB, New Mexico**
Start Date: **12/11/2018**
Completion Date: **1/24/19**

WELL LOG

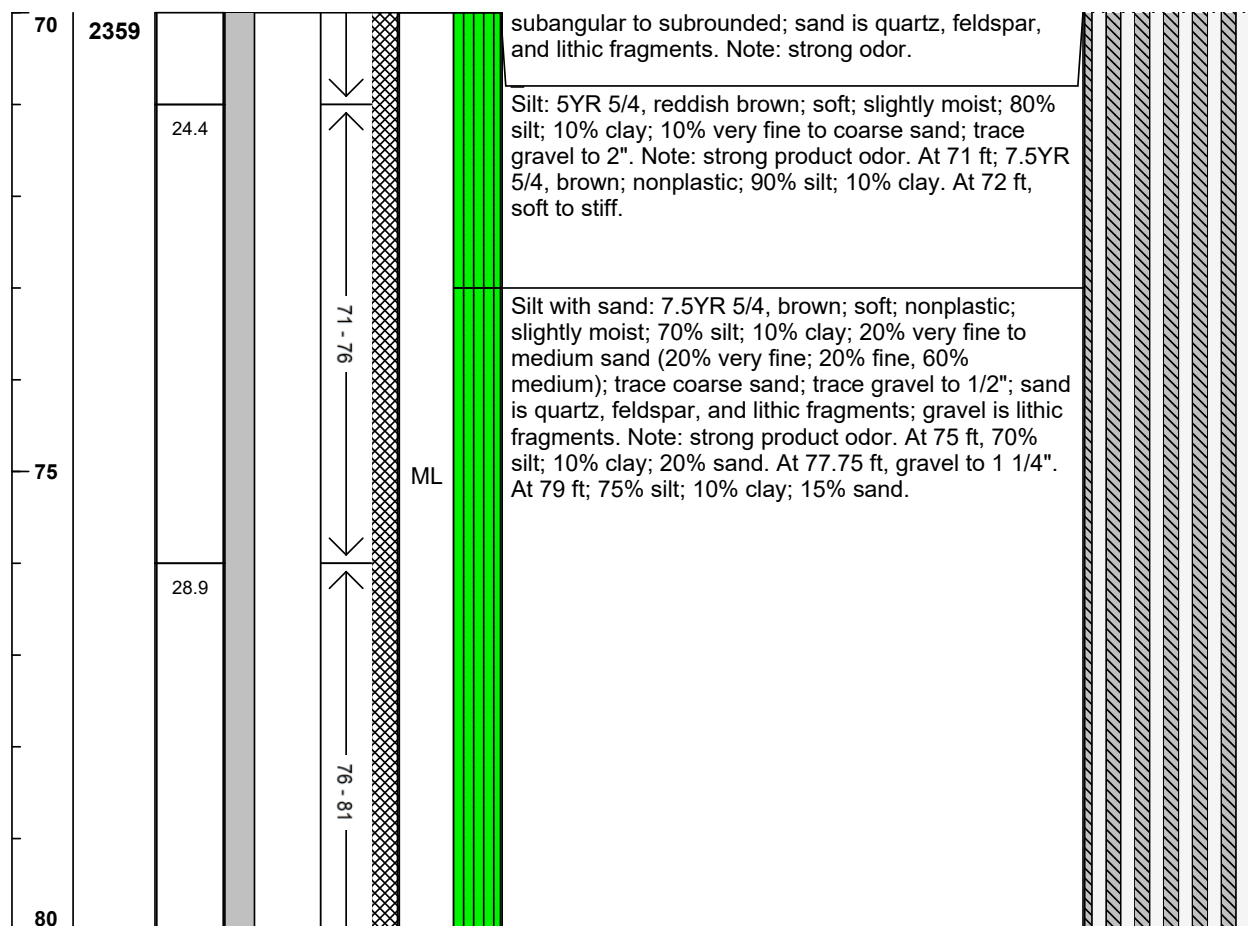
Well ID: **KAFB-106V2**
Page: **8 of 29**

Drilling Company: **Cascade**
Drilling Method: **Sonic Coring**
Drill Bit: **Sonic Core Barrel, 6" ID**
Driller: **Roger Rodriquez**
Geologist: **J. Messenger**

Boring Depth (ft): **287**
Boring Diameter (in): **7"**
Well Diameter: **3/4" ID**
DTW After Completion (ft bgs): **N/A**
Riser Material: **3/4" Sch. 80 PVC**

Screen Material: **3/4" Sch. 80 PVC**
0.010" slot screen
Seal Material(s): **Cement; Bentonite;**
High Solids Bentonite Grout
Filter Pack: **10/20 Silica Sand**

Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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bgs = below ground surface
ft = feet
ID = inner diameter
ppmv = parts per million by volume
USCS = Unified Soil Classification System

UV Fluorescence Field Test



Not Tested



None



Interval Fluoresced

Core Recovery



No Recovery



Complete




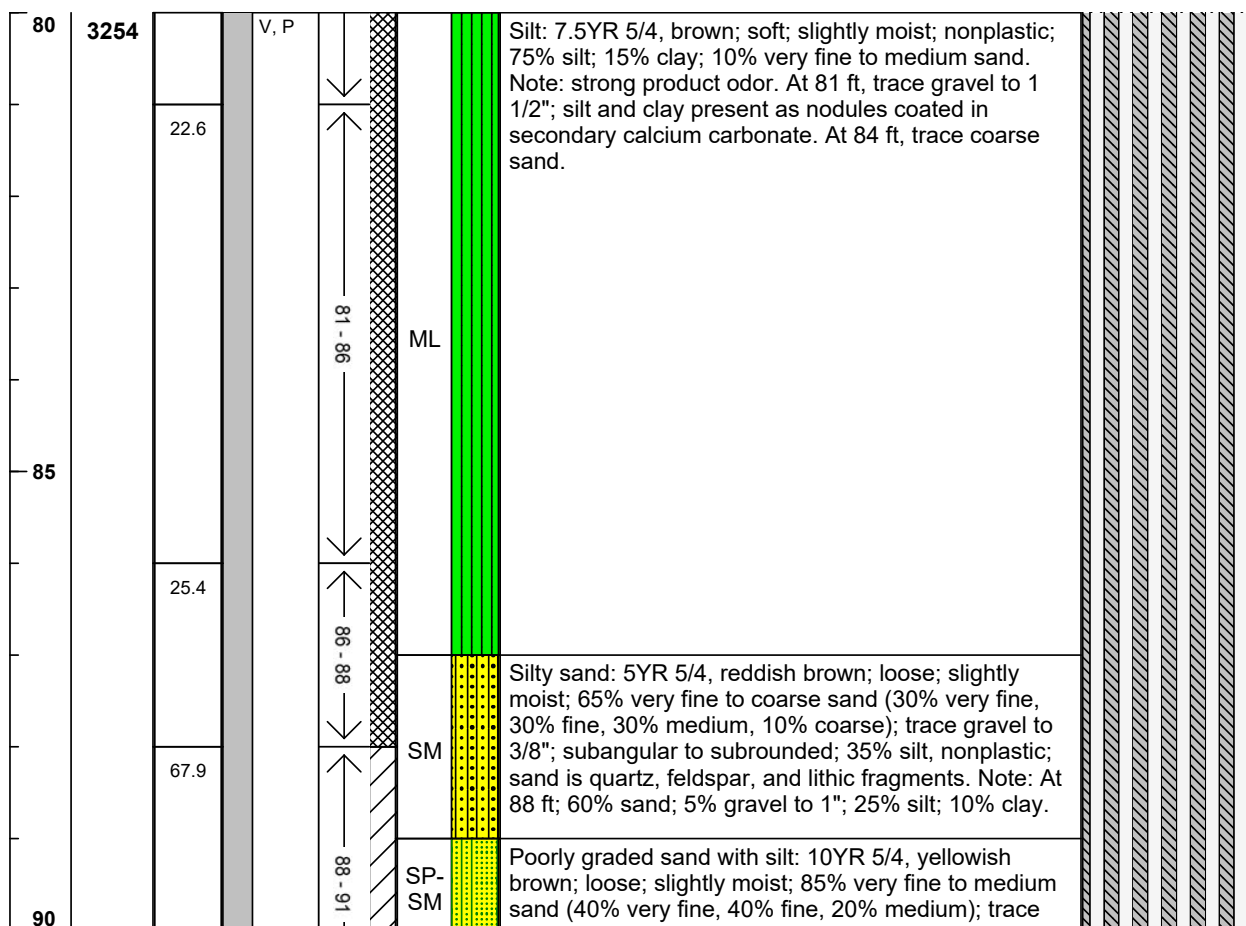
Disturbed Core

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

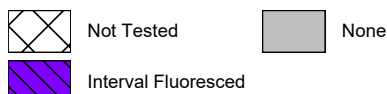
	Project: 62735DM02.1017		WELL LOG Well ID: KAFB-106V2 Page: 9 of 29							
	Location: Kirtland AFB, New Mexico									
Start Date: 12/11/2018		Completion Date: 1/24/19								
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



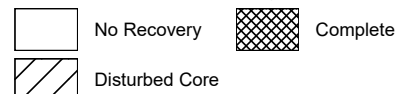
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 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

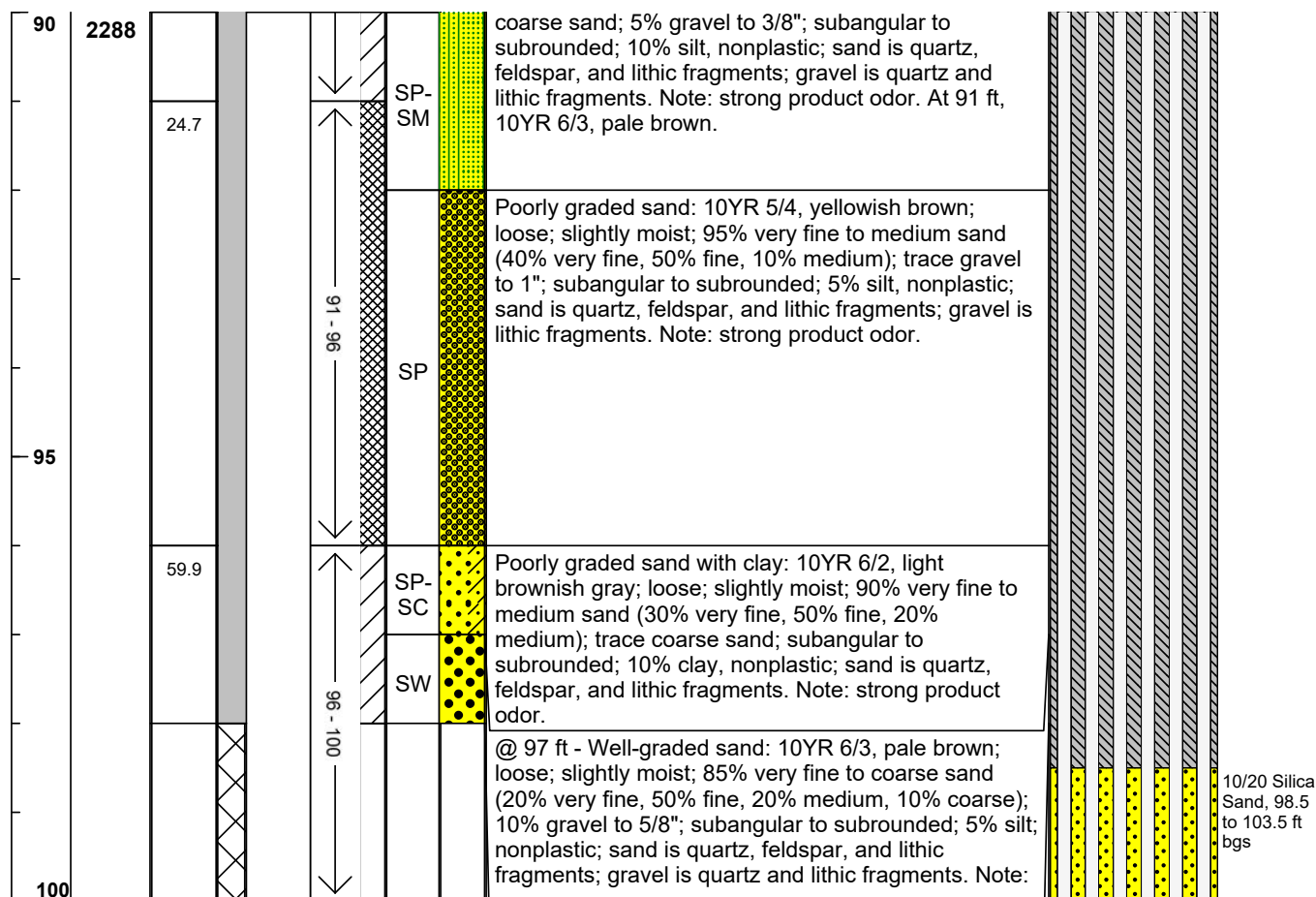


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

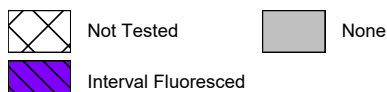
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 10 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



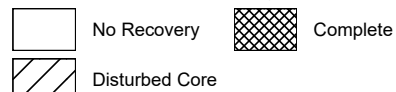
Notes:

UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

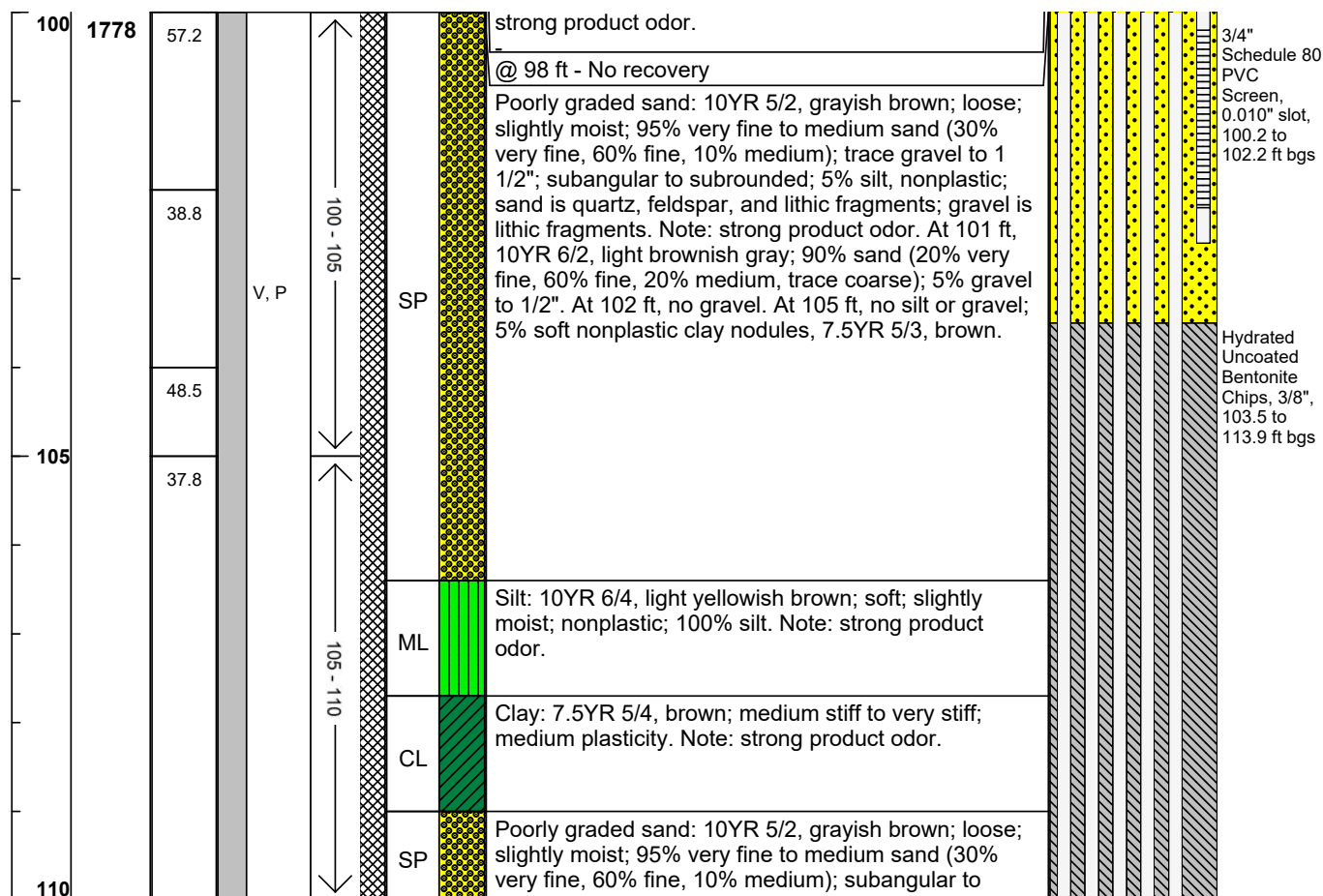


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

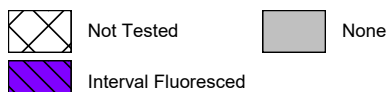
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V2						
Start Date: 12/11/2018		Completion Date: 1/24/19		Page: 11 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

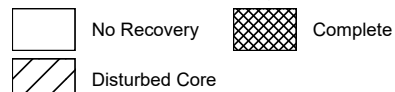


Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

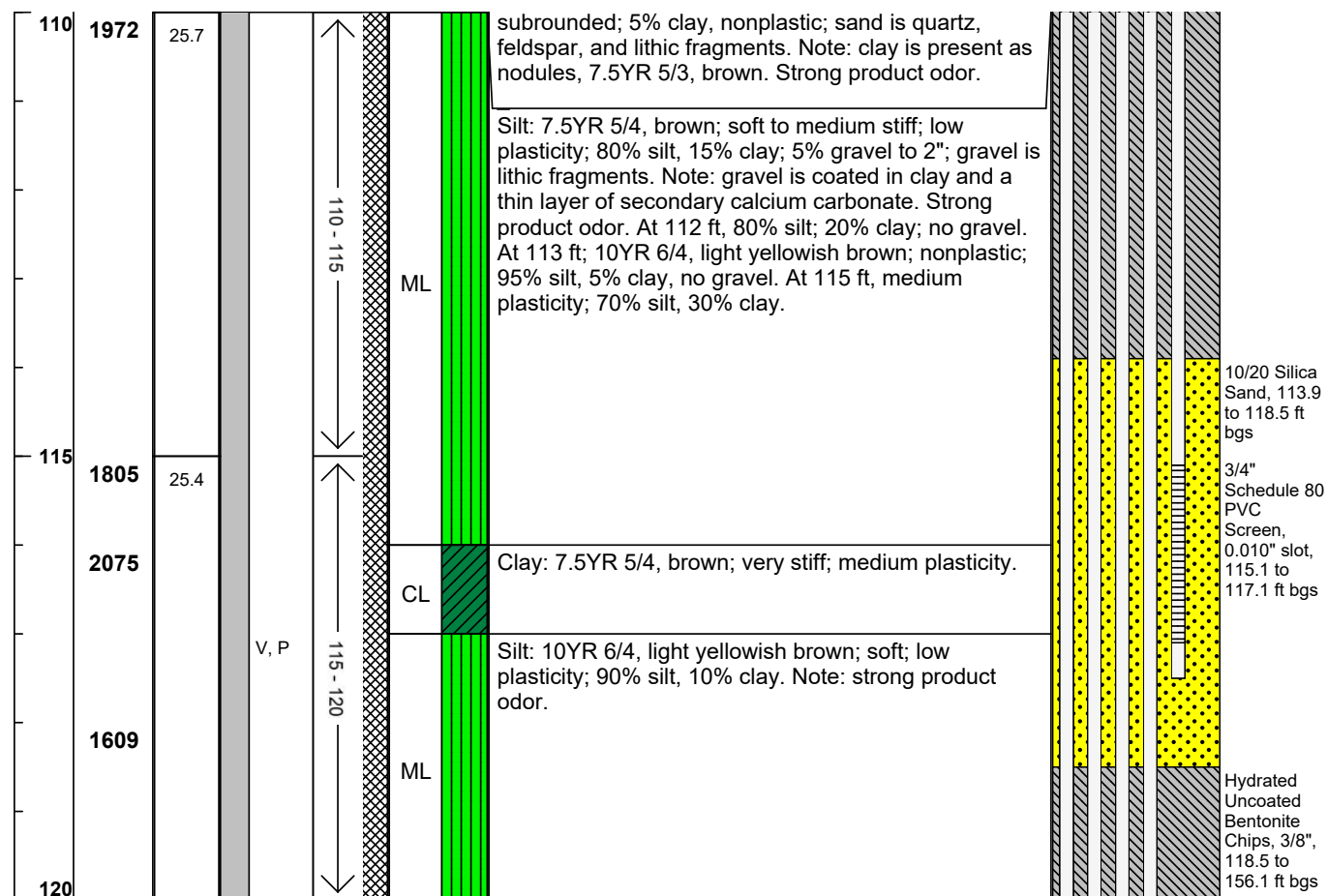


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

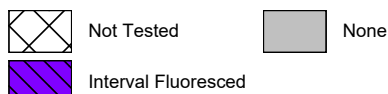
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 12 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand										
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



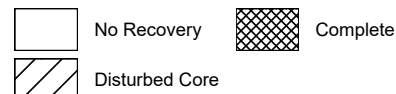
Notes:

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 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

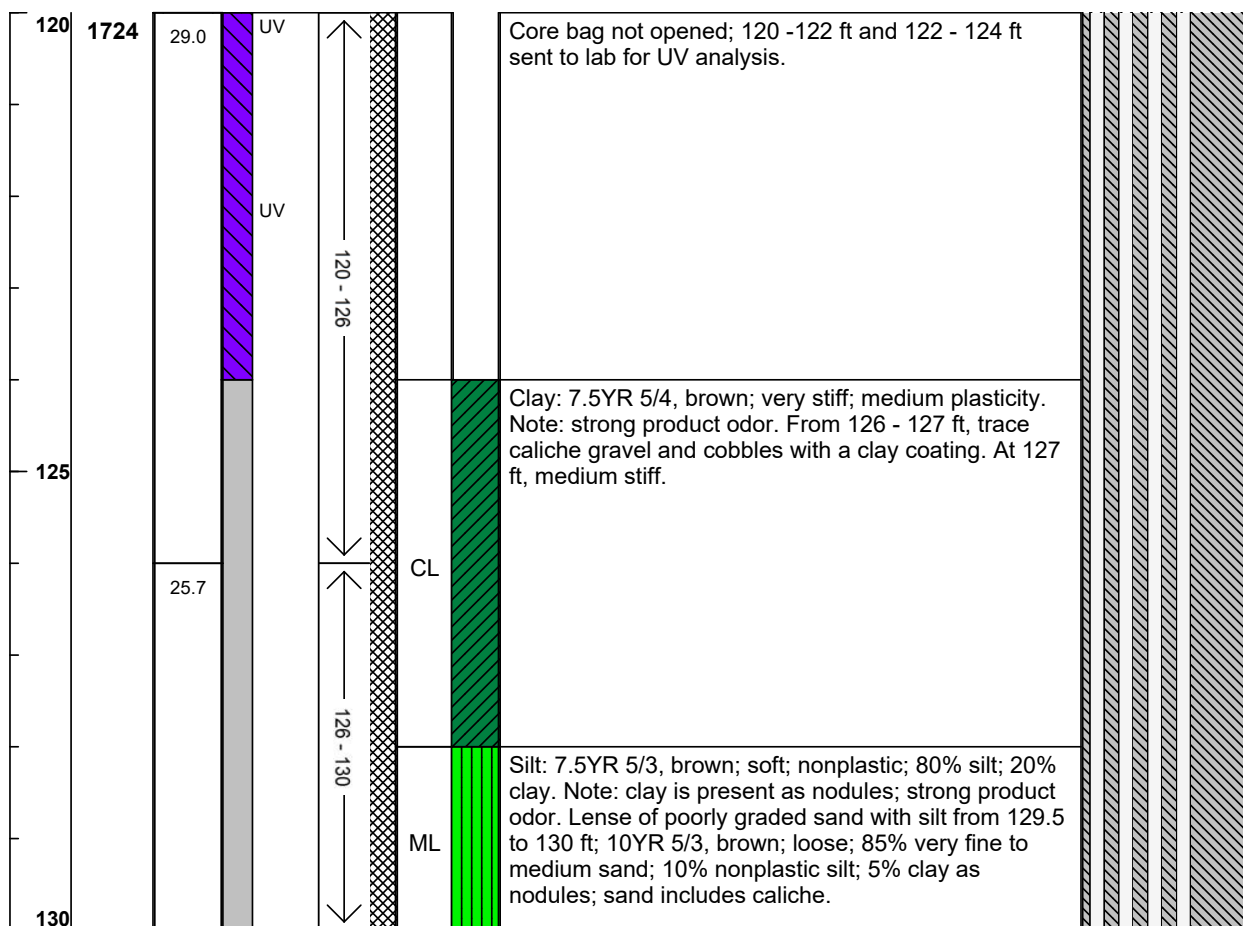


Following coring, the borehole was overdrilled using ARCH for well installation




Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity




There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 13 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" slot screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement; Bentonite;							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System


UV Fluorescence Field Test	
	Not Tested
	Interval Fluoresced
	None

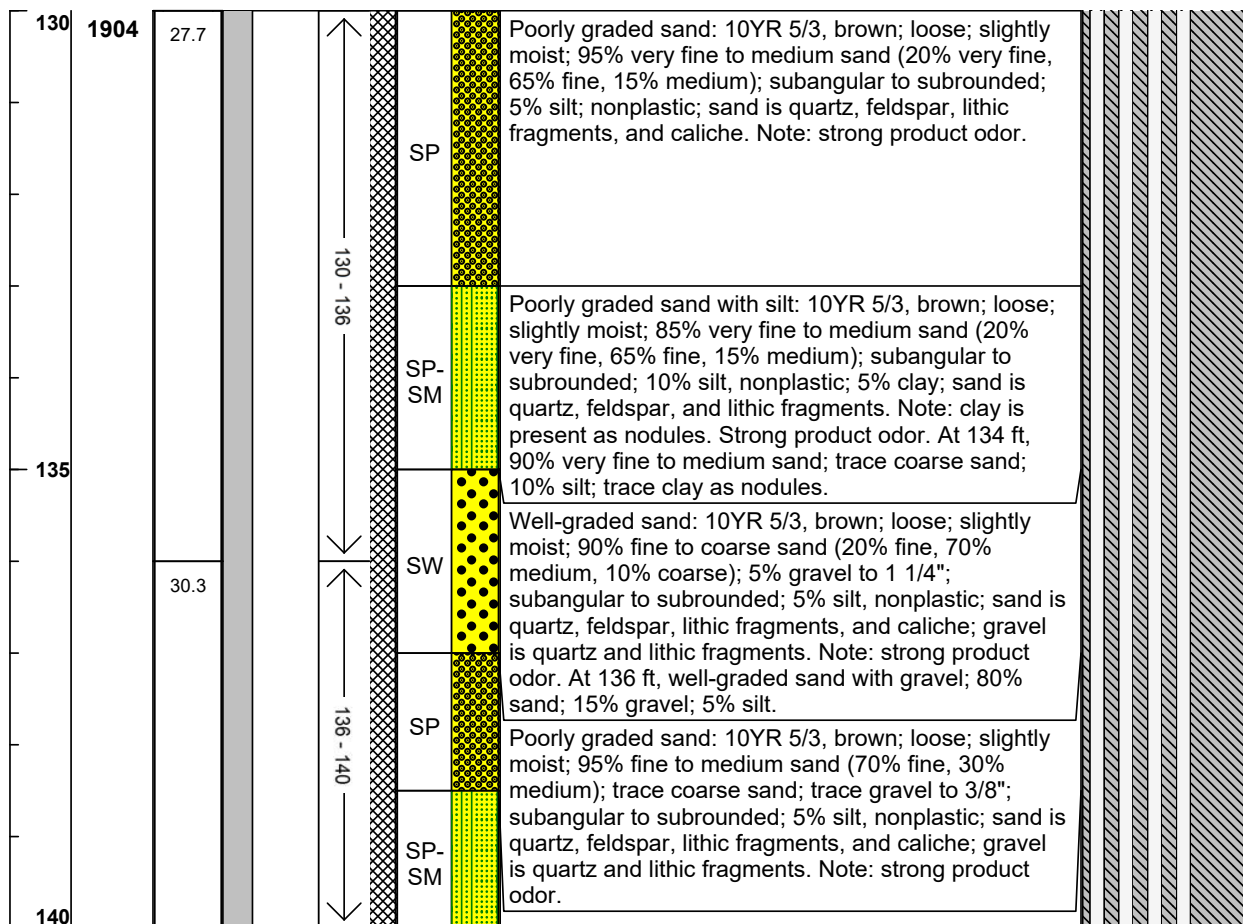
Core Recovery	
	No Recovery
	Disturbed Core
	Complete

Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

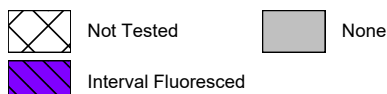
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 14 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" slot screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement; Bentonite;							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



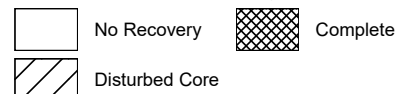
Notes:

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 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

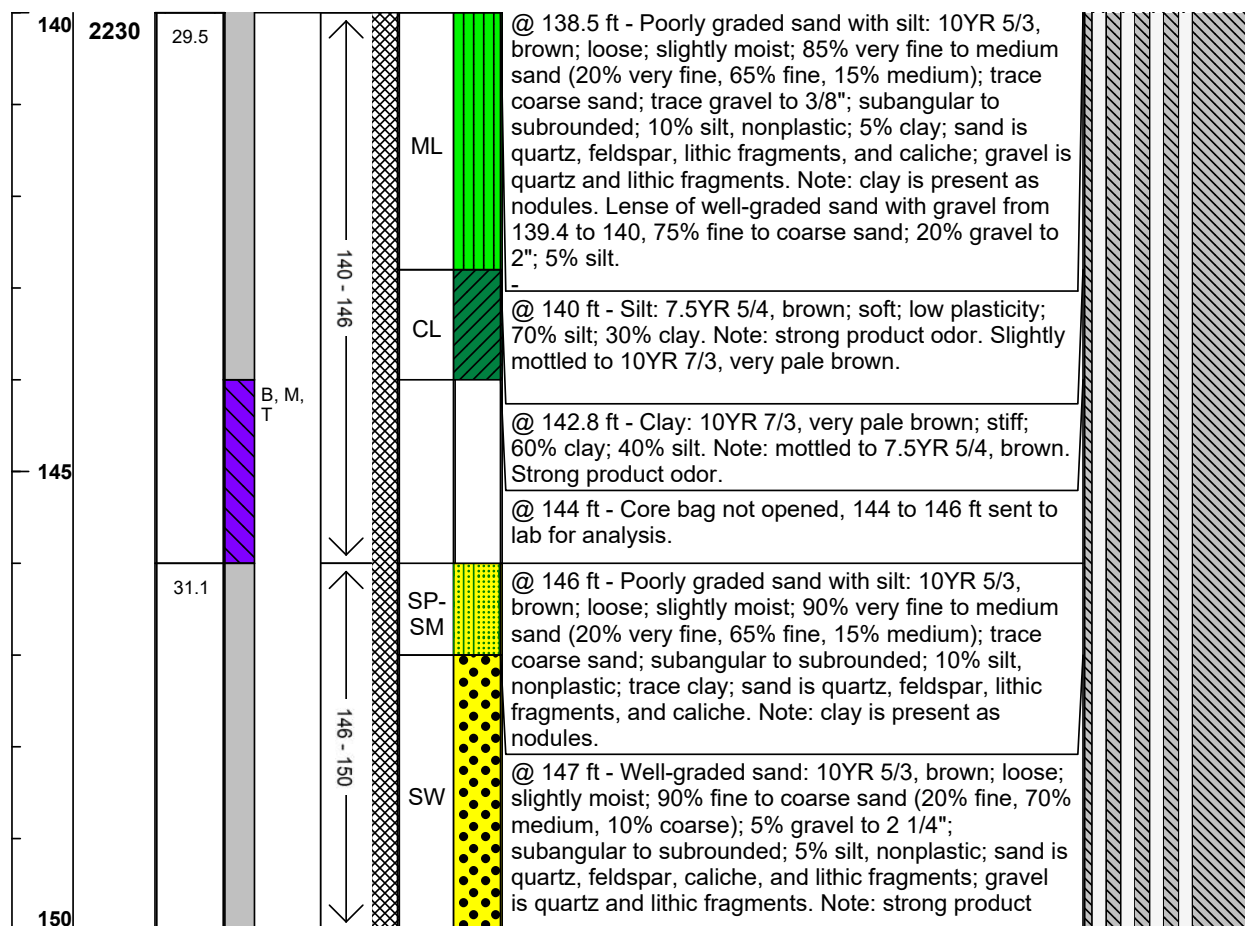


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

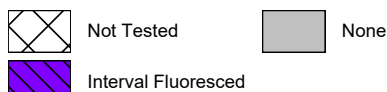
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 15 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen						
Drilling Method: Sonic Coring		Boring Diameter (in): 7"								
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID		Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout						
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A								
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC		Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



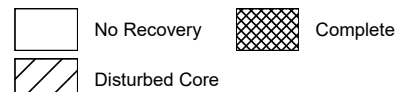
Notes:

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 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

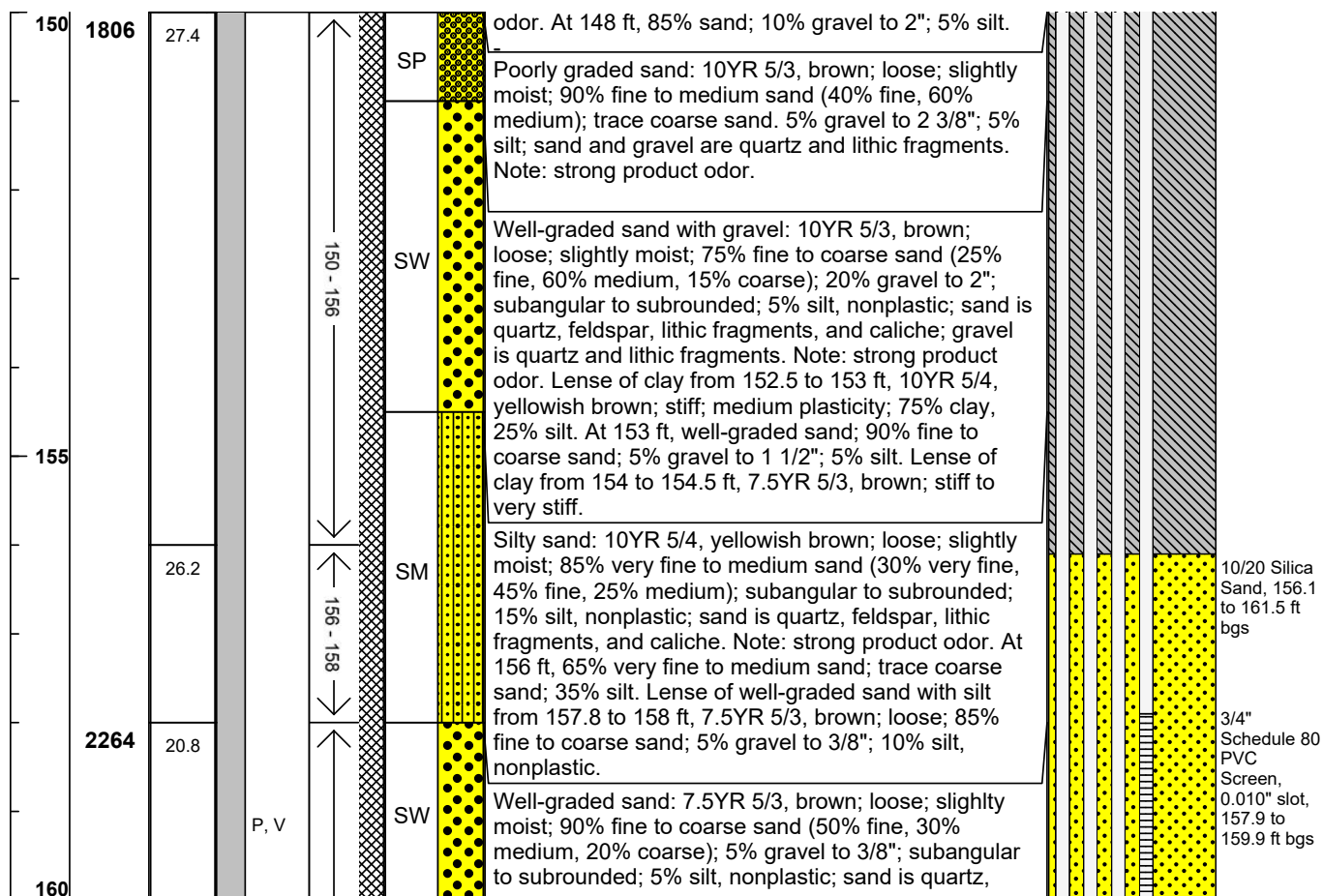


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

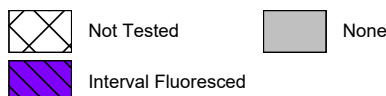
	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 16 of 29							
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC							
		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand								
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



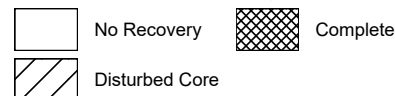
Notes:

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 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

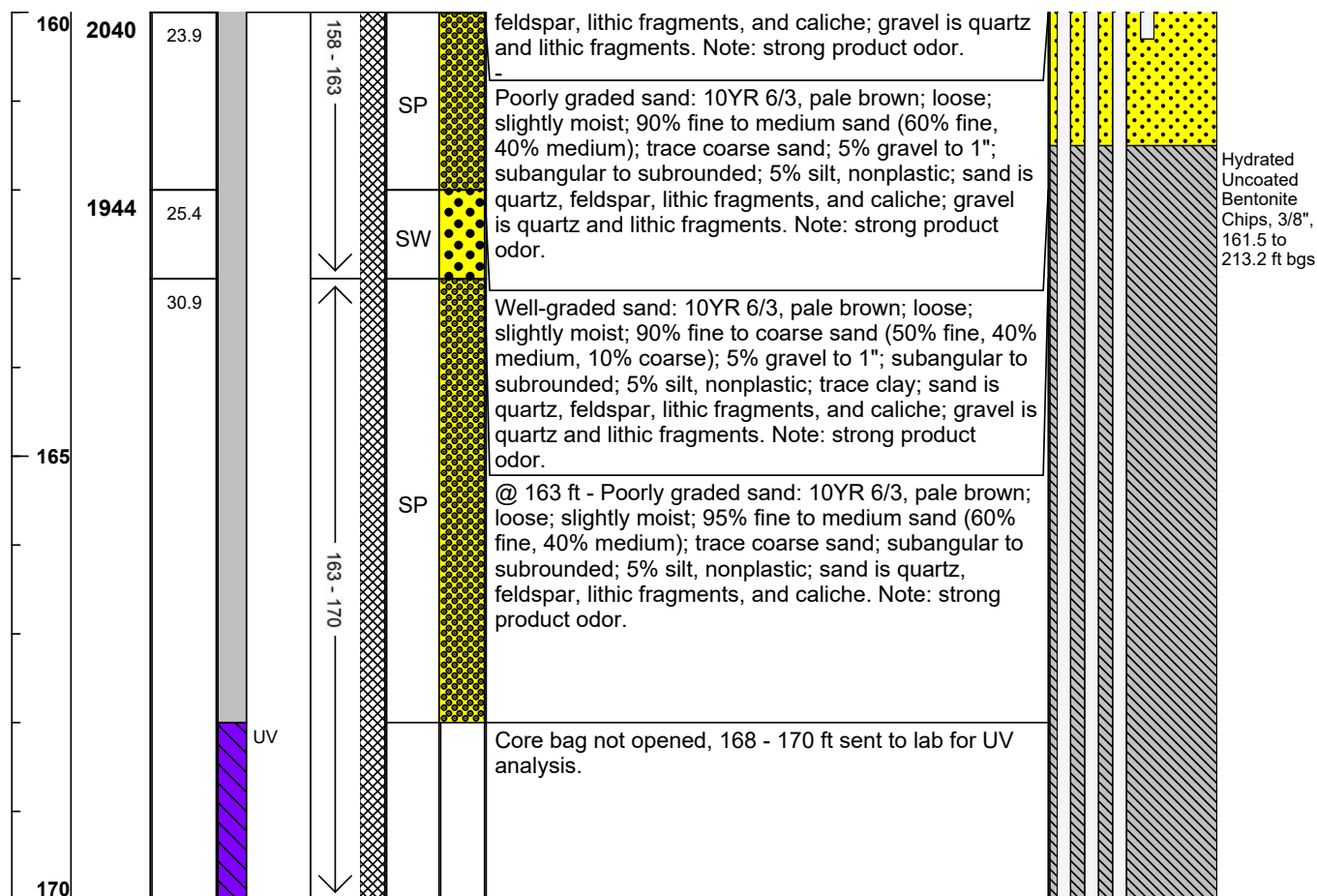


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

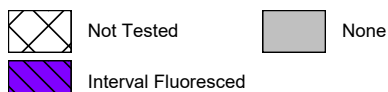
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG Well ID: KAFB-106V2 Page: 17 of 29						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Completion Date: 1/24/19								
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand						
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

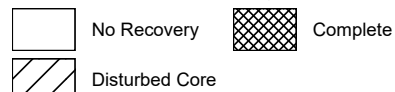


Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

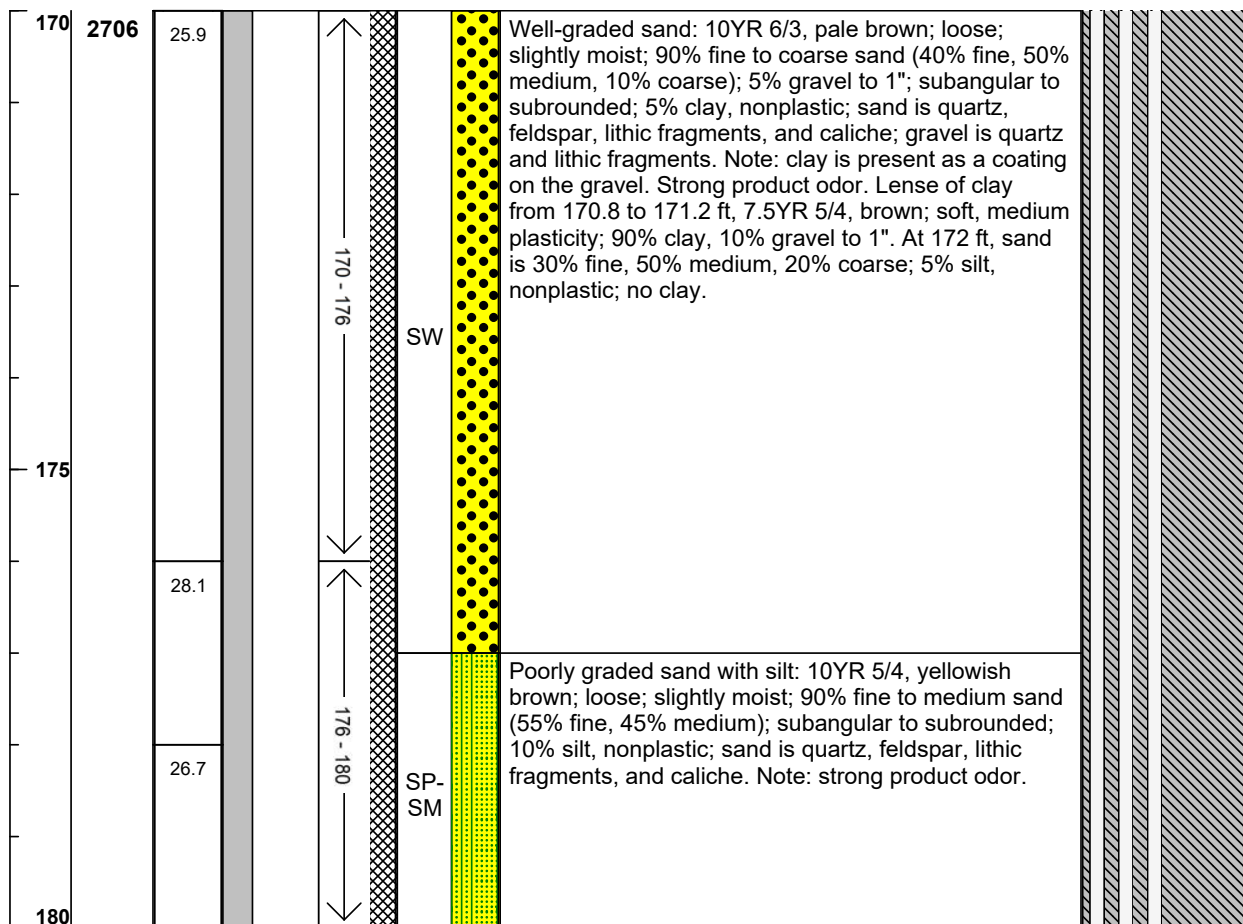


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

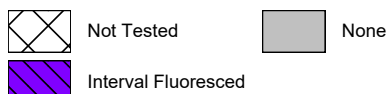
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 18 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" slot screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement; Bentonite;							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



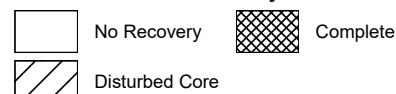
Notes:

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 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

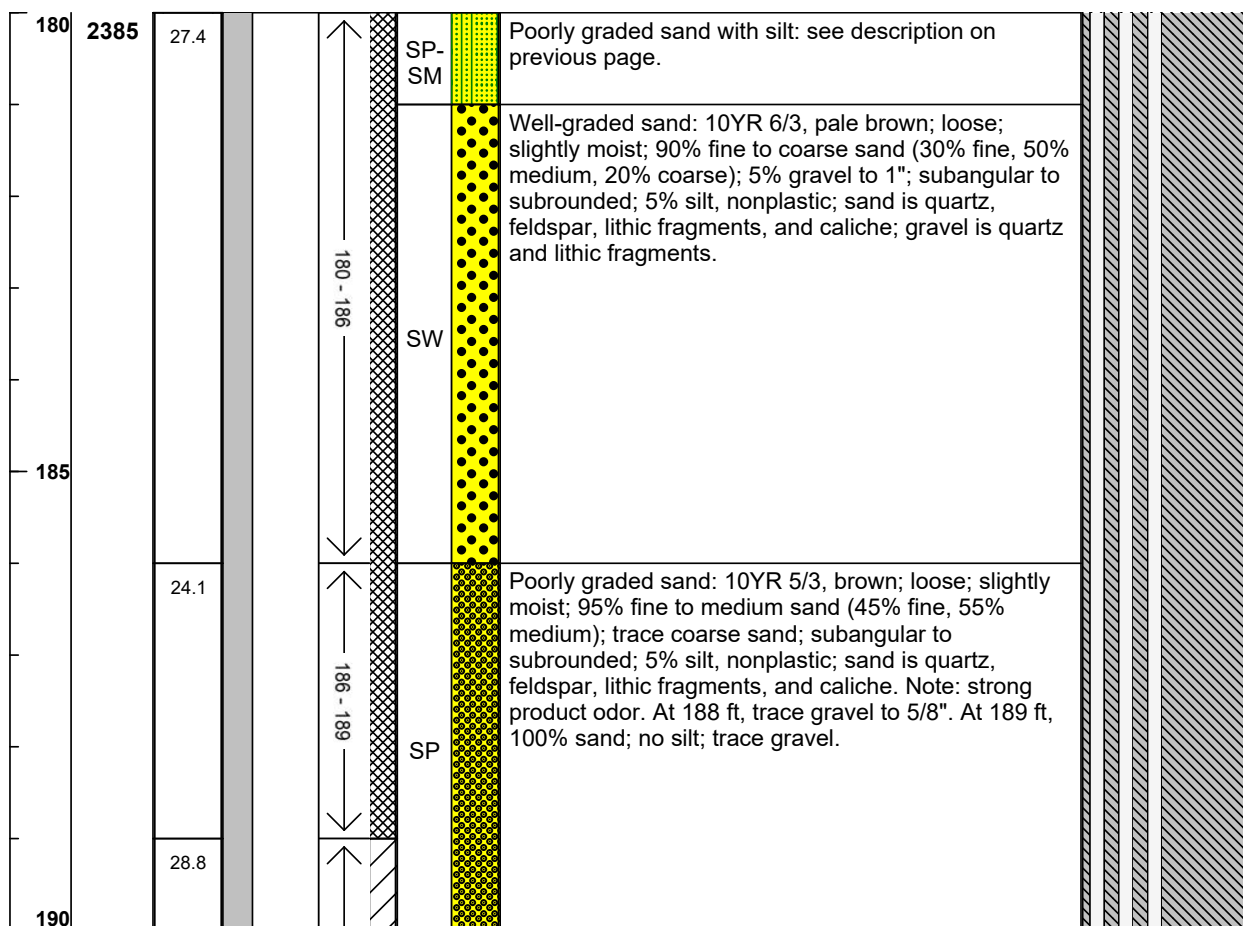


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

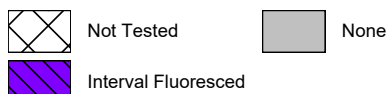
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 19 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" slot screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement; Bentonite;							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



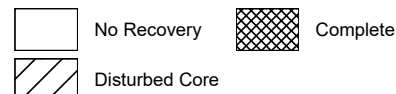
Notes:

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 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

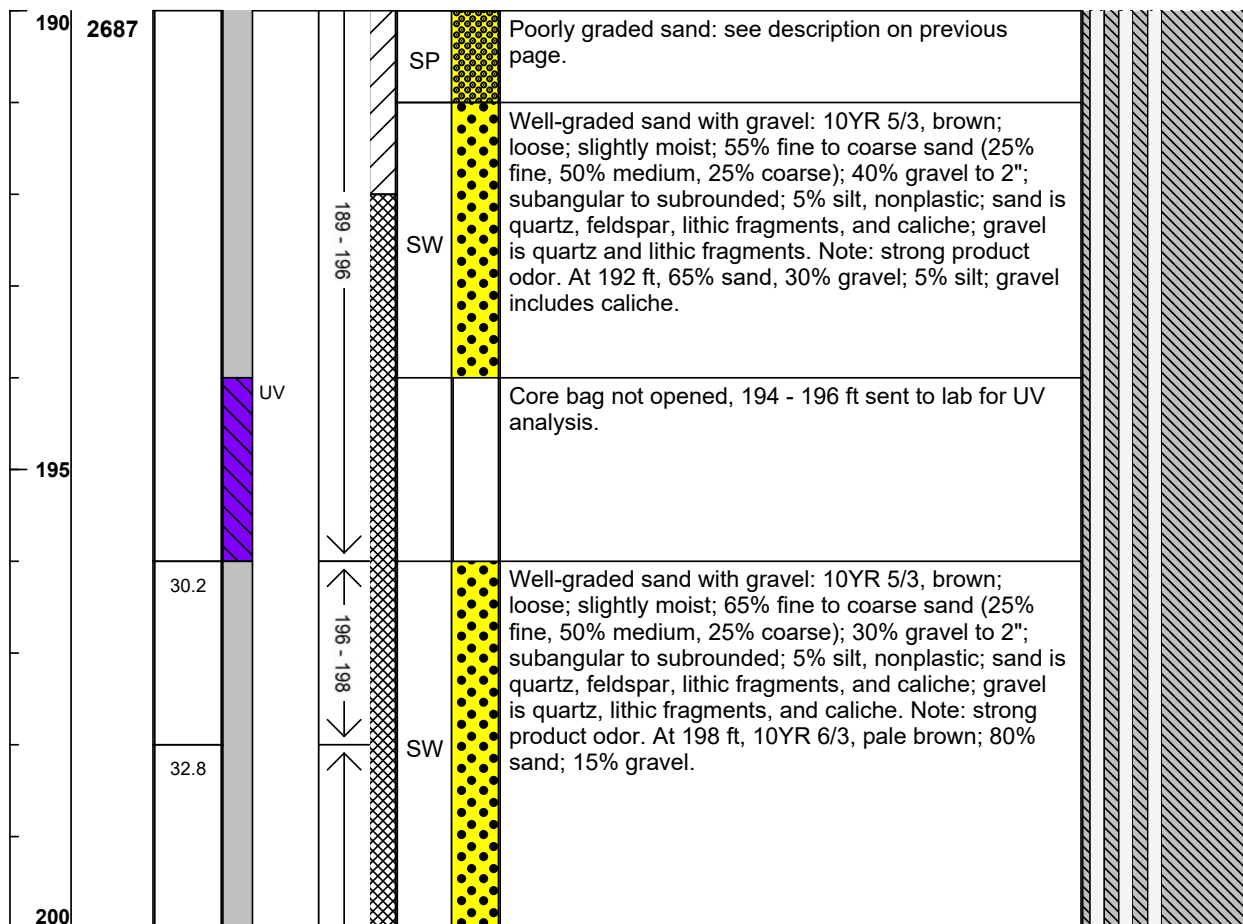


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 20 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" slot screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement; Bentonite;							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes:

UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet

ID = inner diameter

ppmv = parts per million by volume

USCS = Unified Soil Classification System

UV Fluorescence Field Test



Not Tested



None



Interval Fluoresced

Core Recovery



No Recovery



Complete




Disturbed Core

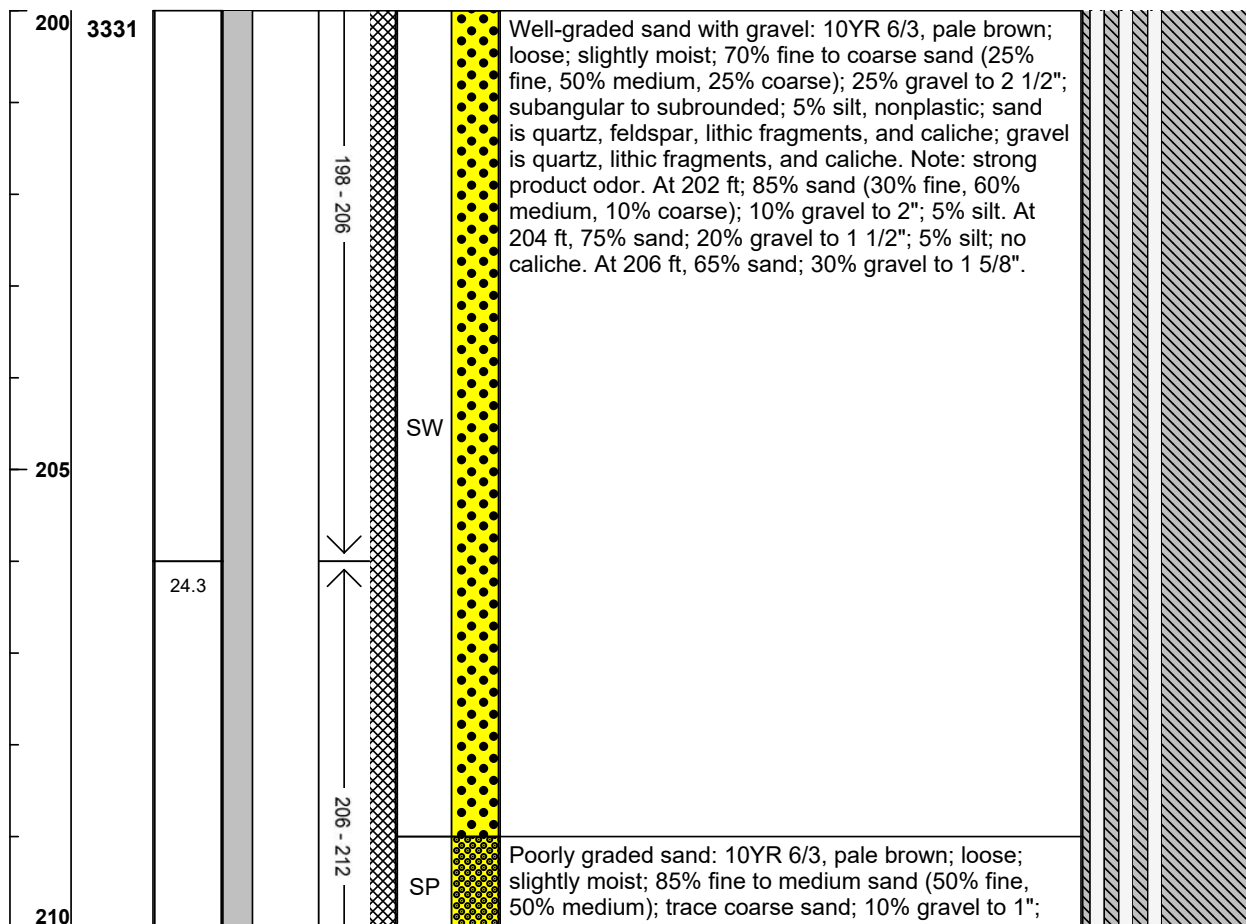
Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;

T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

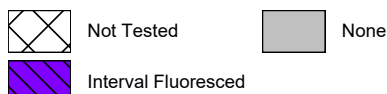
		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 21 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



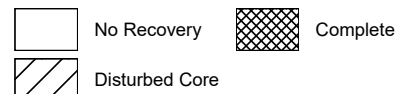
Notes:

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 ID = inner diameter
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 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

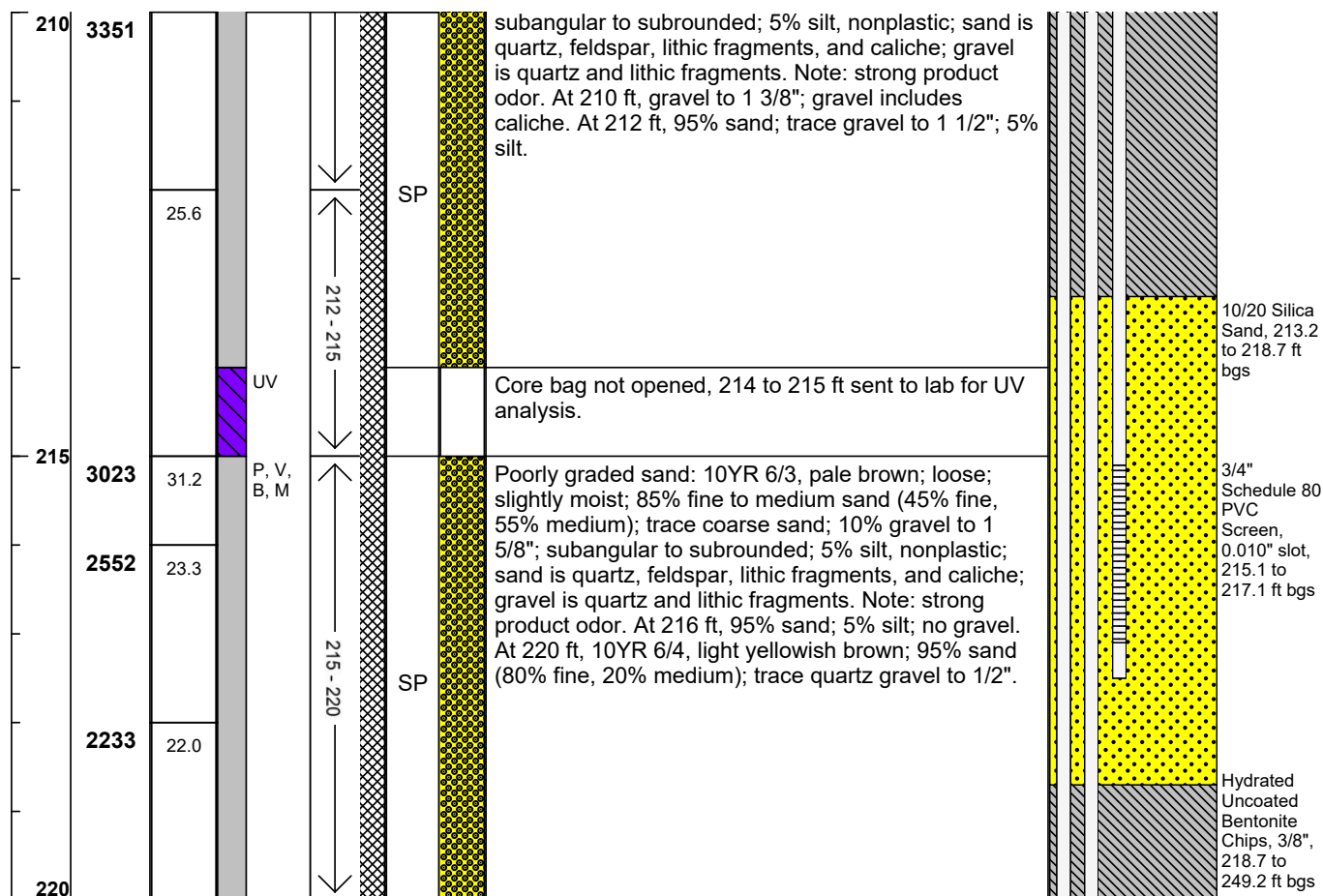


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

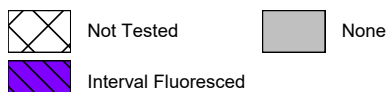
There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V2						
Start Date: 12/11/2018		Completion Date: 1/24/19		Page: 22 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details

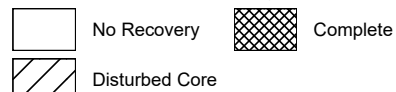


Notes: UV = ultraviolet fluorescence
 NA = Not Applicable
 bgs = below ground surface
 ft = feet
 ID = inner diameter
 ppmv = parts per million by volume
 USCS = Unified Soil Classification System

UV Fluorescence Field Test




Core Recovery

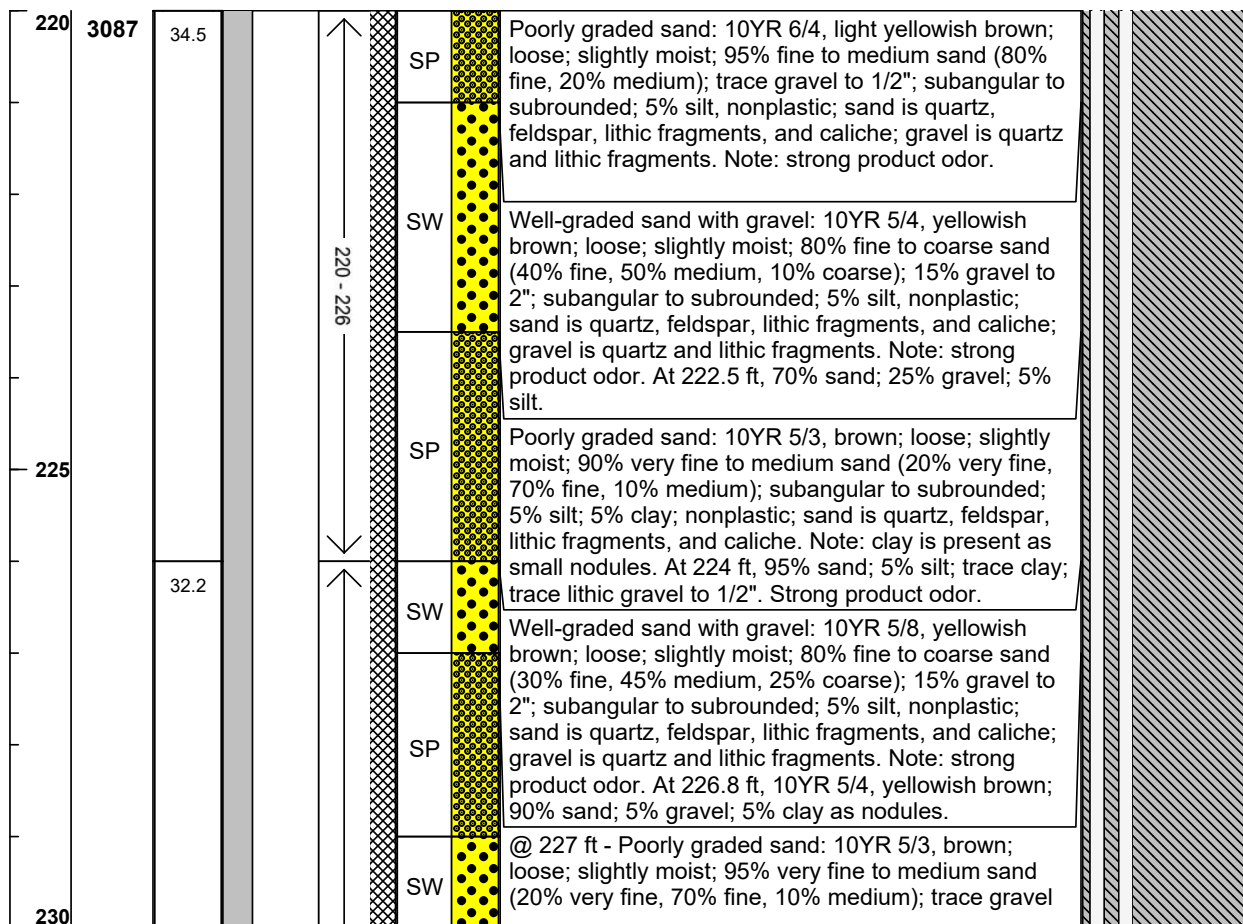


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

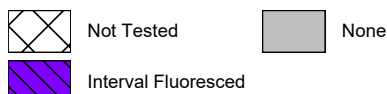
		Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 23 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



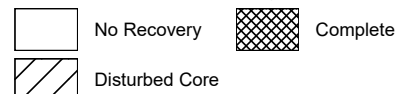
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UV Fluorescence Field Test




Core Recovery

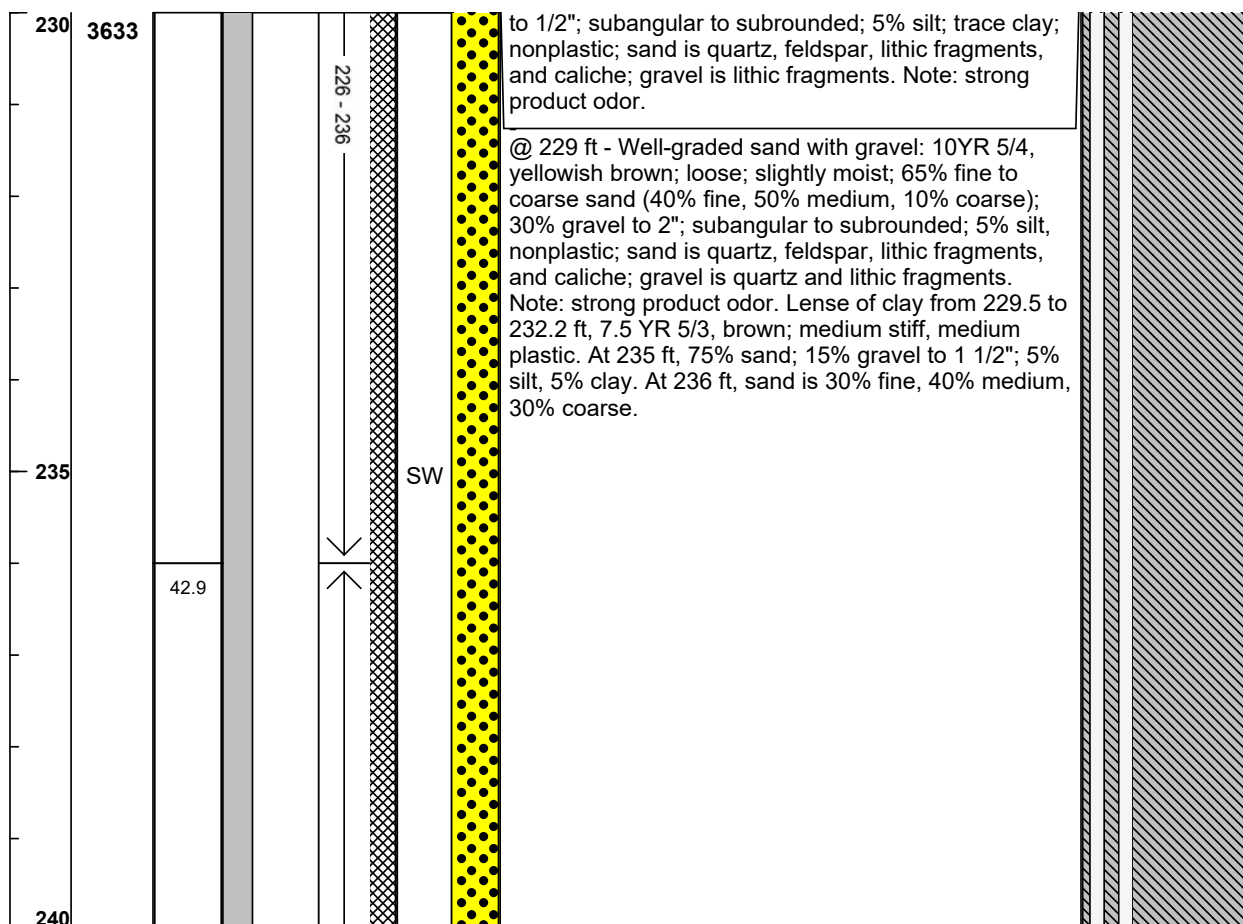


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

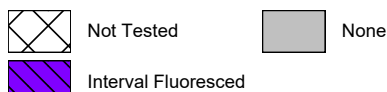
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Well ID: KAFB-106V2		Page: 24 of 29						
Completion Date: 1/24/19										
Drilling Company: Cascade		Boring Depth (ft): 287	Screen Material: 3/4" Sch. 80 PVC							
Drilling Method: Sonic Coring		Boring Diameter (in): 7"	0.010" slot screen							
Drill Bit: Sonic Core Barrel, 6" ID		Well Diameter: 3/4" ID	Seal Material(s): Cement; Bentonite;							
Driller: Roger Rodriguez		DTW After Completion (ft bgs): N/A	High Solids Bentonite Grout							
Geologist: J. Messenger		Riser Material: 3/4" Sch. 80 PVC	Filter Pack: 10/20 Silica Sand							
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



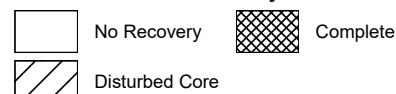
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UV Fluorescence Field Test




Core Recovery

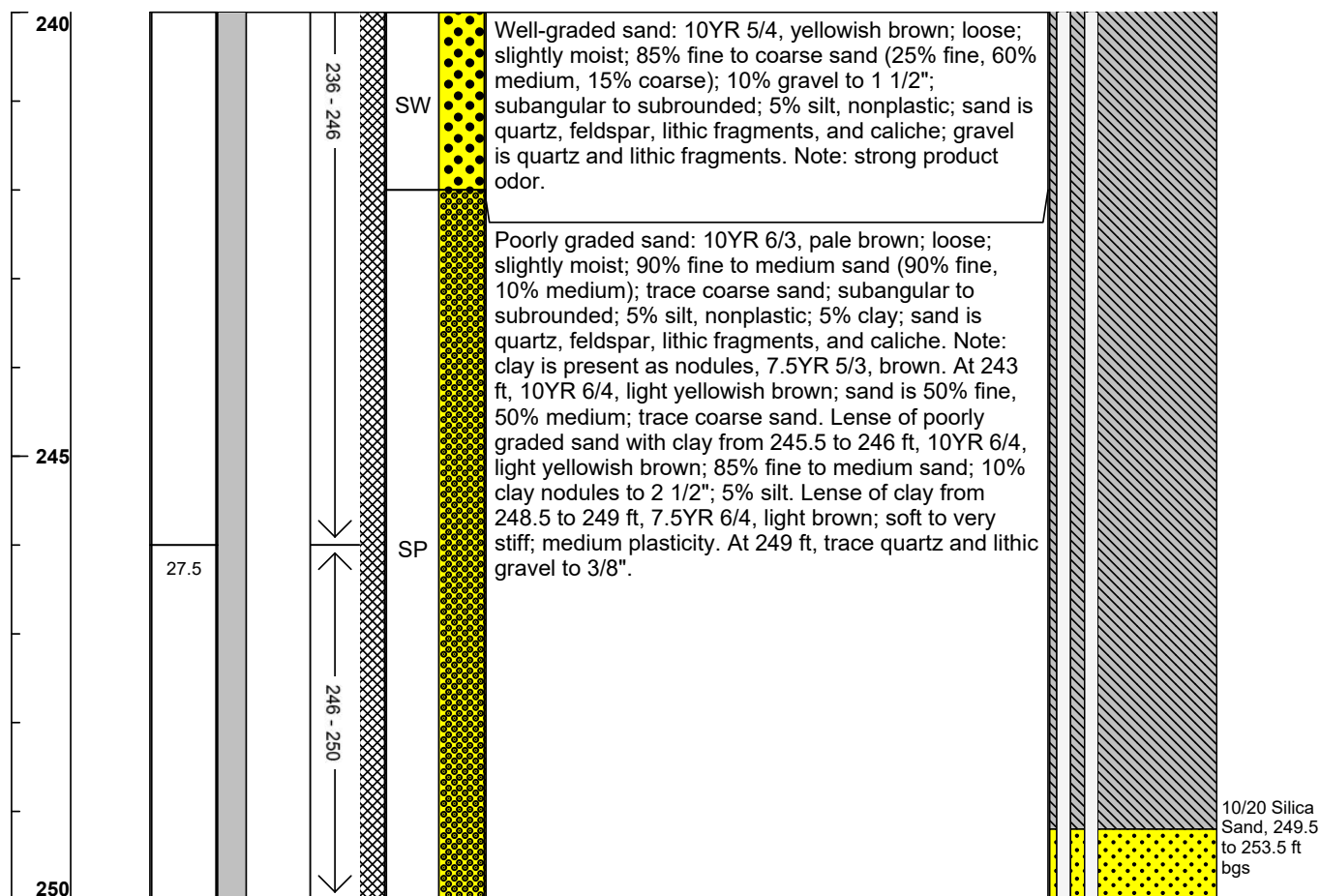


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

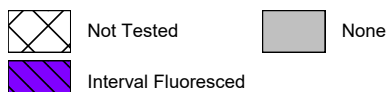
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	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
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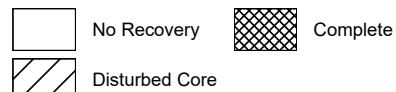
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UV Fluorescence Field Test




Core Recovery

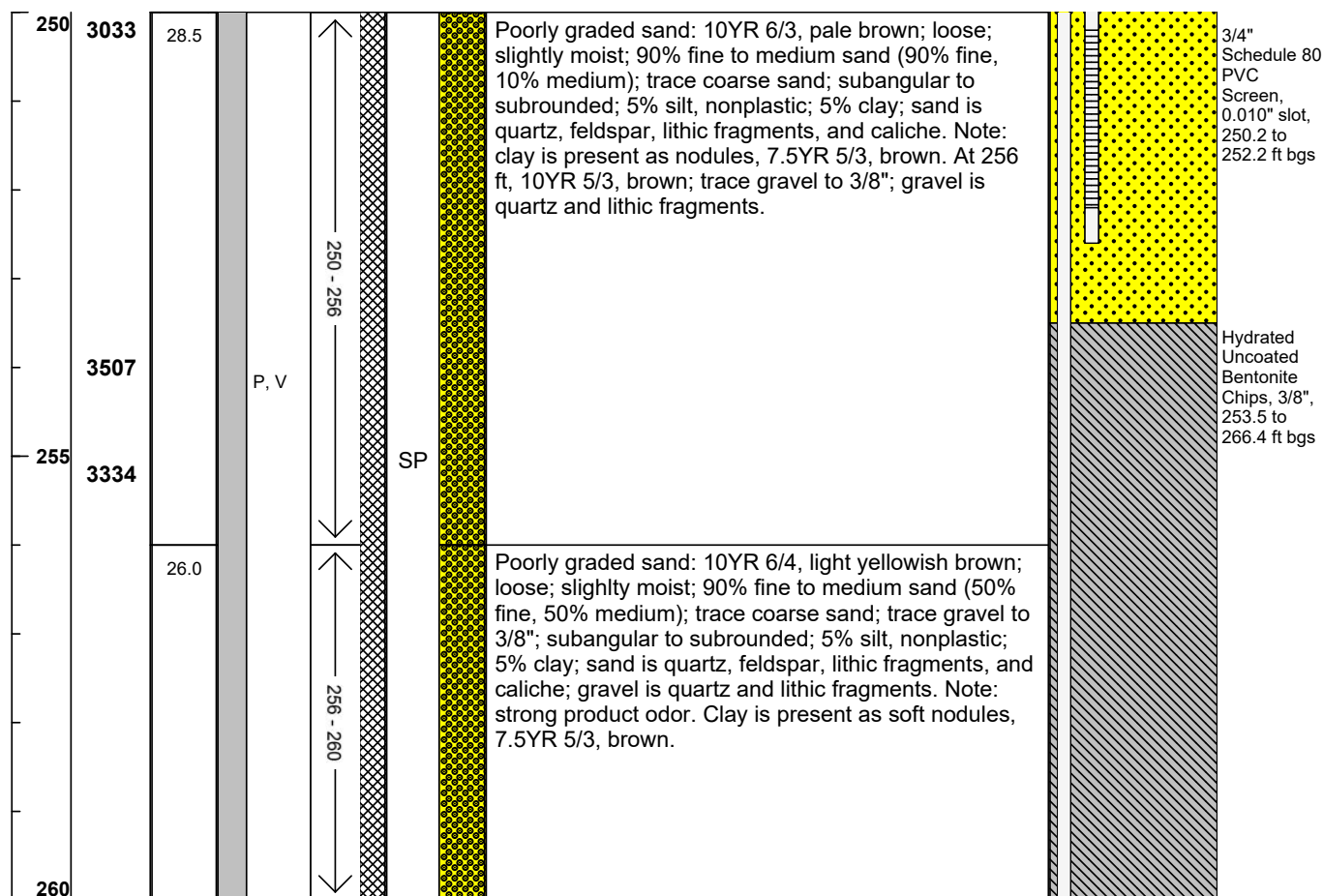


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet; T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

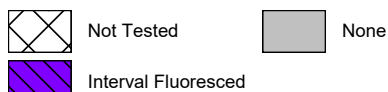
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	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
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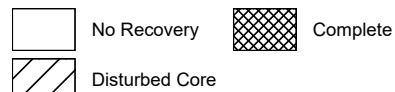
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UV Fluorescence Field Test




Core Recovery



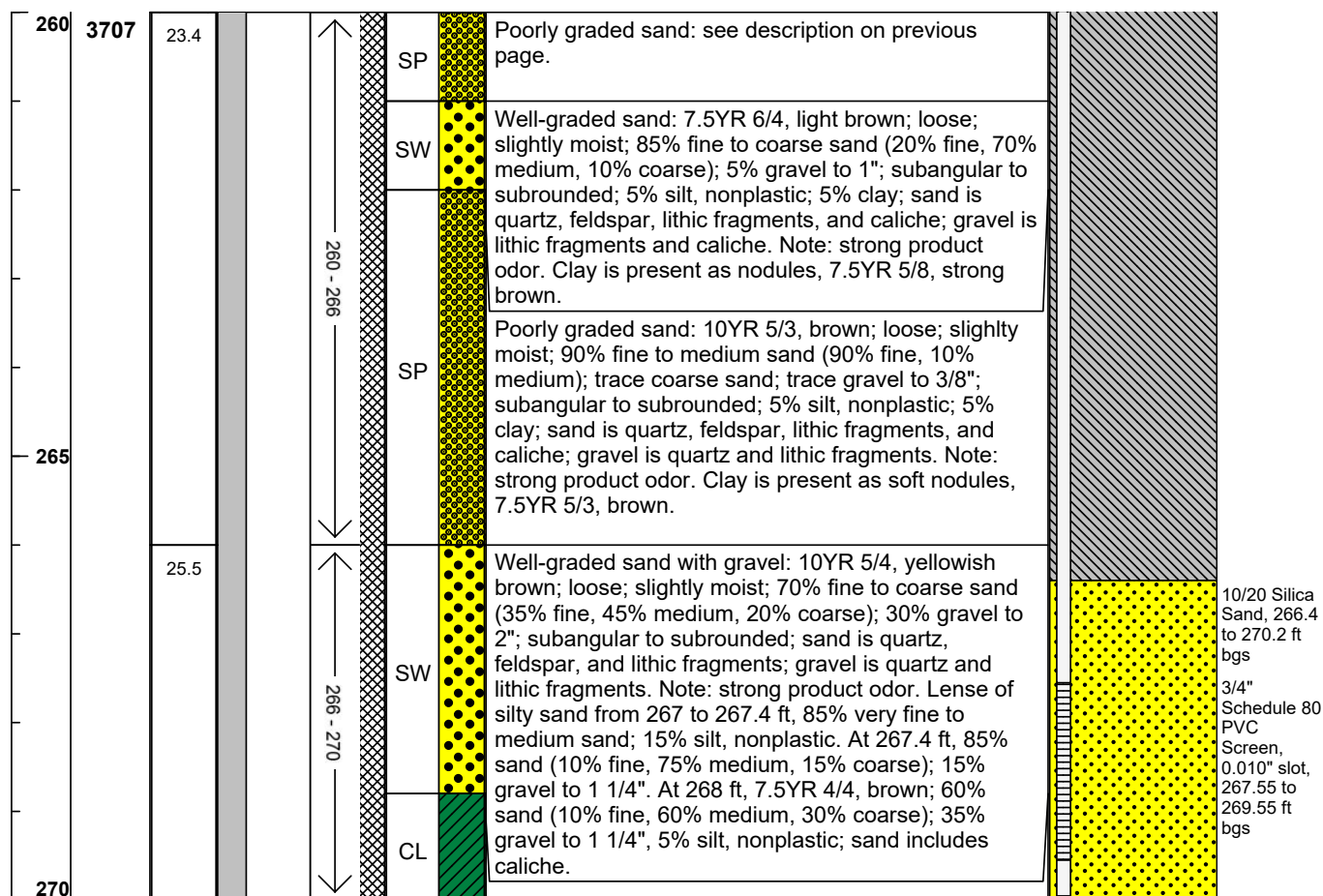
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There is a 0.4 ft sump underlying each screen.

	Project: 62735DM02.1017 Location: Kirtland AFB, New Mexico Start Date: 12/11/2018 Completion Date: 1/24/19		WELL LOG Well ID: KAFB-106V2 Page: 27 of 29	
	Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriquez Geologist: J. Messenger		Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC	
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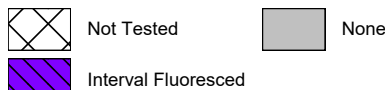
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details
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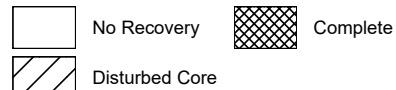
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UV Fluorescence Field Test




Core Recovery

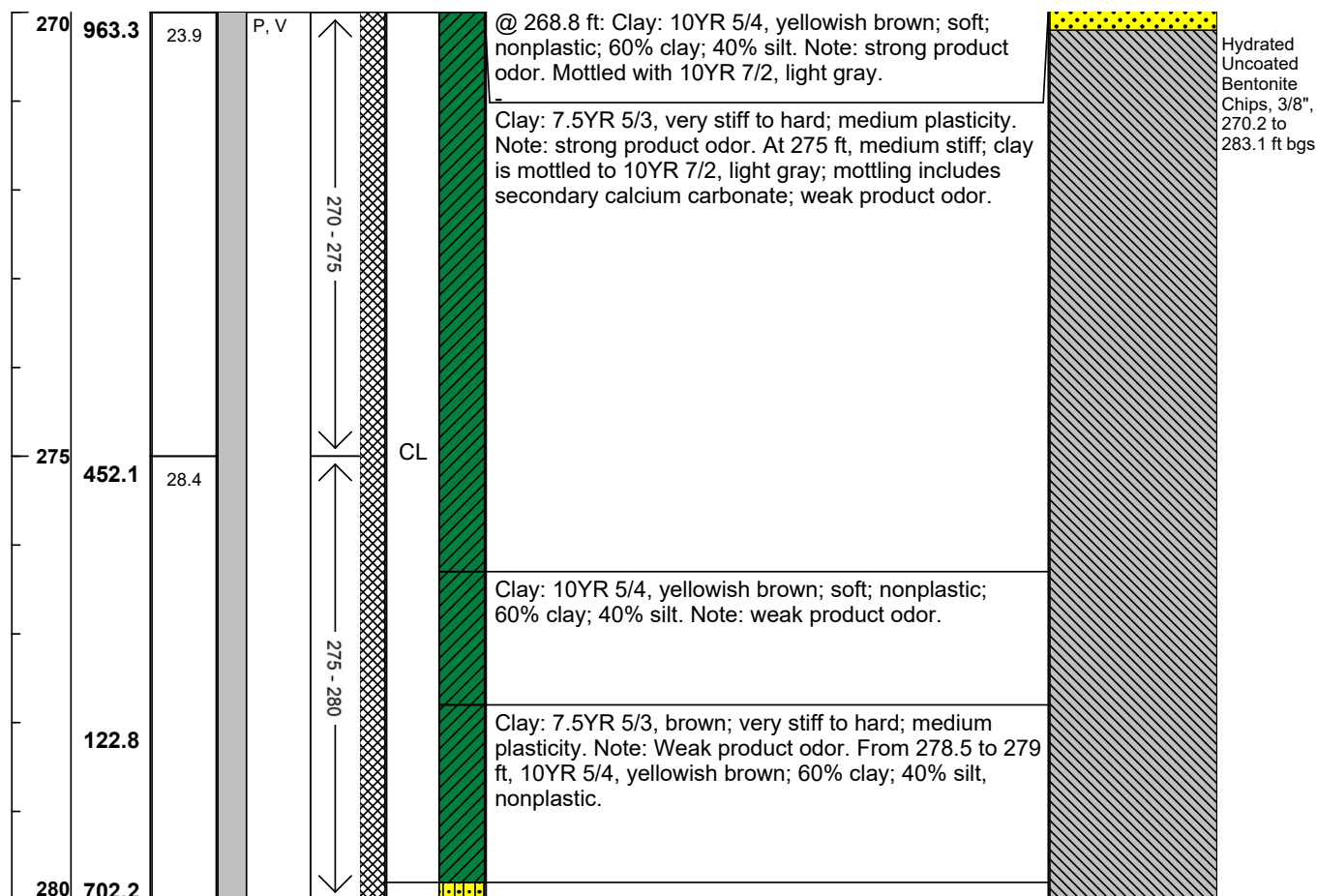


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
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There is a 0.4 ft sump underlying each screen.

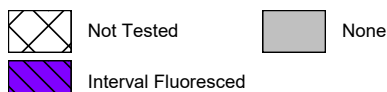
		Project: 62735DM02.1017		WELL LOG						
		Location: Kirtland AFB, New Mexico		Well ID: KAFB-106V2						
Start Date: 12/11/2018		Completion Date: 1/24/19		Page: 28 of 29						
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



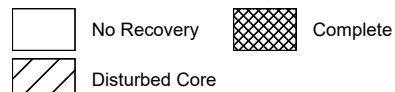
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UV Fluorescence Field Test




Core Recovery

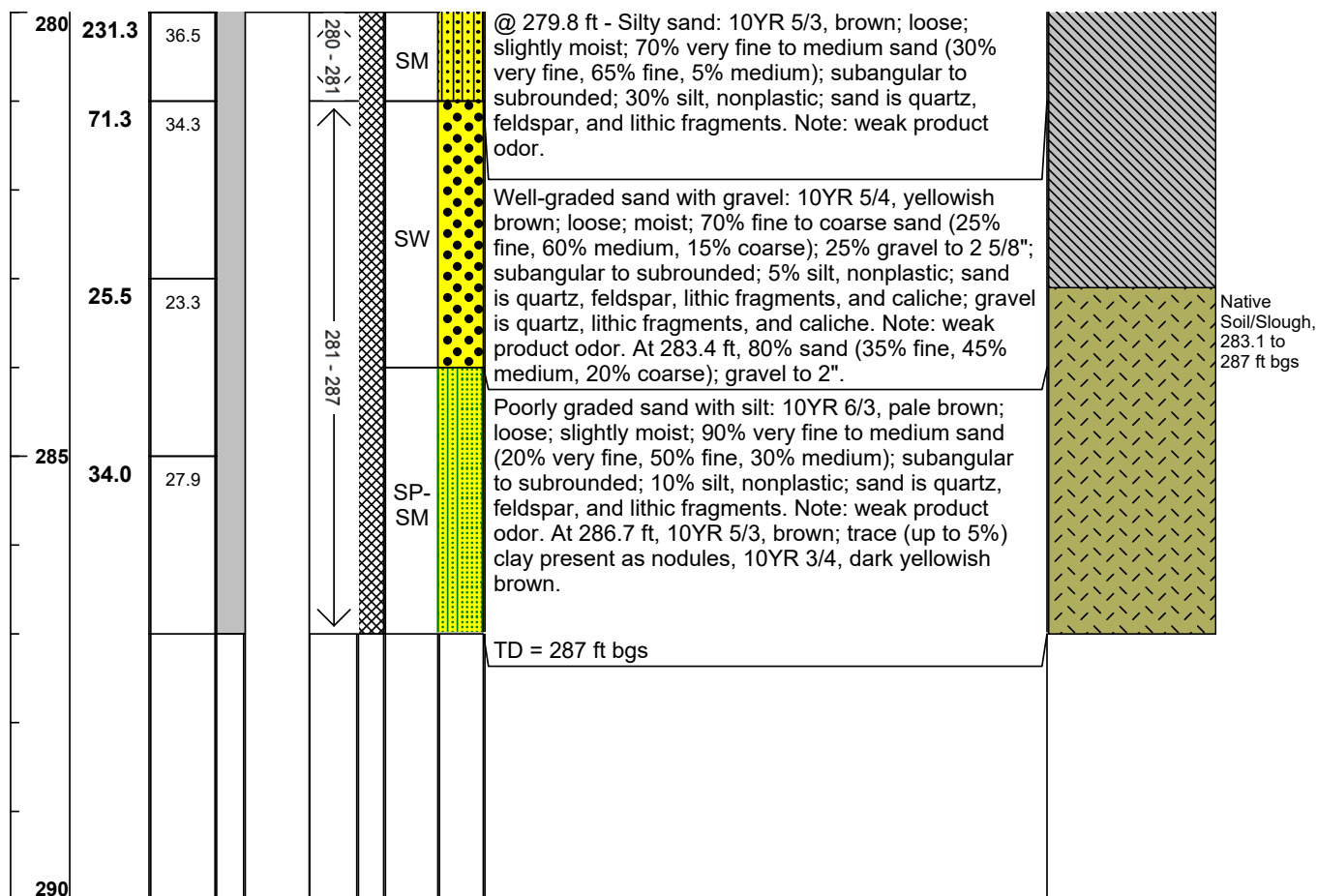


Following coring, the borehole was overdrilled using ARCH for well installation

Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

		Project: 62735DM02.1017		WELL LOG Well ID: KAFB-106V2 Page: 29 of 29						
		Location: Kirtland AFB, New Mexico								
Start Date: 12/11/2018		Completion Date: 1/24/19								
Drilling Company: Cascade Drilling Method: Sonic Coring Drill Bit: Sonic Core Barrel, 6" ID Driller: Roger Rodriguez Geologist: J. Messenger			Boring Depth (ft): 287 Boring Diameter (in): 7" Well Diameter: 3/4" ID DTW After Completion (ft bgs): N/A Riser Material: 3/4" Sch. 80 PVC		Screen Material: 3/4" Sch. 80 PVC 0.010" slot screen Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout Filter Pack: 10/20 Silica Sand					
Depth (ft)	PID (ppmv)	Temp (°C)	Field UV	Samples Collected	Core Run (ft)	Recovery	USCS	Lithology	Sample Description	Completion Details



Notes:

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UV Fluorescence Field Test



Not Tested



None



Interval Fluoresced

Core Recovery



No Recovery



Complete



Disturbed Core

Following coring, the borehole was overdrilled using ARCH for well installation

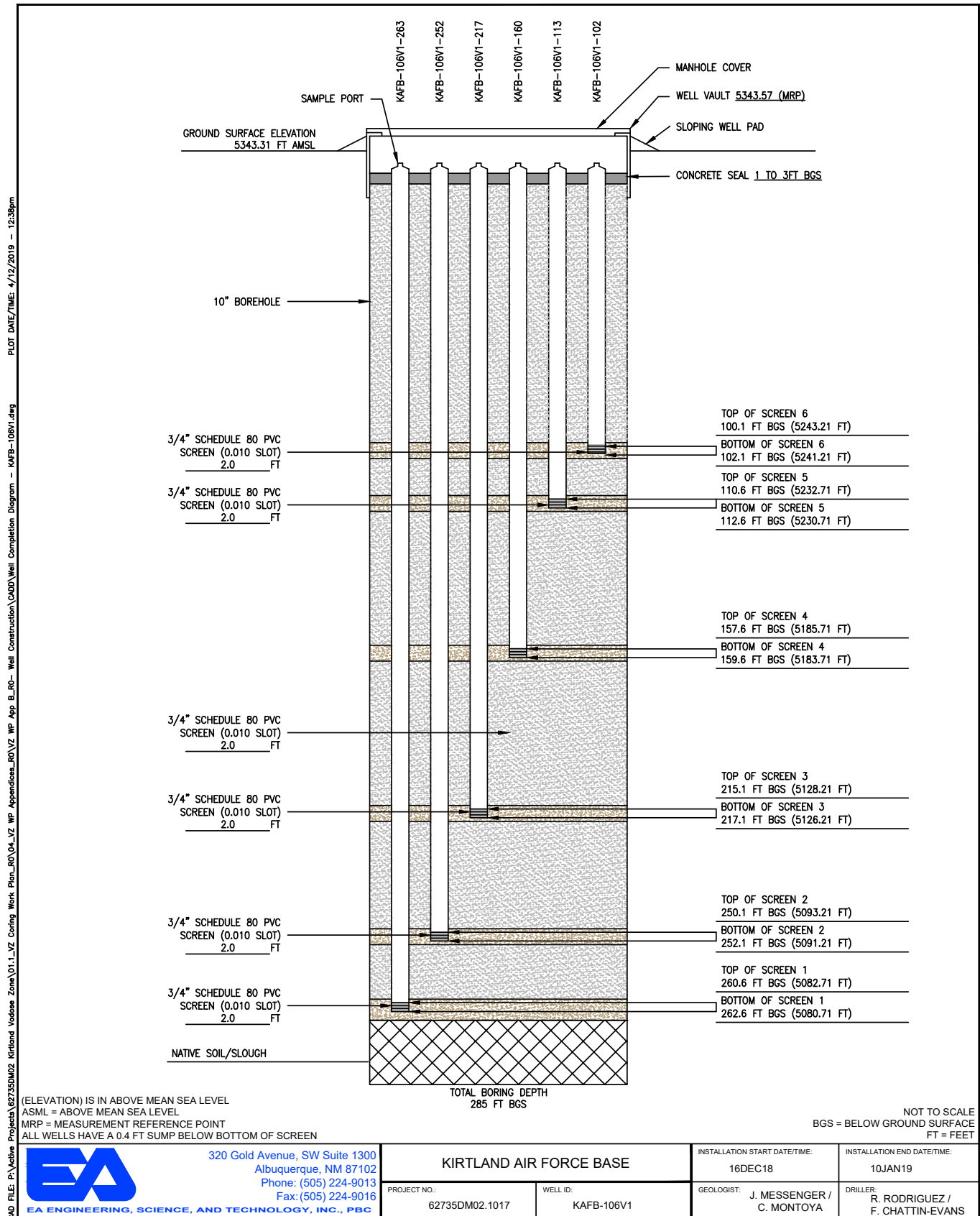
Samples: V = VOCs/EDB; P = TPH; M = mineralogy; B = biologic; W = moisture analysis; G = geotechnical; UV = ultraviolet;
 T = thermal conductivity

There is a 0.4 ft sump underlying each screen.

WELL COMPLETION DIAGRAMS

NESTED SOIL VAPOR WELL COMPLETION DIAGRAM FOR KAFB-106V1

PAGE 1 of 2

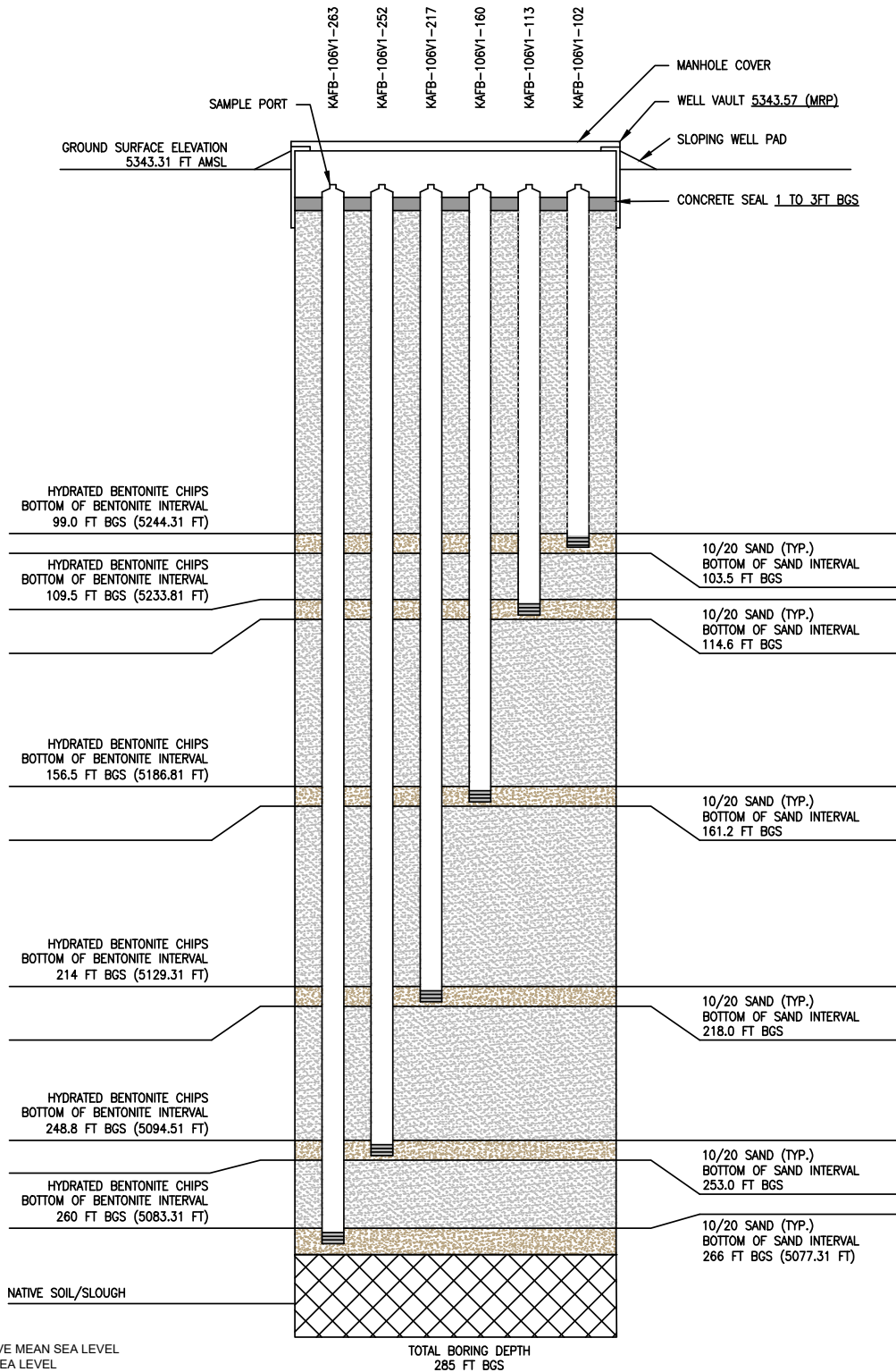


NESTED SOIL VAPOR WELL COMPLETION DIAGRAM FOR KAFB-106V1

PAGE 2 of 2

PLOT DATE/TIME: 4/12/2019 - 12:38pm

CAD FILE: P:\Active Projects\62735DM02 Kirtland Volese Zone\01.1_ZZ Coring Work Plan_R01\04_ZZ WP Appendixes\R01\Z WP App B_R01- Well Completion Diagram - KAFB-106V1.dwg



(ELEVATION) IS IN ABOVE MEAN SEA LEVEL
ASML = ABOVE MEAN SEA LEVEL
MRP = MEASUREMENT REFERENCE POINT
ALL WELLS HAVE A 0.4 FT SUMP BELOW BOTTOM OF SCREEN

NOT TO SCALE
BGS = BELOW GROUND SURFACE
FT = FEET



320 Gold Avenue, SW Suite 1300
Albuquerque, NM 87102
Phone: (505) 224-9013
Fax: (505) 224-9016
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

KIRTLAND AIR FORCE BASE

PROJECT NO.:
62735DM02.1017

WELL ID:
KAFB-106V1

INSTALLATION START DATE/TIME:
16DEC18
GEOLOGIST:
J. MESSENGER
/ C. MONTOYA

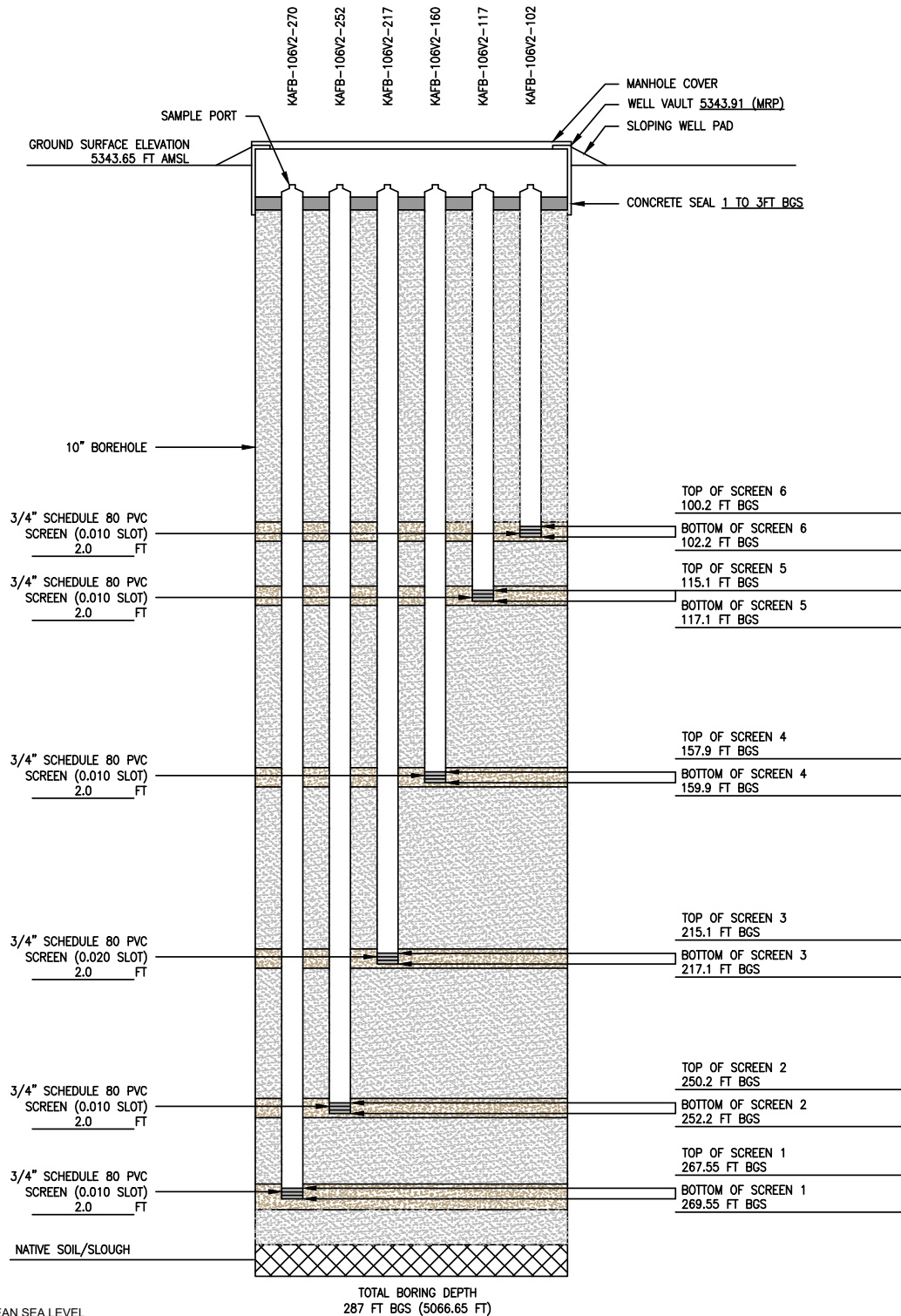
INSTALLATION END DATE/TIME:
10JAN19
DRILLER:
R. RODRIGUEZ /
F. CHATTIN-EVANS

NESTED SOIL VAPOR WELL COMPLETION DIAGRAM FOR KAFB-106V2

PAGE 1 of 2

PLOT DATE/TIME: 4/12/2019 - 12:37pm

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(ELEVATION) IS IN ABOVE MEAN SEA LEVEL
 ASML = ABOVE MEAN SEA LEVEL
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NOT TO SCALE
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EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

KIRTLAND AIR FORCE BASE

PROJECT NO.:
 62735DM02.1017

WELL ID:
 KAFB-106V2

INSTALLATION START DATE/TIME:
 12DEC18

GEOLOGIST:
 J. MESSENGER /
 C. MONTOYA

INSTALLATION END DATE/TIME:
 10JAN19

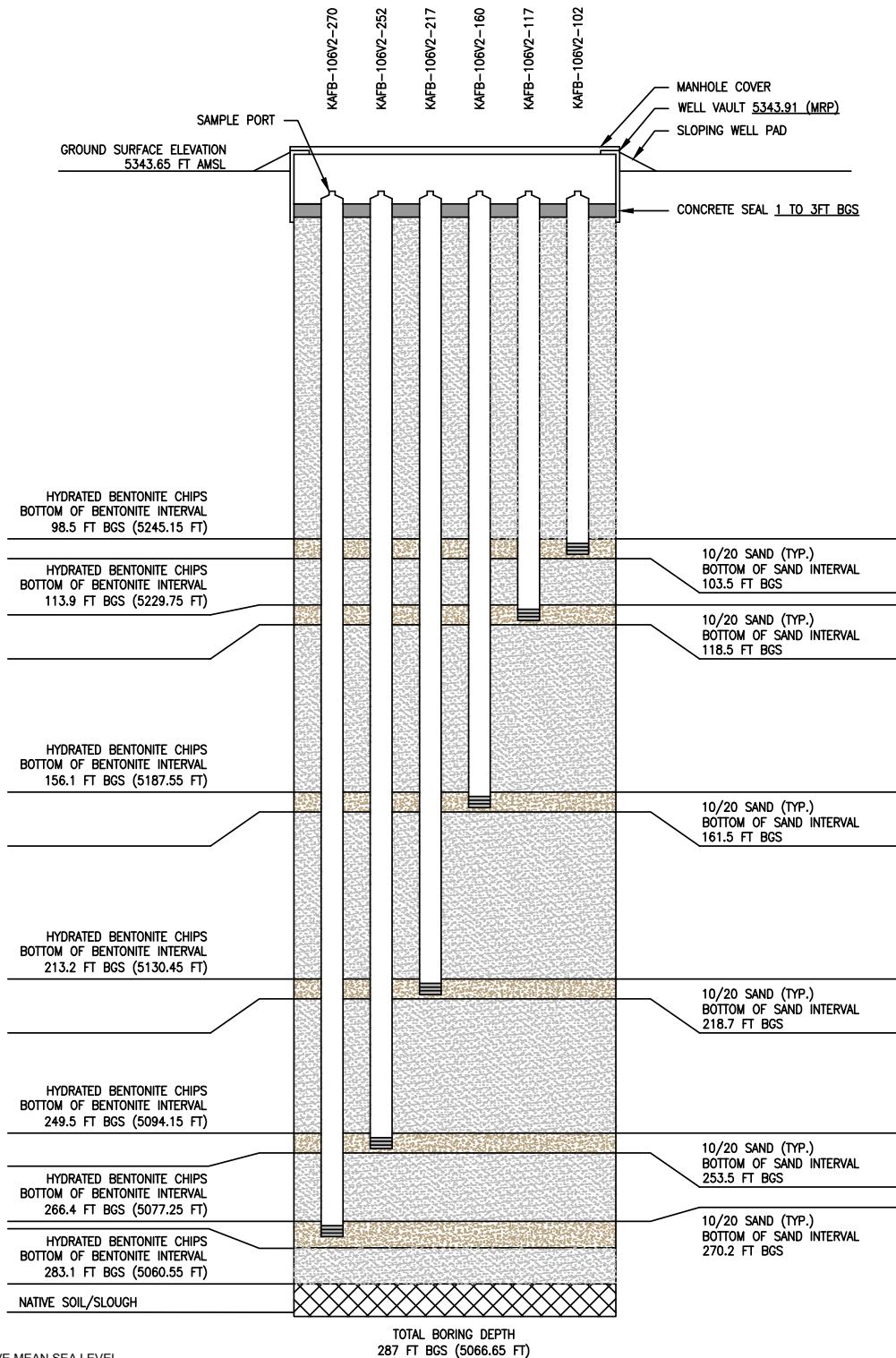
DRILLER:
 R. RODRIGUEZ /
 F. CHATTIN-EVANS

NESTED SOIL VAPOR WELL COMPLETION DIAGRAM FOR KAFB-106V2

PAGE 2 of 2

PLOT DATE/TIME: 4/12/2019 - 12:38pm

CADD FILE: P:\Active Projects\62735DM02 Kirtland Vadoses Zone\01_1_VZ Coring Work Plan_BO_04_VZ WP Appendixes_BO\VZ WP App B_BO- Well Construction\CADD\Well Completion Diagram - KAFB-106V2.dwg



(ELEVATION) IS IN ABOVE MEAN SEA LEVEL
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KIRTLAND AIR FORCE BASE

PROJECT NO.:
62735DM02.1017

WELL ID:
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INSTALLATION START DATE/TIME:
12DEC18

GEOLOGIST:
J. MESSENGER /
C. MONTOYA

INSTALLATION END DATE/TIME:
10JAN19

DRILLER:
R. RODRIGUEZ /
F. CHATTIN-EVANS

APPENDIX D

DEVIATIONS FROM WORK PLAN

APPENDIX D1
INJECTION WELLHEAD LOSS CALCULATIONS

CALCULATION D-1. INJECTION WELLHEAD LOSS CALCULATIONS

OBJECTIVE: Estimate pressure loss in 1/2-inch pipe

REFERENCE: Civil Engineering Reference Manual. M. Linderburg. 2001
Section 17. Fluid Dynamics. Friction Losses for Steam and Gases

INPUT:

$p_0 := 12.13 \text{ psi}$	At approximately 5200 ft msl
$p_a := 1.6 \text{ psi}$	Anticipated applied pressure (maximum blower pressure)
$p_1 := p_0 + p_a = 13.7 \text{ psi}$	Blower Applied Pressure
$L := 100 \text{ ft}$	Longest Run
$R' := \frac{0.08206 \text{ atm L}}{\text{mol K}}$	Universal Constant
$T := 80 \text{ }^\circ\text{F}$	Vapor average temperature
$D := .5 \text{ in} = 0.0417 \text{ ft}$	Selected pipe diameter - existing pipe
$MW := 28.98 \frac{\text{g}}{\text{mol}}$	Air
$Q := \frac{4.0 \text{ ft}^3}{\text{min}}$	Design volumetric flowrate - SVMW-11-250 design flowrate in the approved Bioventing Respiration Pilot Testing Procedure.
$d := 1.293 \frac{\text{kg}}{\text{m}^3}$	Density of air at 0 degrees Celcius
$\mu := 1.709 \cdot 10^{-5} \text{ Pa s}$	Absolute viscosity of air at 0 degrees Celcius
$e := 5 \cdot 10^{-6} \text{ ft}$	Specific Roughness for Plastic Pipe

53.7

CALCULATION 4. PRESSURE LOSS IN SVE MAIN

Calculations:

$$\text{Area} := \frac{3.14 \cdot D^2}{4} = 0.0014 \text{ ft}^2 \quad \text{Area of pipe}$$

$$m := Q \cdot d \cdot \frac{p1}{1 \text{ atm}} \cdot \frac{32 \text{ }^\circ\text{F}}{T} = 0.0021 \frac{\text{kg}}{\text{s}} \quad \text{Mass flowrate}$$

$$G := \frac{m}{\text{Area}} = 16.4094 \frac{\text{kg}}{\text{m}^2 \text{ s}} \quad \text{Mass flowrate per area}$$

$$\text{Re} := \frac{D \cdot G}{\mu} = 12194 \quad \text{Reynold's Number}$$

$$\text{er} := \frac{e}{D} = 0.0001 \quad \text{Relative roughness}$$

$$f := 0.031 \quad \text{From Moody diagram for er 0.00006 and Re } 1.2 \cdot 10^4$$

$$B := \frac{f \cdot L \cdot G^2 \cdot R' \cdot T}{D \cdot MW} = 1.7233 \cdot 10^9 \frac{\text{kg Pa}}{\text{m s}^2}$$

$$p2 := \sqrt{p1^2 - B} = 85077.3077 \text{ Pa} \quad \text{Final pressure at discharge}$$

$$dP := p1 - p2 = 9587.71 \text{ Pa}$$

$$dP = 1.3906 \text{ psi} \quad \text{Pressure loss in pipe per 100-feet}$$

APPENDIX D2
LABORATORY CORRESPONDENCE

Curley, Tyler

From: Moss, Pamela
Sent: Wednesday, March 13, 2019 12:39 PM
To: Curley, Tyler
Subject: FW: Kirtland Bioventing testing April
Attachments: TO-15 LL - Kirtland AFB.PDF

Hi Tyler will the 6L cans work for you thx.

From: Brian Whittaker <BrianWhittaker@eurofinsUS.com>
Sent: Wednesday, March 13, 2019 12:13 PM
To: Moss, Pamela <pmoss@eaest.com>; Curley, Tyler <tcurley@eaest.com>
Subject: RE: Kirtland Bioventing testing April

Hi Pam,

Our canister certification group confirms that a 6L canister is needed in order to achieve the SIM level RLs by TO-15. I can update the attached Low Level VOC list to include the available compounds by SIM and substitute 6L canisters for 1L canisters, unless there objections from EA to the 6L size.

Since these are grab samples, that shouldn't make much of a difference in terms of sample duration. (~1 minute for 1L vs. 2-3 minutes for 6L).

I should have the project file set up by tomorrow and the order confirmations will follow shortly.

Please let me know if you have any questions.

Kind Regards,
Brian Whittaker
Project Manager

Eurofins Air Toxics, LLC
180 Blue Ravine Road, Suite B
FOLSOM, CA 95630
USA
Phone: 916-605-3355
Fax: 916-351-8279
Email: BrianWhittaker@eurofinsUS.com
Website: www.eurofinsus.com

From: Moss, Pamela [<mailto:pmoss@eaest.com>]
Sent: Wednesday, March 13, 2019 10:53 AM
To: Curley, Tyler; Brian Whittaker
Subject: RE: Kirtland Bioventing testing April

EXTERNAL EMAIL*

Hi Brian,

Did you check into the question on the TO15LL vs TO15 SIM ? thx.

From: Curley, Tyler <tcurley@eaest.com>
Sent: Wednesday, March 13, 2019 7:43 AM
To: Brian Whittaker <BrianWhittaker@eurofinsUS.com>; Moss, Pamela <pmoss@eaest.com>
Subject: RE: Kirtland Bioventing testing April

Hi Brian,

I think we will be good with a summa with the built in pressure gauge, a filter, and a connecting ferrule set. Lets set up the first to arrive 3 weeks after the first but please confirm with me prior to shipping. The third set of can will have to come at a later date, I am not sure when this will happen yet but I can give you a months' notice.

Thanks,

Tyler

From: Brian Whittaker <BrianWhittaker@eurofinsUS.com>
Sent: Tuesday, March 12, 2019 1:54 PM
To: Moss, Pamela <pmoss@eaest.com>
Cc: Curley, Tyler <tcurley@eaest.com>
Subject: RE: Kirtland Bioventing testing April

Hi Pam,

Thank you for the update.

Yes, we can analyze Methane by ASTM D-1945 and media delivery is available for the last week of March. Just have Tyler send me a summary of all required sampling equipment and I'll get the order placed right away. A recurring order can be set for the 2 other rounds of sampling.

However, the attached table indicates 1L canisters for TO-15 SIM analysis. I believe we quoted TO-15 Low Level for this project, so please let me know if TO-15 Low Level would be a problem.

Also, we initially quoted this as a DoD QSM 5.0 project, but are now accredited for DoD QSM 5.1 and would follow that criteria. This means I will need to send you an updated variance table that is specific to QSM 5.1. I should have that available for you by tomorrow.

Please contact me if you have any questions or concerns.

Kind Regards,
Brian Whittaker
Project Manager

Eurofins Air Toxics, LLC
180 Blue Ravine Road, Suite B
FOLSOM, CA 95630
USA
Phone: 916-605-3355
Fax: 916-351-8279
Email: BrianWhittaker@eurofinsUS.com
Website: www.eurofinsus.com

From: Moss, Pamela [<mailto:pmoss@eaest.com>]
Sent: Tuesday, March 12, 2019 10:53 AM
To: Brian Whittaker
Cc: Curley, Tyler
Subject: Kirtland Bioventing testing April
Importance: High

EXTERNAL EMAIL*

Hi Brian,

We will be awarding you a PO for this upcoming testing at Kirtland. plz see attached table. I was working with you on the scoping last year for the work plan.

We may also need to add methane, can that be run with the D1945 I assume so. I see it was included in the reporting limits table you sent to me.

Tyler plans to start sampling the first week of April, will you be able to deliver the supplies in time. There will be a total of 3 rounds of sampling but I am not sure when the second or the third round will occur. To start lets set the delivery of the second set of samples approximately 3 weeks after the first set, and we will keep you posted. We will collect 14 samples.

Plz let me know if you can support this thx.

Pam

Pamela J. Moss
Senior Scientist
EA Engineering, Science, and Technology, Inc., PBC
7995 E. Prentice Ave, Suite 206E
Greenwood Village, CO 80111
303-590-9143 (office)
303-810-6903 (cell)
pmoss@eaest.com



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Notify us [here](#) to report this email as spam.

APPENDIX E

ANALYTICAL LABORATORY DATA

- E-1 Injection Water Laboratory Analytical Results
- E-2 Soil Vapor Laboratory Analytical Results
- E-3 Summary of Soil Vapor Analytical Data (Provided Via CD)
- E-4 Data Quality Evaluation Report

APPENDIX E-1

INJECTION WATER LABORATORY ANALYTICAL RESULTS



*Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com*

May 23, 2019

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Bioventing Pilot Test

OrderNo.: 1905A53

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/21/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", with a stylized flourish at the end.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 1905A53

Date Reported: 5/23/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: GWTS-233EFF2-052119

Project: Kirtland BFF Bioventing Pilot Test

Collection Date: 5/21/2019 10:18:00 AM

Lab ID: 1905A53-001

Matrix: AQUEOUS

Received Date: 5/21/2019 11:34:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB							Analyst: CLP
1,2-Dibromoethane	ND	0.0095		µg/L	1	5/22/2019 4:27:20 PM	45114
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Toluene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Ethylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Naphthalene	ND	2.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1-Methylnaphthalene	ND	4.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
2-Methylnaphthalene	ND	4.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Acetone	ND	10		µg/L	1	5/21/2019 9:58:00 PM	R60022
Bromobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Bromodichloromethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Bromoform	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Bromomethane	ND	3.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
2-Butanone	ND	10		µg/L	1	5/21/2019 9:58:00 PM	R60022
Carbon disulfide	ND	10		µg/L	1	5/21/2019 9:58:00 PM	R60022
Carbon Tetrachloride	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Chlorobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Chloroethane	ND	2.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Chloroform	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Chloromethane	ND	3.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
2-Chlorotoluene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
4-Chlorotoluene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
cis-1,2-DCE	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Dibromochloromethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Dibromomethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,3-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,4-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Dichlorodifluoromethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1-Dichloroethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1-Dichloroethene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2-Dichloropropane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 1 of 10

Analytical Report

Lab Order 1905A53

Date Reported: 5/23/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: GWTS-233EFF2-052119

Project: Kirtland BFF Bioventing Pilot Test

Collection Date: 5/21/2019 10:18:00 AM

Lab ID: 1905A53-001

Matrix: AQUEOUS

Received Date: 5/21/2019 11:34:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,3-Dichloropropane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
2,2-Dichloropropane	ND	2.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Hexachlorobutadiene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
2-Hexanone	ND	10		µg/L	1	5/21/2019 9:58:00 PM	R60022
Isopropylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
4-Isopropyltoluene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
4-Methyl-2-pentanone	ND	10		µg/L	1	5/21/2019 9:58:00 PM	R60022
Methylene Chloride	ND	3.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
n-Butylbenzene	ND	3.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
n-Propylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
sec-Butylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Styrene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
tert-Butylbenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
trans-1,2-DCE	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1,1-Trichloroethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,1,2-Trichloroethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Trichloroethene (TCE)	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Trichlorofluoromethane	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
1,2,3-Trichloropropane	ND	2.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Vinyl chloride	ND	1.0		µg/L	1	5/21/2019 9:58:00 PM	R60022
Xylenes, Total	ND	1.5		µg/L	1	5/21/2019 9:58:00 PM	R60022
Surr: 1,2-Dichloroethane-d4	92.2	70-130		%Rec	1	5/21/2019 9:58:00 PM	R60022
Surr: 4-Bromofluorobenzene	94.2	70-130		%Rec	1	5/21/2019 9:58:00 PM	R60022
Surr: Dibromofluoromethane	91.9	70-130		%Rec	1	5/21/2019 9:58:00 PM	R60022
Surr: Toluene-d8	98.4	70-130		%Rec	1	5/21/2019 9:58:00 PM	R60022

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1905A53

Date Reported: 5/23/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: GWTS-233EFF2DUP-052119

Project: Kirtland BFF Bioventing Pilot Test

Collection Date: 5/21/2019 10:18:00 AM

Lab ID: 1905A53-002

Matrix: AQUEOUS

Received Date: 5/21/2019 11:34:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB							Analyst: CLP
1,2-Dibromoethane	ND	0.0094		µg/L	1	5/22/2019 4:42:31 PM	45114
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Toluene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Ethylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Naphthalene	ND	2.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1-Methylnaphthalene	ND	4.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
2-Methylnaphthalene	ND	4.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Acetone	ND	10		µg/L	1	5/21/2019 10:22:00 PM	R60022
Bromobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Bromodichloromethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Bromoform	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Bromomethane	ND	3.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
2-Butanone	ND	10		µg/L	1	5/21/2019 10:22:00 PM	R60022
Carbon disulfide	ND	10		µg/L	1	5/21/2019 10:22:00 PM	R60022
Carbon Tetrachloride	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Chlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Chloroethane	ND	2.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Chloroform	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Chloromethane	ND	3.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
2-Chlorotoluene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
4-Chlorotoluene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
cis-1,2-DCE	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Dibromochloromethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Dibromomethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,3-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,4-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Dichlorodifluoromethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1-Dichloroethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1-Dichloroethene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2-Dichloropropane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1905A53

Date Reported: 5/23/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: GWTS-233EFF2DUP-052119

Project: Kirtland BFF Bioventing Pilot Test

Collection Date: 5/21/2019 10:18:00 AM

Lab ID: 1905A53-002

Matrix: AQUEOUS

Received Date: 5/21/2019 11:34:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,3-Dichloropropane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
2,2-Dichloropropane	ND	2.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Hexachlorobutadiene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
2-Hexanone	ND	10		µg/L	1	5/21/2019 10:22:00 PM	R60022
Isopropylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
4-Isopropyltoluene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
4-Methyl-2-pentanone	ND	10		µg/L	1	5/21/2019 10:22:00 PM	R60022
Methylene Chloride	ND	3.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
n-Butylbenzene	ND	3.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
n-Propylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
sec-Butylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Styrene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
tert-Butylbenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
trans-1,2-DCE	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1,1-Trichloroethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,1,2-Trichloroethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Trichloroethene (TCE)	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Trichlorofluoromethane	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
1,2,3-Trichloropropane	ND	2.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Vinyl chloride	ND	1.0		µg/L	1	5/21/2019 10:22:00 PM	R60022
Xylenes, Total	ND	1.5		µg/L	1	5/21/2019 10:22:00 PM	R60022
Surr: 1,2-Dichloroethane-d4	93.8	70-130		%Rec	1	5/21/2019 10:22:00 PM	R60022
Surr: 4-Bromofluorobenzene	93.4	70-130		%Rec	1	5/21/2019 10:22:00 PM	R60022
Surr: Dibromofluoromethane	92.7	70-130		%Rec	1	5/21/2019 10:22:00 PM	R60022
Surr: Toluene-d8	97.5	70-130		%Rec	1	5/21/2019 10:22:00 PM	R60022

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1905A53

Date Reported: 5/23/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: Trip Blank

Project: Kirtland BFF Bioventing Pilot Test

Collection Date:

Lab ID: 1905A53-003

Matrix: TRIP BLANK

Received Date: 5/21/2019 11:34:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB							Analyst: CLP
1,2-Dibromoethane	ND	0.0094		µg/L	1	5/22/2019 5:27:47 PM	45114
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Toluene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Ethylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Naphthalene	ND	2.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1-Methylnaphthalene	ND	4.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
2-Methylnaphthalene	ND	4.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Acetone	ND	10		µg/L	1	5/21/2019 10:46:00 PM	R60022
Bromobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Bromodichloromethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Bromoform	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Bromomethane	ND	3.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
2-Butanone	ND	10		µg/L	1	5/21/2019 10:46:00 PM	R60022
Carbon disulfide	ND	10		µg/L	1	5/21/2019 10:46:00 PM	R60022
Carbon Tetrachloride	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Chlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Chloroethane	ND	2.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Chloroform	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Chloromethane	ND	3.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
2-Chlorotoluene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
4-Chlorotoluene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
cis-1,2-DCE	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Dibromochloromethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Dibromomethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,3-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,4-Dichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Dichlorodifluoromethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1-Dichloroethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1-Dichloroethene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2-Dichloropropane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1905A53

Date Reported: 5/23/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: Trip Blank

Project: Kirtland BFF Bioventing Pilot Test

Collection Date:

Lab ID: 1905A53-003

Matrix: TRIP BLANK

Received Date: 5/21/2019 11:34:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,3-Dichloropropane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
2,2-Dichloropropane	ND	2.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Hexachlorobutadiene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
2-Hexanone	ND	10		µg/L	1	5/21/2019 10:46:00 PM	R60022
Isopropylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
4-Isopropyltoluene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
4-Methyl-2-pentanone	ND	10		µg/L	1	5/21/2019 10:46:00 PM	R60022
Methylene Chloride	ND	3.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
n-Butylbenzene	ND	3.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
n-Propylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
sec-Butylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Styrene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
tert-Butylbenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
trans-1,2-DCE	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1,1-Trichloroethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,1,2-Trichloroethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Trichloroethene (TCE)	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Trichlorofluoromethane	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
1,2,3-Trichloropropane	ND	2.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Vinyl chloride	ND	1.0		µg/L	1	5/21/2019 10:46:00 PM	R60022
Xylenes, Total	ND	1.5		µg/L	1	5/21/2019 10:46:00 PM	R60022
Surr: 1,2-Dichloroethane-d4	90.7	70-130		%Rec	1	5/21/2019 10:46:00 PM	R60022
Surr: 4-Bromofluorobenzene	91.7	70-130		%Rec	1	5/21/2019 10:46:00 PM	R60022
Surr: Dibromofluoromethane	94.0	70-130		%Rec	1	5/21/2019 10:46:00 PM	R60022
Surr: Toluene-d8	98.4	70-130		%Rec	1	5/21/2019 10:46:00 PM	R60022

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1905A53****23-May-19****Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Bioventing Pilot Test

Sample ID: MB-45114	SampType: MBLK	TestCode: EPA Method 8011/504.1: EDB								
Client ID: PBW	Batch ID: 45114	RunNo: 60087								
Prep Date: 5/22/2019	Analysis Date: 5/22/2019	SeqNo: 2029153 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: LCS-45114		SampType: LCS		TestCode: EPA Method 8011/504.1: EDB						
Client ID: LCSW		Batch ID: 45114		RunNo: 60087						
Prep Date: 5/22/2019		Analysis Date: 5/22/2019		SeqNo: 2029155		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.095	0.010	0.1000	0	94.7	70	130			

Sample ID: 1905A53-002BMS		SampType: MS		TestCode: EPA Method 8011/504.1: EDB						
Client ID: GWTS-233EFF2DUP		Batch ID: 45114		RunNo: 60087						
Prep Date: 5/22/2019		Analysis Date: 5/22/2019		SeqNo: 2029158		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.089	0.0094	0.09409	0	94.5	65	135			

Sample ID: 1905A53-002BMSD SampType: MSD TestCode: EPA Method 8011/504.1: EDB										
Client ID: GWTS-233EFF2DUP		Batch ID: 45114			RunNo: 60087					
Prep Date: 5/22/2019		Analysis Date: 5/22/2019			SeqNo: 2029159		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.082	0.0094	0.09383	0	87.1	65	135	8.38	20	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1905A53****23-May-19****Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Bioventing Pilot Test

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R60022			RunNo: 60022						
Prep Date:	Analysis Date: 5/21/2019			SeqNo: 2027493			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	91.5	70	130			
Toluene	20	1.0	20.00	0	99.9	70	130			
Chlorobenzene	22	1.0	20.00	0	108	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	88.8	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	86.9	70	130			
Surr: 1,2-Dichloroethane-d4	9.1		10.00		90.7	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.6	70	130			
Surr: Dibromofluoromethane	9.4		10.00		94.4	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: rb	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R60022		RunNo: 60022							
Prep Date:	Analysis Date: 5/21/2019		SeqNo: 2027494		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORTWO#: **1905A53****Hall Environmental Analysis Laboratory, Inc.**

23-May-19

Client: EA Engineering Science & Technology**Project:** Kirtland BFF Bioventing Pilot Test

Sample ID: rb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R60022	RunNo: 60022								
Prep Date:	Analysis Date: 5/21/2019	SeqNo: 2027494	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**WO#: **1905A53****23-May-19****Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Bioventing Pilot Test

Sample ID: rb		SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW		Batch ID: R60022		RunNo: 60022						
Prep Date:		Analysis Date: 5/21/2019		SeqNo: 2027494			Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	8.2		10.00		82.1	70	130			
Surr: 4-Bromofluorobenzene	8.9		10.00		89.2	70	130			
Surr: Dibromofluoromethane	8.9		10.00		88.6	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

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Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1905A53

RcptNo: 1

Received By: Yazmine Garduno

5/21/2019 11:34:00 AM

Yazmine Garduno

Completed By: Leah Baca

5/21/2019 12:41:51 PM

Leah Baca

Reviewed By: DAD 5/21/19

SP 5/21/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☐ No ☒ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

Samples were collected the same day and chilled.

of preserved bottles checked for pH:
(<2 or >12 unless noted)

Adjusted?

Checked by:

YG 5/21/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	12.3	Good	Yes			

Chain-of-Custody Record

Client: EA Engineering

320 Gold Ave SW Ste 1300

Mailing Address:

ABQ NM 87102

Phone #: (505) 401-1181

email or Fax#: djercinovic@east.com

QA/QC Package:

☐ Standard☐ Level 4 (Full Validation)

Accreditation:

☐ Az Compliance☐ NELAC☐ Other☐ EDD (Type)

Sampler:

On Ice: ☒ Yes ☐ No

of Coolers:

Cooler Temp (including CF):

17.3

Date

Time

Matrix

Sample Name

5/24/19 1018 H₂O GWTS-233EFF2-0521195/24/19 1018 H₂O GWTS-233EFF2DUP-0521195/24/19 — H₂O TRIP BLANK

Container

Type and #

240mL EDB

340mL 8260 and Hg C12

140mL EDB

240mL 8260

Preservative

Type

Na₂S₂O₃

↓

HEAL No.

1905A53

Analysis Request

BTX / MTBE / TMB's (8021)

TPH: 8015D (GRO / DRO / MRO)

8081 Pesticides/8082 PCB's

EDB (Method 504.1)

PAHs by 8310 or 8270SIMS

RCRA 8 Metals

Cl, F, Br, NO₃, PO₄, SO₄

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

Date:

Time

Relinquished by:

Joshua Livingston JML

Date:

Time

Relinquished by:

YUW

Received by:

Via:

CDU

Received by:

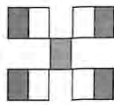
Via:

Date

Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.


**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

APPENDIX E-2

SOIL VAPOR LABORATORY ANALYTICAL DATA

4/26/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1904263A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/11/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1904263A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/11/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/26/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-15	15.0 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-15	12.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-15	10.5 "Hg	5 psi
04A	KAFB-106V1 217.1	Modified TO-15	9.5 "Hg	5 psi
04B	KAFB-106V1 217.1	Modified TO-15	9.5 "Hg	5 psi
05A	KAFB-106V1 252.1	Modified TO-15	12.0 "Hg	5 psi
05B	KAFB-106V1 252.1	Modified TO-15	12.0 "Hg	5 psi
06A	KAFB-106V1 262.6	Modified TO-15	11.0 "Hg	5 psi
06B	KAFB-106V1 262.6	Modified TO-15	11.0 "Hg	5 psi
07A	Lab Blank	Modified TO-15	NA	NA
07B	Lab Blank	Modified TO-15	NA	NA
08A	CCV	Modified TO-15	NA	NA
08B	CCV	Modified TO-15	NA	NA
08C	CCV	Modified TO-15	NA	NA
08D	CCV	Modified TO-15	NA	NA
09A	LCS	Modified TO-15	NA	NA
09AA	LCSD	Modified TO-15	NA	NA
09B	LCS	Modified TO-15	NA	NA
09BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/26/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

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**LABORATORY NARRATIVE
DoD QSM 5.1 TO-15 LL/SIM
EA Engineering
Workorder# 1904263A**

Six 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on April 11, 2019. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modification taken to run these samples is summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-15 LL/SIM</i>	<i>ATL Modifications</i>
Blank and standards	Zero air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V1 102.1 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Sample KAFB-106V1 102.1 was received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Samples were analyzed in two analytical batches on MSD-14 on 4/24/19 and 4/25/19. The initial continuing calibration verification (CCV) for the batch were reported as lab fractions 08A and 08C and the ending CCV were reported as lab fractions 08B and 08D

Naphthalene exceeded initial calibration project acceptance criterion of $\leq 30\%$ Relative Standard Deviation (RSD).

Chloroethane was manually integrated in the initial calibration.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

A Limit of Detection (LOD) study and Method Detection Limit (MDL) study is not maintained for non-standard compounds.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

The per analytical batch duplicate analysis required for this project is associated with work order 1404325A.

All samples were transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 217.1, KAFB-106V1 252.1 and KAFB-106V1 262.6 due to the presence of high level target species.

Acetone exceeded the instrument's calibration range for samples KAFB-106V1 102.1, KAFB-106V1 159.6 and KAFB-106V1 217.1 and was flagged accordingly.

Hexane exceeded the instrument's calibration range for samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 159.6 and KAFB-106V1 217.1 and was flagged accordingly.

2-Butanone (Methyl Ethyl Ketone) exceeded the instrument's calibration range for samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 217.1 and KAFB-106V1 262.6 and was flagged accordingly.

Cyclohexane exceeded the instrument's calibration range for samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 159.6 and KAFB-106V1 217.1 and was flagged accordingly.

Heptane exceeded the instrument's calibration range for samples KAFB-106V1 217.1, KAFB-106V1 252.1 and KAFB-106V1 262.6 and was flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

CN - See case narrative explanation

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	4/24/19 10:09 PM
Lab ID:	1904263A-01A	Dilution Factor:	134
Date/Time Collected:	4/10/19 09:52 AM	Instrument/File Name:	msd14.i / 14042420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	750	1600	2700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	8000	9900	20000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	620	2000	3300	54000
1,2-Dibromoethane (EDB)	106-93-4	910	3100	5100	3800 J
1,2-Dichlorobenzene	95-50-1	970	2400	4000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	550	2000	3300	19000
1,3-Butadiene	106-99-0	460	890	1500	Not Detected U
1,4-Dioxane	123-91-1	2600	4800	9600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1900	4000	7900	780000 J
2-Hexanone	591-78-6	4100	5500	11000	Not Detected U
2-Propanol	67-63-0	840	3300	6600	270000
4-Methyl-2-pentanone	108-10-1	1300	1600	2700	Not Detected U
Acetone	67-64-1	930	3200	6400	4400000 J
Benzene	71-43-2	300	1300	2100	2100000
Bromodichloromethane	75-27-4	450	2700	4500	Not Detected U
Bromoform	75-25-2	960	4200	6900	Not Detected U
Carbon Disulfide	75-15-0	1300	4200	8300	Not Detected U
Carbon Tetrachloride	56-23-5	1000	2500	4200	Not Detected U
Chloroethane	75-00-3	2000	3500	7100	Not Detected U
Chloroform	67-66-3	560	2000	3300	Not Detected U
Chloromethane	74-87-3	1200	2800	5500	Not Detected U
Cyclohexane	110-82-7	510	1400	2300	5300000 J
Dibromochloromethane	124-48-1	1200	3400	5700	Not Detected U
Ethanol	64-17-5	1100	2500	5000	160000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	4/24/19 10:09 PM
Lab ID:	1904263A-01A	Dilution Factor:	134
Date/Time Collected:	4/10/19 09:52 AM	Instrument/File Name:	msd14.i / 14042420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	9600	Not Detected U
Ethyl Benzene	100-41-4	580	1700	2900	170000
Freon 11	75-69-4	560	2200	3800	Not Detected U
Freon 113	76-13-1	910	3100	5100	Not Detected U
Freon 12	75-71-8	740	2000	3300	Not Detected U
Heptane	142-82-5	930	1600	2700	3100000
Hexane	110-54-3	580	1400	2400	8500000 J
m,p-Xylene	108-38-3	550	1700	2900	270000
Methylene Chloride	75-09-2	1400	4600	9300	Not Detected U
Naphthalene	91-20-3	1100	7000	14000	Not Detected U
o-Xylene	95-47-6	780	1700	2900	82000
Propylene	115-07-1	790	2300	4600	42000
Styrene	100-42-5	540	1700	2800	Not Detected U
Tetrachloroethene	127-18-4	1600	2700	4500	Not Detected U
Tetrahydrofuran	109-99-9	700	1200	2000	Not Detected U
Toluene	108-88-3	450	1500	2500	1900000
Total Xylene	1330-20-7	NA	D	2900	350000
Trichloroethene	79-01-6	1100	2200	3600	Not Detected U
Vinyl Chloride	75-01-4	590	1000	1700	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	4/24/19 10:09 PM
Lab ID:	1904263A-01A	Dilution Factor:	134
Date/Time Collected:	4/10/19 09:52 AM	Instrument/Filename:	msd14.i / 14042420
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	116
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	4/24/19 10:43 PM
Lab ID:	1904263A-02A	Dilution Factor:	112
Date/Time Collected:	4/10/19 10:14 AM	Instrument/File Name:	msd14.i / 14042421
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	630	1400	2300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6700	8300	17000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	520	1600	2800	58000
1,2-Dibromoethane (EDB)	106-93-4	760	2600	4300	3800 J
1,2-Dichlorobenzene	95-50-1	810	2000	3400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	460	1600	2800	19000
1,3-Butadiene	106-99-0	390	740	1200	Not Detected U
1,4-Dioxane	123-91-1	2200	4000	8100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	3300	6600	370000 J
2-Hexanone	591-78-6	3400	4600	9200	Not Detected U
2-Propanol	67-63-0	700	2800	5500	120000
4-Methyl-2-pentanone	108-10-1	1100	1400	2300	Not Detected U
Acetone	67-64-1	780	2700	5300	2500000
Benzene	71-43-2	250	1100	1800	1600000
Bromodichloromethane	75-27-4	380	2200	3800	Not Detected U
Bromoform	75-25-2	800	3500	5800	Not Detected U
Carbon Disulfide	75-15-0	1100	3500	7000	Not Detected U
Carbon Tetrachloride	56-23-5	840	2100	3500	Not Detected U
Chloroethane	75-00-3	1700	3000	5900	Not Detected U
Chloroform	67-66-3	470	1600	2700	Not Detected U
Chloromethane	74-87-3	970	2300	4600	Not Detected U
Cyclohexane	110-82-7	430	1200	1900	4300000 J
Dibromochloromethane	124-48-1	980	2900	4800	Not Detected U
Ethanol	64-17-5	920	2100	4200	140000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	4/24/19 10:43 PM
Lab ID:	1904263A-02A	Dilution Factor:	112
Date/Time Collected:	4/10/19 10:14 AM	Instrument/File Name:	msd14.i / 14042421
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	8100	Not Detected U
Ethyl Benzene	100-41-4	490	1400	2400	190000
Freon 11	75-69-4	460	1900	3100	Not Detected U
Freon 113	76-13-1	760	2600	4300	Not Detected U
Freon 12	75-71-8	610	1700	2800	Not Detected U
Heptane	142-82-5	780	1400	2300	2900000
Hexane	110-54-3	480	1200	2000	6900000 J
m,p-Xylene	108-38-3	460	1400	2400	320000
Methylene Chloride	75-09-2	1200	3900	7800	Not Detected U
Naphthalene	91-20-3	900	5900	12000	980 J
o-Xylene	95-47-6	660	1400	2400	95000
Propylene	115-07-1	660	1900	3800	37000
Styrene	100-42-5	450	1400	2400	Not Detected U
Tetrachloroethene	127-18-4	1300	2300	3800	Not Detected U
Tetrahydrofuran	109-99-9	580	990	1600	Not Detected U
Toluene	108-88-3	380	1300	2100	1700000
Total Xylene	1330-20-7	NA	D	2400	410000
Trichloroethene	79-01-6	890	1800	3000	Not Detected U
Vinyl Chloride	75-01-4	500	860	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	4/24/19 10:43 PM
Lab ID:	1904263A-02A	Dilution Factor:	112
Date/Time Collected:	4/10/19 10:14 AM	Instrument/Filename:	msd14.i / 14042421
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	116
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	4/24/19 11:15 PM
Lab ID:	1904263A-03A	Dilution Factor:	103
Date/Time Collected:	4/10/19 10:40 AM	Instrument/File Name:	msd14.i / 14042422
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	580	1200	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6200	7600	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	480	1500	2500	78000
1,2-Dibromoethane (EDB)	106-93-4	700	2400	4000	2800 J
1,2-Dichlorobenzene	95-50-1	750	1800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	420	1500	2500	28000
1,3-Butadiene	106-99-0	360	680	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	3700	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3000	6100	170000
2-Hexanone	591-78-6	3200	4200	8400	Not Detected U
2-Propanol	67-63-0	640	2500	5100	390000
4-Methyl-2-pentanone	108-10-1	1000	1300	2100	Not Detected U
Acetone	67-64-1	710	2400	4900	2600000 J
Benzene	71-43-2	230	990	1600	1300000
Bromodichloromethane	75-27-4	340	2100	3400	Not Detected U
Bromoform	75-25-2	730	3200	5300	Not Detected U
Carbon Disulfide	75-15-0	980	3200	6400	Not Detected U
Carbon Tetrachloride	56-23-5	770	1900	3200	Not Detected U
Chloroethane	75-00-3	1600	2700	5400	Not Detected U
Chloroform	67-66-3	430	1500	2500	Not Detected U
Chloromethane	74-87-3	890	2100	4200	Not Detected U
Cyclohexane	110-82-7	390	1100	1800	3800000 J
Dibromochloromethane	124-48-1	900	2600	4400	Not Detected U
Ethanol	64-17-5	850	1900	3900	110000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	4/24/19 11:15 PM
Lab ID:	1904263A-03A	Dilution Factor:	103
Date/Time Collected:	4/10/19 10:40 AM	Instrument/Filename:	msd14.i / 14042422
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected U
Ethyl Benzene	100-41-4	450	1300	2200	280000
Freon 11	75-69-4	430	1700	2900	Not Detected U
Freon 113	76-13-1	700	2400	3900	Not Detected U
Freon 12	75-71-8	560	1500	2500	Not Detected U
Heptane	142-82-5	710	1300	2100	3600000
Hexane	110-54-3	450	1100	1800	5300000 J
m,p-Xylene	108-38-3	420	1300	2200	620000
Methylene Chloride	75-09-2	1100	3600	7200	Not Detected U
Naphthalene	91-20-3	830	5400	11000	Not Detected U
o-Xylene	95-47-6	600	1300	2200	180000
Propylene	115-07-1	610	1800	3500	32000
Styrene	100-42-5	420	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2100	3500	Not Detected U
Tetrahydrofuran	109-99-9	540	910	1500	Not Detected U
Toluene	108-88-3	350	1200	1900	2200000
Total Xylene	1330-20-7	NA	D	2200	790000
Trichloroethene	79-01-6	820	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	460	790	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	4/24/19 11:15 PM
Lab ID:	1904263A-03A	Dilution Factor:	103
Date/Time Collected:	4/10/19 10:40 AM	Instrument/Filename:	msd14.i / 14042422
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	116
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	4/24/19 08:26 PM
Lab ID:	1904263A-04A	Dilution Factor:	98.0
Date/Time Collected:	4/10/19 11:01 AM	Instrument/File Name:	msd14.i / 14042417
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	550	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5900	7300	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	460	1400	2400	98000
1,2-Dibromoethane (EDB)	106-93-4	660	2200	3800	4500
1,2-Dichlorobenzene	95-50-1	710	1800	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	400	1400	2400	41000
1,3-Butadiene	106-99-0	340	650	1100	Not Detected U
1,4-Dioxane	123-91-1	1900	3500	7100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	2900	5800	500000 J
2-Hexanone	591-78-6	3000	4000	8000	Not Detected U
2-Propanol	67-63-0	610	2400	4800	58000
4-Methyl-2-pentanone	108-10-1	980	1200	2000	Not Detected U
Acetone	67-64-1	680	2300	4600	4900000 J
Benzene	71-43-2	220	940	1600	1700000
Bromodichloromethane	75-27-4	330	2000	3300	Not Detected U
Bromoform	75-25-2	700	3000	5100	Not Detected U
Carbon Disulfide	75-15-0	930	3000	6100	Not Detected U
Carbon Tetrachloride	56-23-5	730	1800	3100	Not Detected U
Chloroethane	75-00-3	1500	2600	5200	Not Detected U
Chloroform	67-66-3	410	1400	2400	Not Detected U
Chloromethane	74-87-3	850	2000	4000	Not Detected U
Cyclohexane	110-82-7	370	1000	1700	5800000 J
Dibromochloromethane	124-48-1	860	2500	4200	Not Detected U
Ethanol	64-17-5	810	1800	3700	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	4/24/19 08:26 PM
Lab ID:	1904263A-04A	Dilution Factor:	98.0
Date/Time Collected:	4/10/19 11:01 AM	Instrument/Filename:	msd14.i / 14042417
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7100	Not Detected U
Ethyl Benzene	100-41-4	420	1300	2100	460000
Freon 11	75-69-4	410	1600	2800	Not Detected U
Freon 113	76-13-1	670	2200	3800	Not Detected U
Freon 12	75-71-8	540	1400	2400	Not Detected U
Heptane	142-82-5	680	1200	2000	660000 J
Hexane	110-54-3	420	1000	1700	720000 J
m,p-Xylene	108-38-3	400	1300	2100	1400000
Methylene Chloride	75-09-2	1000	3400	6800	Not Detected U
Naphthalene	91-20-3	790	5100	10000	Not Detected U
o-Xylene	95-47-6	570	1300	2100	400000
Propylene	115-07-1	580	1700	3400	62000
Styrene	100-42-5	400	1200	2100	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3300	Not Detected U
Tetrahydrofuran	109-99-9	510	870	1400	Not Detected U
Toluene	108-88-3	330	1100	1800	Not Detected U
Total Xylene	1330-20-7	NA	D	2100	1800000
Trichloroethene	79-01-6	780	1600	2600	Not Detected U
Vinyl Chloride	75-01-4	430	750	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	4/24/19 08:26 PM
Lab ID:	1904263A-04A	Dilution Factor:	98.0
Date/Time Collected:	4/10/19 11:01 AM	Instrument/Filename:	msd14.i / 14042417
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	133
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	4/25/19 04:08 PM
Lab ID:	1904263A-04B	Dilution Factor:	196
Date/Time Collected:	4/10/19 11:01 AM	Instrument/Filename:	msd14.i / 14042512
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	660	2200	3700	4200000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	113
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	4/24/19 09:03 PM
Lab ID:	1904263A-05A	Dilution Factor:	112
Date/Time Collected:	4/10/19 11:19 AM	Instrument/File Name:	msd14.i / 14042418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	630	1400	2300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6700	8300	17000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	520	1600	2800	50000
1,2-Dibromoethane (EDB)	106-93-4	760	2600	4300	18000
1,2-Dichlorobenzene	95-50-1	810	2000	3400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	460	1600	2800	22000
1,3-Butadiene	106-99-0	390	740	1200	Not Detected U
1,4-Dioxane	123-91-1	2200	4000	8100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	3300	6600	280000
2-Hexanone	591-78-6	3400	4600	9200	Not Detected U
2-Propanol	67-63-0	700	2800	5500	27000
4-Methyl-2-pentanone	108-10-1	1100	1400	2300	Not Detected U
Acetone	67-64-1	780	2700	5300	1100000
Benzene	71-43-2	250	1100	1800	870000
Bromodichloromethane	75-27-4	380	2200	3800	Not Detected U
Bromoform	75-25-2	800	3500	5800	Not Detected U
Carbon Disulfide	75-15-0	1100	3500	7000	Not Detected U
Carbon Tetrachloride	56-23-5	840	2100	3500	Not Detected U
Chloroethane	75-00-3	1700	3000	5900	Not Detected U
Chloroform	67-66-3	470	1600	2700	Not Detected U
Chloromethane	74-87-3	970	2300	4600	Not Detected U
Cyclohexane	110-82-7	430	1200	1900	3500000
Dibromochloromethane	124-48-1	980	2900	4800	Not Detected U
Ethanol	64-17-5	920	2100	4200	2400 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	4/24/19 09:03 PM
Lab ID:	1904263A-05A	Dilution Factor:	112
Date/Time Collected:	4/10/19 11:19 AM	Instrument/Filename:	msd14.i / 14042418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	8100	Not Detected U
Ethyl Benzene	100-41-4	490	1400	2400	400000
Freon 11	75-69-4	460	1900	3100	Not Detected U
Freon 113	76-13-1	760	2600	4300	Not Detected U
Freon 12	75-71-8	610	1700	2800	Not Detected U
Heptane	142-82-5	780	1400	2300	7200000 J
Hexane	110-54-3	480	1200	2000	3700000
m,p-Xylene	108-38-3	460	1400	2400	1200000
Methylene Chloride	75-09-2	1200	3900	7800	Not Detected U
Naphthalene	91-20-3	900	5900	12000	Not Detected U
o-Xylene	95-47-6	660	1400	2400	320000
Propylene	115-07-1	660	1900	3800	100000
Styrene	100-42-5	450	1400	2400	Not Detected U
Tetrachloroethene	127-18-4	1300	2300	3800	Not Detected U
Tetrahydrofuran	109-99-9	580	990	1600	Not Detected U
Toluene	108-88-3	380	1300	2100	Not Detected U
Total Xylene	1330-20-7	NA	D	2400	1500000
Trichloroethene	79-01-6	890	1800	3000	Not Detected U
Vinyl Chloride	75-01-4	500	860	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	4/24/19 09:03 PM
Lab ID:	1904263A-05A	Dilution Factor:	112
Date/Time Collected:	4/10/19 11:19 AM	Instrument/Filename:	msd14.i / 14042418
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	121
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	4/25/19 04:38 PM
Lab ID:	1904263A-05B	Dilution Factor:	223
Date/Time Collected:	4/10/19 11:19 AM	Instrument/Filename:	msd14.i / 14042513
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	760	2500	4200	5400000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	124
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	4/24/19 09:39 PM
Lab ID:	1904263A-06A	Dilution Factor:	106
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	msd14.i / 14042419
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	600	1300	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6400	7900	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	68000
1,2-Dibromoethane (EDB)	106-93-4	720	2400	4100	23000
1,2-Dichlorobenzene	95-50-1	770	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	430	1600	2600	27000
1,3-Butadiene	106-99-0	370	700	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3800	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3100	6200	510000 J
2-Hexanone	591-78-6	3200	4300	8700	Not Detected U
2-Propanol	67-63-0	660	2600	5200	50000
4-Methyl-2-pentanone	108-10-1	1000	1300	2200	Not Detected U
Acetone	67-64-1	740	2500	5000	1800000
Benzene	71-43-2	240	1000	1700	920000
Bromodichloromethane	75-27-4	360	2100	3600	Not Detected U
Bromoform	75-25-2	760	3300	5500	Not Detected U
Carbon Disulfide	75-15-0	1000	3300	6600	Not Detected U
Carbon Tetrachloride	56-23-5	790	2000	3300	Not Detected U
Chloroethane	75-00-3	1600	2800	5600	Not Detected U
Chloroform	67-66-3	440	1600	2600	Not Detected U
Chloromethane	74-87-3	920	2200	4400	Not Detected U
Cyclohexane	110-82-7	400	1100	1800	3300000
Dibromochloromethane	124-48-1	930	2700	4500	Not Detected U
Ethanol	64-17-5	870	2000	4000	12000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	4/24/19 09:39 PM
Lab ID:	1904263A-06A	Dilution Factor:	106
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	msd14.i / 14042419
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected U
Ethyl Benzene	100-41-4	460	1400	2300	410000
Freon 11	75-69-4	440	1800	3000	Not Detected U
Freon 113	76-13-1	720	2400	4100	Not Detected U
Freon 12	75-71-8	580	1600	2600	Not Detected U
Heptane	142-82-5	730	1300	2200	8100000 J
Hexane	110-54-3	460	1100	1900	3100000
m,p-Xylene	108-38-3	430	1400	2300	1100000
Methylene Chloride	75-09-2	1100	3700	7400	Not Detected U
Naphthalene	91-20-3	860	5600	11000	Not Detected U
o-Xylene	95-47-6	620	1400	2300	280000
Propylene	115-07-1	620	1800	3600	110000
Styrene	100-42-5	430	1400	2200	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3600	Not Detected U
Tetrahydrofuran	109-99-9	550	940	1600	Not Detected U
Toluene	108-88-3	360	1200	2000	Not Detected U
Total Xylene	1330-20-7	NA	D	2300	1400000
Trichloroethene	79-01-6	840	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	470	810	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	4/24/19 09:39 PM
Lab ID:	1904263A-06A	Dilution Factor:	106
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	msd14.i / 14042419
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	126
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	114

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	4/25/19 10:21 PM
Lab ID:	1904263A-06B	Dilution Factor:	353
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	msd14.i / 14042524
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	1200	4000	6600	6400000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	105
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/24/19 12:28 PM
Lab ID:	1904263A-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	29	59	Not Detected U
2-Hexanone	591-78-6	31	41	82	Not Detected U
2-Propanol	67-63-0	6.3	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	24	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	26	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	21	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	19	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/24/19 12:28 PM
Lab ID:	1904263A-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected U
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	35	69	Not Detected U
Naphthalene	91-20-3	8.1	52	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	17	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/24/19 12:28 PM
Lab ID:	1904263A-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042406a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/25/19 11:27 AM
Lab ID:	1904263A-07B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042507a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	3.4	11	19	5.7 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	94
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 09:21 AM
Lab ID:	1904263A-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	106
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	99
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	102
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	101
4-Methyl-2-pentanone	108-10-1	105
Acetone	67-64-1	102
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	96
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	100
Carbon Tetrachloride	56-23-5	101
Chloroethane	75-00-3	110
Chloroform	67-66-3	98
Chloromethane	74-87-3	103
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	99
Ethanol	64-17-5	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 09:21 AM
Lab ID:	1904263A-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	110
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	103
Freon 113	76-13-1	101
Freon 12	75-71-8	102
Heptane	142-82-5	94
Hexane	110-54-3	102
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	125
o-Xylene	95-47-6	97
Propylene	115-07-1	94
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	96
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	95
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 09:21 AM
Lab ID:	1904263A-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 11:51 PM
Lab ID:	1904263A-08B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042423
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	95
1,2,4-Trimethylbenzene	95-63-6	98
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	106
1,3-Butadiene	106-99-0	98
1,4-Dioxane	123-91-1	106
2-Butanone (Methyl Ethyl Ketone)	78-93-3	111
2-Hexanone	591-78-6	105
2-Propanol	67-63-0	102
4-Methyl-2-pentanone	108-10-1	110
Acetone	67-64-1	117
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	94
Chloroethane	75-00-3	110
Chloroform	67-66-3	99
Chloromethane	74-87-3	100
Cyclohexane	110-82-7	112
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	111

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 11:51 PM
Lab ID:	1904263A-08B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042423
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	110
Ethyl Benzene	100-41-4	99
Freon 11	75-69-4	99
Freon 113	76-13-1	104
Freon 12	75-71-8	99
Heptane	142-82-5	105
Hexane	110-54-3	110
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	98
Naphthalene	91-20-3	107
o-Xylene	95-47-6	99
Propylene	115-07-1	97
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	98
Tetrahydrofuran	109-99-9	100
Toluene	108-88-3	104
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	93

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 11:51 PM
Lab ID:	1904263A-08B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042423
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/25/19 07:38 AM
Lab ID:	1904263A-08C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042502a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	93
4-Bromofluorobenzene	460-00-4	83-115	104
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/25/19 10:51 PM
Lab ID:	1904263A-08D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042525
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	93
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/24/19 10:16 AM
Lab ID:	1904263A-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	107
1,2,4-Trichlorobenzene	120-82-1	132
1,2,4-Trimethylbenzene	95-63-6	103
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	109
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	106
1,4-Dioxane	123-91-1	116
2-Butanone (Methyl Ethyl Ketone)	78-93-3	106
2-Hexanone	591-78-6	126
2-Propanol	67-63-0	110
4-Methyl-2-pentanone	108-10-1	109
Acetone	67-64-1	109
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	105
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	106
Chloroethane	75-00-3	115
Chloroform	67-66-3	103
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	107
Dibromochloromethane	124-48-1	103
Ethanol	64-17-5	118

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/24/19 10:16 AM
Lab ID:	1904263A-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	111
Freon 113	76-13-1	104
Freon 12	75-71-8	109
Heptane	142-82-5	102
Hexane	110-54-3	106
m,p-Xylene	108-38-3	99
Methylene Chloride	75-09-2	104
Naphthalene	91-20-3	114
o-Xylene	95-47-6	101
Propylene	115-07-1	95
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	104
Toluene	108-88-3	99
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	110

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/24/19 10:16 AM
Lab ID:	1904263A-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/24/19 10:54 AM
Lab ID:	1904263A-09AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	103
1,2,4-Trichlorobenzene	120-82-1	121
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	108
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	118
2-Butanone (Methyl Ethyl Ketone)	78-93-3	109
2-Hexanone	591-78-6	124
2-Propanol	67-63-0	111
4-Methyl-2-pentanone	108-10-1	112
Acetone	67-64-1	107
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	106
Carbon Disulfide	75-15-0	92
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	106
Chloroform	67-66-3	103
Chloromethane	74-87-3	105
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	104
Ethanol	64-17-5	124

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/24/19 10:54 AM
Lab ID:	1904263A-09AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	111
Freon 113	76-13-1	103
Freon 12	75-71-8	105
Heptane	142-82-5	100
Hexane	110-54-3	102
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	105
o-Xylene	95-47-6	104
Propylene	115-07-1	98
Styrene	100-42-5	105
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	103
Toluene	108-88-3	100
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	108

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/24/19 10:54 AM
Lab ID:	1904263A-09AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/25/19 08:59 AM
Lab ID:	1904263A-09B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042504a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	92
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/25/19 09:35 AM
Lab ID:	1904263A-09BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042505a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	92
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	103

* % Recovery is calculated using unrounded analytical results.

4/24/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1904263B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/11/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1904263B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/11/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-3	15.0 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-3	12.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-3	10.5 "Hg	5 psi
04A	KAFB-106V1 217.1	Modified TO-3	9.5 "Hg	5 psi
05A	KAFB-106V1 252.1	Modified TO-3	12.0 "Hg	5 psi
06A	KAFB-106V1 262.6	Modified TO-3	11.0 "Hg	5 psi
06AA	KAFB-106V1 262.6 Lab Duplicate	Modified TO-3	11.0 "Hg	5 psi
07A	Lab Blank	Modified TO-3	NA	NA
08A	LCS	Modified TO-3	NA	NA
08AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/24/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 TO-3
EA Engineering
Workorder# 1904263B

Six 6 Liter Summa Canister (100% SIM certified DoD 5.1) samples were received on April 11, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m3. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V1 102.1 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Sample KAFB-106V1 102.1 was received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	4/17/19 04:19 PM
Lab ID:	1904263B-01A	Dilution Factor:	5360
Date/Time Collected:	4/10/19 09:52 AM	Instrument/Filename:	gcd.i / d041711
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	310000	440000	550000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	96

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	4/17/19 03:28 PM
Lab ID:	1904263B-02A	Dilution Factor:	4460
Date/Time Collected:	4/10/19 10:14 AM	Instrument/Filename:	gcd.i / d041710
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	260000	360000	460000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	100

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	4/17/19 02:19 PM
Lab ID:	1904263B-03A	Dilution Factor:	4120
Date/Time Collected:	4/10/19 10:40 AM	Instrument/Filename:	gcd.i / d041709
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	240000	340000	420000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	101

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	4/17/19 12:38 PM
Lab ID:	1904263B-04A	Dilution Factor:	4900
Date/Time Collected:	4/10/19 11:01 AM	Instrument/Filename:	gcd.i / d041707
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	290000	400000	500000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	98

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	4/17/19 12:00 PM
Lab ID:	1904263B-05A	Dilution Factor:	4460
Date/Time Collected:	4/10/19 11:19 AM	Instrument/Filename:	gcd.i / d041706
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	260000	360000	460000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	99

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	4/17/19 11:12 AM
Lab ID:	1904263B-06A	Dilution Factor:	4240
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	gcd.i / d041705
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	250000	350000	430000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6 Lab Duplicate	Date/Time Analyzed:	4/17/19 01:41 PM
Lab ID:	1904263B-06AA	Dilution Factor:	4240
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	gcd.i / d041708
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	250000	350000	430000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	118

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/17/19 09:25 AM
Lab ID:	1904263B-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041703
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	96

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/17/19 08:37 AM
Lab ID:	1904263B-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041702
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		104

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	97

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/17/19 05:05 PM
Lab ID:	1904263B-08AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041712
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		100

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

* % Recovery is calculated using unrounded analytical results.

4/24/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1904263C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/11/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1904263C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/11/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified ASTM D-1945	15.0 "Hg	5 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified ASTM D-1945	15.0 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified ASTM D-1945	12.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified ASTM D-1945	10.5 "Hg	5 psi
04A	KAFB-106V1 217.1	Modified ASTM D-1945	9.5 "Hg	5 psi
05A	KAFB-106V1 252.1	Modified ASTM D-1945	12.0 "Hg	5 psi
06A	KAFB-106V1 262.6	Modified ASTM D-1945	11.0 "Hg	5 psi
07A	Lab Blank	Modified ASTM D-1945	NA	NA
07B	Lab Blank	Modified ASTM D-1945	NA	NA
08A	LCS	Modified ASTM D-1945	NA	NA
08AA	LCSD	Modified ASTM D-1945	NA	NA
08B	LCS	Modified ASTM D-1945	NA	NA
08BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/24/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8, LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 ASTM D1945
EA Engineering
Workorder# 1904263C

Six 6 Liter Summa Canister (100% SIM certified DoD 5.1) samples were received on April 11, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V1 102.1 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Sample KAFB-106V1 102.1 was received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Methane was manually integrated in sample KAFB-106V1 102.1.

Methane and Ethane were manually integrated in samples KAFB-106V1 102.1 Lab Duplicate, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 217.1, KAFB-106V1 252.1 and KAFB-106V1 262.6.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	4/18/19 07:01 PM
Lab ID:	1904263C-01A	Dilution Factor:	2.68
Date/Time Collected:	4/10/19 09:52 AM	Instrument/Filename:	gc10.i / 10041909
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00029	0.0027	0.0089
Carbon Dioxide	124-38-9	0.0029	0.013	0.027	12
Carbon Monoxide	630-08-0	0.0035	0.013	0.027	Not Detected U
Ethane	74-84-0	0.000067	0.00029	0.0027	0.0039
Hydrogen	1333-74-0	0.0040	0.017	0.027	Not Detected U
Methane	74-82-8	0.000072	0.00013	0.00027	0.025
Nitrogen	7727-37-9	0.18	0.18	0.27	85
Oxygen	7782-44-7	0.050	0.048	0.27	1.4
Pentane	109-66-0	0.000067	0.00029	0.0027	0.18
Propane	74-98-6	0.000080	0.00029	0.0027	0.0017 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 80

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	4/18/19 09:11 PM
Lab ID:	1904263C-01AA	Dilution Factor:	2.68
Date/Time Collected:	4/10/19 09:52 AM	Instrument/File Name:	gc10.i / 10041912
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00029	0.0027	0.0090
Carbon Dioxide	124-38-9	0.0029	0.013	0.027	12
Carbon Monoxide	630-08-0	0.0035	0.013	0.027	Not Detected U
Ethane	74-84-0	0.000067	0.00029	0.0027	0.0039
Hydrogen	1333-74-0	0.0040	0.017	0.027	Not Detected U
Methane	74-82-8	0.000072	0.00013	0.00027	0.025
Nitrogen	7727-37-9	0.18	0.18	0.27	85
Oxygen	7782-44-7	0.050	0.048	0.27	1.4
Pentane	109-66-0	0.000067	0.00029	0.0027	0.18
Propane	74-98-6	0.000080	0.00029	0.0027	0.0017 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 79

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	4/18/19 10:58 PM
Lab ID:	1904263C-02A	Dilution Factor:	2.23
Date/Time Collected:	4/10/19 10:14 AM	Instrument/Filename:	gc10.i / 10041915
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	0.011
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	12
Carbon Monoxide	630-08-0	0.0030	0.011	0.022	Not Detected U
Ethane	74-84-0	0.000056	0.00024	0.0022	0.0040
Hydrogen	1333-74-0	0.0034	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.025
Nitrogen	7727-37-9	0.15	0.15	0.22	85
Oxygen	7782-44-7	0.041	0.040	0.22	1.2
Pentane	109-66-0	0.000056	0.00024	0.0022	0.24
Propane	74-98-6	0.000067	0.00024	0.0022	0.0018 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 88

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	4/19/19 09:17 AM
Lab ID:	1904263C-03A	Dilution Factor:	2.06
Date/Time Collected:	4/10/19 10:40 AM	Instrument/Filename:	gc10.i / 10041918
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0069
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	12
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0029
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.013
Nitrogen	7727-37-9	0.14	0.14	0.21	85
Oxygen	7782-44-7	0.038	0.037	0.21	1.2
Pentane	109-66-0	0.000052	0.00023	0.0021	0.18
Propane	74-98-6	0.000062	0.00023	0.0021	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 79

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	4/19/19 10:26 AM
Lab ID:	1904263C-04A	Dilution Factor:	1.96
Date/Time Collected:	4/10/19 11:01 AM	Instrument/File Name:	gc10.i / 10041921
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00022	0.0020	0.0025
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	12
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	0.0054 J
Ethane	74-84-0	0.000049	0.00022	0.0020	0.0029
Hydrogen	1333-74-0	0.0029	0.012	0.020	Not Detected U
Methane	74-82-8	0.000053	0.000098	0.00020	0.0056
Nitrogen	7727-37-9	0.13	0.13	0.20	85
Oxygen	7782-44-7	0.036	0.035	0.20	1.3
Pentane	109-66-0	0.000049	0.00022	0.0020	0.081
Propane	74-98-6	0.000059	0.00022	0.0020	0.0019 J

J = Estimated value.

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. =86

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	4/19/19 11:45 AM
Lab ID:	1904263C-05A	Dilution Factor:	2.23
Date/Time Collected:	4/10/19 11:19 AM	Instrument/Filename:	gc10.i / 10041924
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	0.0039
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	12
Carbon Monoxide	630-08-0	0.0030	0.011	0.022	0.0081 J
Ethane	74-84-0	0.000056	0.00024	0.0022	0.0058
Hydrogen	1333-74-0	0.0034	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.0070
Nitrogen	7727-37-9	0.15	0.15	0.22	86
Oxygen	7782-44-7	0.041	0.040	0.22	1.2
Pentane	109-66-0	0.000056	0.00024	0.0022	0.051
Propane	74-98-6	0.000067	0.00024	0.0022	0.0060

J = Estimated value.

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 61

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	4/19/19 12:56 PM
Lab ID:	1904263C-06A	Dilution Factor:	2.12
Date/Time Collected:	4/10/19 11:36 AM	Instrument/Filename:	gc10.i / 10041927
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0054
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	11
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	0.013 J
Ethane	74-84-0	0.000053	0.00023	0.0021	0.0065
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.0070
Nitrogen	7727-37-9	0.14	0.14	0.21	88
Oxygen	7782-44-7	0.039	0.038	0.21	1.4
Pentane	109-66-0	0.000053	0.00023	0.0021	0.059
Propane	74-98-6	0.000064	0.00023	0.0021	0.0071

J = Estimated value.

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 66

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/18/19 05:57 PM
Lab ID:	1904263C-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041907
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/18/19 06:27 PM
Lab ID:	1904263C-07B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041908c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/18/19 03:43 PM
Lab ID:	1904263C-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041903a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	99
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	101
Methane	74-82-8	102
Nitrogen	7727-37-9	91
Oxygen	7782-44-7	104
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/18/19 04:08 PM
Lab ID:	1904263C-08AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041904a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	101
Methane	74-82-8	102
Nitrogen	7727-37-9	91
Oxygen	7782-44-7	104
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/18/19 04:49 PM
Lab ID:	1904263C-08B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041905c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/18/19 05:28 PM
Lab ID:	1904263C-08BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041906c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

4/25/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1904325A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/12/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1904325A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/12/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/25/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 102.2	Modified TO-15	9.2 "Hg	5.1 psi
01AA	KAFB-106V2 102.2 Lab Duplicate	Modified TO-15	9.2 "Hg	5.1 psi
01B	KAFB-106V2 102.2	Modified TO-15	9.2 "Hg	5.1 psi
01BB	KAFB-106V2 102.2 Lab Duplicate	Modified TO-15	9.2 "Hg	5.1 psi
02A	KAFB-106V2 117.1	Modified TO-15	9.4 "Hg	4.8 psi
03A	KAFB-106V2 117.1 DUP	Modified TO-15	9.4 "Hg	5 psi
04A	KAFB-106V2 159.9	Modified TO-15	10.6 "Hg	5 psi
05A	KAFB-106V2 217.1	Modified TO-15	11.2 "Hg	5.1 psi
06A	KAFB-106V2 252.2	Modified TO-15	9.8 "Hg	5.3 psi
07A	KAFB-106V2 252.2 DUP	Modified TO-15	9.6 "Hg	5.3 psi
08A	KAFB-106V2 269.5	Modified TO-15	10.4 "Hg	4.9 psi
09A	Lab Blank	Modified TO-15	NA	NA
09B	Lab Blank	Modified TO-15	NA	NA
10A	CCV	Modified TO-15	NA	NA
10B	CCV	Modified TO-15	NA	NA
10C	CCV	Modified TO-15	NA	NA
10D	CCV	Modified TO-15	NA	NA
11A	LCS	Modified TO-15	NA	NA
11AA	LCSD	Modified TO-15	NA	NA
11B	LCS	Modified TO-15	NA	NA
11BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/25/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8, LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
DoD QSM 5.1 - TO-15
EA Engineering
Workorder# 1904325A

Eight 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on April 12, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

The Chain of Custody (COC) information for samples KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2, KAFB-106V2 252.2 DUP and KAFB-106V2 269.5 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used to process and report the samples.

Analytical Notes

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Samples were analyzed in two analytical batches on MSD-14 on 4/24/19 and 4/25/19. The initial continuing calibration verification (CCV) for the batch were reported as lab fractions 10A, 10B and the ending CCV were reported as lab fractions 10C and 10D.

Naphthalene exceeded initial calibration project acceptance criterion of $\leq 30\%$ Relative Standard Deviation (RSD).

Chloromethane was manually integrated in the initial calibration

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

A Limit of Detection (LOD) study and Method Detection Limit (MDL) study is not maintained for non-standard compounds.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and

O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes.

Samples KAFB-106V2 102.2, KAFB-106V2 102.2 Lab Duplicate, KAFB-106V2 102.2 , KAFB-106V2 102.2 Lab Duplicate, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2, KAFB-106V2 252.2 DUP and KAFB-106V2 269.5 were transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on samples KAFB-106V2 102.2, KAFB-106V2 102.2 Lab Duplicate, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2, KAFB-106V2 252.2 DUP and KAFB-106V2 269.5 due to the presence of high level target species.

2-Butanone (Methyl Ethyl Ketone), Acetone, Cyclohexane, Hexane and Heptane exceeded the instrument's calibration range for samples KAFB-106V2 102.2, KAFB-106V2 102.2 Lab Duplicate and KAFB-106V2 217.1 and were flagged accordingly.

Cyclohexane, Hexane and Heptane exceeded the instrument's calibration range for samples KAFB-106V2 117.1 and KAFB-106V2 117.1 DUP and were flagged accordingly.

2-Butanone (Methyl Ethyl Ketone) and Heptane exceeded the instrument's calibration range for samples KAFB-106V2 252.2 and KAFB-106V2 252.2 DUP and were flagged accordingly.

2-Butanone (Methyl Ethyl Ketone) exceeded the instrument's calibration range for sample KAFB-106V2 269.5 and was flagged accordingly.

The recovery of surrogate 1,2-Dichloroethane-d4 in sample KAFB-106V2 102.2 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	4/24/19 02:55 PM
Lab ID:	1904325A-01A	Dilution Factor:	97.0
Date/Time Collected:	4/11/19 08:33 AM	Instrument/File Name:	msd14.i / 14042408
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	540	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5800	7200	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	450	1400	2400	23000
1,2-Dibromoethane (EDB)	106-93-4	660	2200	3700	20000
1,2-Dichlorobenzene	95-50-1	700	1700	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	400	1400	2400	12000
1,3-Butadiene	106-99-0	340	640	1100	Not Detected U
1,4-Dioxane	123-91-1	1900	3500	7000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	2900	5700	610000 J
2-Hexanone	591-78-6	3000	4000	7900	Not Detected U
2-Propanol	67-63-0	610	2400	4800	260000
4-Methyl-2-pentanone	108-10-1	960	1200	2000	Not Detected U
Acetone	67-64-1	670	2300	4600	3500000 J
Benzene	71-43-2	220	930	1500	2100000
Bromodichloromethane	75-27-4	320	1900	3200	Not Detected U
Bromoform	75-25-2	690	3000	5000	Not Detected U
Carbon Disulfide	75-15-0	920	3000	6000	Not Detected U
Carbon Tetrachloride	56-23-5	730	1800	3000	Not Detected U
Chloroethane	75-00-3	1500	2600	5100	Not Detected U
Chloroform	67-66-3	410	1400	2400	Not Detected U
Chloromethane	74-87-3	840	2000	4000	Not Detected U
Cyclohexane	110-82-7	370	1000	1700	7000000 J
Dibromochloromethane	124-48-1	850	2500	4100	Not Detected U
Ethanol	64-17-5	800	1800	3600	41000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	4/24/19 02:55 PM
Lab ID:	1904325A-01A	Dilution Factor:	97.0
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042408
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7000	Not Detected
Ethyl Benzene	100-41-4	420	1300	2100	280000
Freon 11	75-69-4	400	1600	2700	Not Detected U
Freon 113	76-13-1	660	2200	3700	Not Detected U
Freon 12	75-71-8	530	1400	2400	Not Detected U
Heptane	142-82-5	670	1200	2000	7200000 J
Hexane	110-54-3	420	1000	1700	8300000 J
m,p-Xylene	108-38-3	400	1300	2100	710000
Methylene Chloride	75-09-2	1000	3400	6700	Not Detected U
Naphthalene	91-20-3	780	5100	10000	Not Detected U
o-Xylene	95-47-6	570	1300	2100	180000
Propylene	115-07-1	570	1700	3300	33000
Styrene	100-42-5	390	1200	2100	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3300	Not Detected U
Tetrahydrofuran	109-99-9	510	860	1400	Not Detected U
Total Xylene	1330-20-7	9000	D	2100	890000
Trichloroethene	79-01-6	770	1600	2600	Not Detected U
Vinyl Chloride	75-01-4	430	740	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	4/24/19 02:55 PM
Lab ID:	1904325A-01A	Dilution Factor:	97.0
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042408
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	148 Q
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2 Lab Duplicate	Date/Time Analyzed:	4/24/19 03:27 PM
Lab ID:	1904325A-01AA	Dilution Factor:	97.0
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042409
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	540	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5800	7200	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	450	1400	2400	20000
1,2-Dibromoethane (EDB)	106-93-4	660	2200	3700	18000
1,2-Dichlorobenzene	95-50-1	700	1700	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	400	1400	2400	10000
1,3-Butadiene	106-99-0	340	640	1100	Not Detected U
1,4-Dioxane	123-91-1	1900	3500	7000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	2900	5700	620000 J
2-Hexanone	591-78-6	3000	4000	7900	Not Detected U
2-Propanol	67-63-0	610	2400	4800	260000
4-Methyl-2-pentanone	108-10-1	960	1200	2000	Not Detected U
Acetone	67-64-1	670	2300	4600	3500000 J
Benzene	71-43-2	220	930	1500	2000000
Bromodichloromethane	75-27-4	320	1900	3200	Not Detected U
Bromoform	75-25-2	690	3000	5000	Not Detected U
Carbon Disulfide	75-15-0	920	3000	6000	Not Detected U
Carbon Tetrachloride	56-23-5	730	1800	3000	Not Detected U
Chloroethane	75-00-3	1500	2600	5100	Not Detected U
Chloroform	67-66-3	410	1400	2400	Not Detected U
Chloromethane	74-87-3	840	2000	4000	Not Detected U
Cyclohexane	110-82-7	370	1000	1700	6600000 J
Dibromochloromethane	124-48-1	850	2500	4100	Not Detected U
Ethanol	64-17-5	800	1800	3600	41000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2 Lab Duplicate	Date/Time Analyzed:	4/24/19 03:27 PM
Lab ID:	1904325A-01AA	Dilution Factor:	97.0
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042409
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7000	Not Detected
Ethyl Benzene	100-41-4	420	1300	2100	260000
Freon 11	75-69-4	400	1600	2700	Not Detected U
Freon 113	76-13-1	660	2200	3700	Not Detected U
Freon 12	75-71-8	530	1400	2400	Not Detected U
Heptane	142-82-5	670	1200	2000	6700000 J
Hexane	110-54-3	420	1000	1700	7900000 J
m,p-Xylene	108-38-3	400	1300	2100	630000
Methylene Chloride	75-09-2	1000	3400	6700	Not Detected U
Naphthalene	91-20-3	780	5100	10000	Not Detected U
o-Xylene	95-47-6	570	1300	2100	160000
Propylene	115-07-1	570	1700	3300	33000
Styrene	100-42-5	390	1200	2100	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3300	Not Detected U
Tetrahydrofuran	109-99-9	510	860	1400	Not Detected U
Total Xylene	1330-20-7	9000	D	2100	790000
Trichloroethene	79-01-6	770	1600	2600	Not Detected U
Vinyl Chloride	75-01-4	430	740	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	137

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2 Lab Duplicate	Date/Time Analyzed:	4/24/19 03:27 PM
Lab ID:	1904325A-01AA	Dilution Factor:	97.0
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042409
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	4/25/19 02:11 PM
Lab ID:	1904325A-01B	Dilution Factor:	194
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042508
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	660	2200	3600	5100000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	124
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2 Lab Duplicate	Date/Time Analyzed:	4/25/19 02:33 PM
Lab ID:	1904325A-01BB	Dilution Factor:	194
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	msd14.i / 14042509
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	660	2200	3600	5100000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	121
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	4/24/19 03:59 PM
Lab ID:	1904325A-02A	Dilution Factor:	96.5
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	msd14.i / 14042410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	540	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5800	7200	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	450	1400	2400	6500
1,2-Dibromoethane (EDB)	106-93-4	650	2200	3700	9700
1,2-Dichlorobenzene	95-50-1	700	1700	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	390	1400	2400	3900
1,3-Butadiene	106-99-0	340	640	1100	Not Detected U
1,4-Dioxane	123-91-1	1900	3500	7000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	2800	5700	270000
2-Hexanone	591-78-6	3000	4000	7900	Not Detected U
2-Propanol	67-63-0	600	2400	4700	65000
4-Methyl-2-pentanone	108-10-1	960	1200	2000	Not Detected U
Acetone	67-64-1	670	2300	4600	1500000
Benzene	71-43-2	220	920	1500	1800000
Bromodichloromethane	75-27-4	320	1900	3200	Not Detected U
Bromoform	75-25-2	690	3000	5000	Not Detected U
Carbon Disulfide	75-15-0	910	3000	6000	Not Detected U
Carbon Tetrachloride	56-23-5	720	1800	3000	Not Detected U
Chloroethane	75-00-3	1500	2500	5100	Not Detected U
Chloroform	67-66-3	400	1400	2400	Not Detected U
Chloromethane	74-87-3	840	2000	4000	Not Detected U
Cyclohexane	110-82-7	370	1000	1700	5600000 J
Dibromochloromethane	124-48-1	850	2500	4100	Not Detected U
Ethanol	64-17-5	800	1800	3600	11000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	4/24/19 03:59 PM
Lab ID:	1904325A-02A	Dilution Factor:	96.5
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	msd14.i / 14042410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7000	Not Detected
Ethyl Benzene	100-41-4	420	1200	2100	390000
Freon 11	75-69-4	400	1600	2700	Not Detected U
Freon 113	76-13-1	660	2200	3700	Not Detected U
Freon 12	75-71-8	530	1400	2400	Not Detected U
Heptane	142-82-5	670	1200	2000	5100000 J
Hexane	110-54-3	420	1000	1700	7100000 J
m,p-Xylene	108-38-3	390	1200	2100	970000
Methylene Chloride	75-09-2	1000	3400	6700	Not Detected U
Naphthalene	91-20-3	780	5000	10000	Not Detected U
o-Xylene	95-47-6	560	1200	2100	230000
Propylene	115-07-1	570	1700	3300	30000
Styrene	100-42-5	390	1200	2000	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3300	Not Detected U
Tetrahydrofuran	109-99-9	500	850	1400	Not Detected U
Toluene	108-88-3	330	1100	1800	3300000
Total Xylene	1330-20-7	9000	D	2100	1200000
Trichloroethene	79-01-6	770	1600	2600	Not Detected U
Vinyl Chloride	75-01-4	430	740	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	4/24/19 03:59 PM
Lab ID:	1904325A-02A	Dilution Factor:	96.5
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	msd14.i / 14042410
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	130
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	4/24/19 04:39 PM
Lab ID:	1904325A-03A	Dilution Factor:	97.5
Date/Time Collected:	4/11/19 09:03 AM	Instrument/File Name:	msd14.i / 14042411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	550	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5800	7200	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	460	1400	2400	5600
1,2-Dibromoethane (EDB)	106-93-4	660	2200	3700	8800
1,2-Dichlorobenzene	95-50-1	710	1800	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	400	1400	2400	3400
1,3-Butadiene	106-99-0	340	650	1100	Not Detected U
1,4-Dioxane	123-91-1	1900	3500	7000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	2900	5800	260000
2-Hexanone	591-78-6	3000	4000	8000	Not Detected U
2-Propanol	67-63-0	610	2400	4800	62000
4-Methyl-2-pentanone	108-10-1	970	1200	2000	Not Detected U
Acetone	67-64-1	680	2300	4600	1400000
Benzene	71-43-2	220	930	1600	1700000
Bromodichloromethane	75-27-4	330	2000	3300	Not Detected U
Bromoform	75-25-2	700	3000	5000	Not Detected U
Carbon Disulfide	75-15-0	920	3000	6100	Not Detected U
Carbon Tetrachloride	56-23-5	730	1800	3100	Not Detected U
Chloroethane	75-00-3	1500	2600	5100	Not Detected U
Chloroform	67-66-3	410	1400	2400	Not Detected U
Chloromethane	74-87-3	840	2000	4000	Not Detected U
Cyclohexane	110-82-7	370	1000	1700	5400000 J
Dibromochloromethane	124-48-1	860	2500	4200	Not Detected U
Ethanol	64-17-5	800	1800	3700	9600

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	4/24/19 04:39 PM
Lab ID:	1904325A-03A	Dilution Factor:	97.5
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	msd14.i / 14042411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7000	Not Detected
Ethyl Benzene	100-41-4	420	1300	2100	330000
Freon 11	75-69-4	400	1600	2700	Not Detected U
Freon 113	76-13-1	660	2200	3700	Not Detected U
Freon 12	75-71-8	540	1400	2400	Not Detected U
Heptane	142-82-5	680	1200	2000	4900000 J
Hexane	110-54-3	420	1000	1700	7000000 J
m,p-Xylene	108-38-3	400	1300	2100	870000
Methylene Chloride	75-09-2	1000	3400	6800	Not Detected U
Naphthalene	91-20-3	790	5100	10000	Not Detected U
o-Xylene	95-47-6	570	1300	2100	210000
Propylene	115-07-1	570	1700	3400	32000
Styrene	100-42-5	390	1200	2100	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3300	Not Detected U
Tetrahydrofuran	109-99-9	510	860	1400	Not Detected U
Toluene	108-88-3	330	1100	1800	3000000
Total Xylene	1330-20-7	9100	D	2100	1100000
Trichloroethene	79-01-6	780	1600	2600	Not Detected U
Vinyl Chloride	75-01-4	430	750	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	4/24/19 04:39 PM
Lab ID:	1904325A-03A	Dilution Factor:	97.5
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	msd14.i / 14042411
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	128
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	4/24/19 05:16 PM
Lab ID:	1904325A-04A	Dilution Factor:	104
Date/Time Collected:	4/11/19 09:33 AM	Instrument/Filename:	msd14.i / 14042412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	580	1300	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6200	7700	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	480	1500	2600	74000
1,2-Dibromoethane (EDB)	106-93-4	700	2400	4000	2500 J
1,2-Dichlorobenzene	95-50-1	760	1900	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	420	1500	2600	26000
1,3-Butadiene	106-99-0	360	690	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3700	7500	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3100	6100	44000
2-Hexanone	591-78-6	3200	4300	8500	Not Detected U
2-Propanol	67-63-0	650	2600	5100	10000
4-Methyl-2-pentanone	108-10-1	1000	1300	2100	Not Detected U
Acetone	67-64-1	720	2500	4900	650000
Benzene	71-43-2	230	1000	1700	550000
Bromodichloromethane	75-27-4	350	2100	3500	Not Detected U
Bromoform	75-25-2	740	3200	5400	Not Detected U
Carbon Disulfide	75-15-0	980	3200	6500	Not Detected U
Carbon Tetrachloride	56-23-5	780	2000	3300	Not Detected U
Chloroethane	75-00-3	1600	2700	5500	Not Detected U
Chloroform	67-66-3	440	1500	2500	Not Detected U
Chloromethane	74-87-3	900	2100	4300	Not Detected U
Cyclohexane	110-82-7	400	1100	1800	1600000
Dibromochloromethane	124-48-1	910	2600	4400	Not Detected U
Ethanol	64-17-5	860	2000	3900	2900 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	4/24/19 05:16 PM
Lab ID:	1904325A-04A	Dilution Factor:	104
Date/Time Collected:	4/11/19 09:33 AM	Instrument/File Name:	msd14.i / 14042412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7500	Not Detected
Ethyl Benzene	100-41-4	450	1400	2200	150000
Freon 11	75-69-4	430	1800	2900	Not Detected U
Freon 113	76-13-1	710	2400	4000	Not Detected U
Freon 12	75-71-8	570	1500	2600	Not Detected U
Heptane	142-82-5	720	1300	2100	1800000
Hexane	110-54-3	450	1100	1800	2100000
m,p-Xylene	108-38-3	420	1400	2200	380000
Methylene Chloride	75-09-2	1100	3600	7200	Not Detected U
Naphthalene	91-20-3	840	5400	11000	1300 J
o-Xylene	95-47-6	610	1400	2200	120000
Propylene	115-07-1	610	1800	3600	29000
Styrene	100-42-5	420	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2100	3500	Not Detected U
Tetrahydrofuran	109-99-9	540	920	1500	Not Detected U
Toluene	108-88-3	350	1200	2000	1200000
Total Xylene	1330-20-7	9700	D	2200	500000
Trichloroethene	79-01-6	830	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	460	800	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	4/24/19 05:16 PM
Lab ID:	1904325A-04A	Dilution Factor:	104
Date/Time Collected:	4/11/19 09:33 AM	Instrument/Filename:	msd14.i / 14042412
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	118
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	4/24/19 05:52 PM
Lab ID:	1904325A-05A	Dilution Factor:	108
Date/Time Collected:	4/11/19 10:15 AM	Instrument/Filename:	msd14.i / 14042413
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	610	1300	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6500	8000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	45000
1,2-Dibromoethane (EDB)	106-93-4	730	2500	4100	6000
1,2-Dichlorobenzene	95-50-1	780	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	440	1600	2600	17000
1,3-Butadiene	106-99-0	380	720	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3200	6400	360000 J
2-Hexanone	591-78-6	3300	4400	8800	Not Detected U
2-Propanol	67-63-0	680	2600	5300	400000
4-Methyl-2-pentanone	108-10-1	1100	1300	2200	Not Detected U
Acetone	67-64-1	750	2600	5100	4400000 J
Benzene	71-43-2	240	1000	1700	1500000
Bromodichloromethane	75-27-4	360	2200	3600	Not Detected U
Bromoform	75-25-2	770	3300	5600	Not Detected U
Carbon Disulfide	75-15-0	1000	3400	6700	Not Detected U
Carbon Tetrachloride	56-23-5	810	2000	3400	Not Detected U
Chloroethane	75-00-3	1600	2800	5700	Not Detected U
Chloroform	67-66-3	450	1600	2600	Not Detected U
Chloromethane	74-87-3	940	2200	4500	Not Detected U
Cyclohexane	110-82-7	410	1100	1800	4800000 J
Dibromochloromethane	124-48-1	950	2800	4600	Not Detected U
Ethanol	64-17-5	890	2000	4100	7200

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	4/24/19 05:52 PM
Lab ID:	1904325A-05A	Dilution Factor:	108
Date/Time Collected:	4/11/19 10:15 AM	Instrument/Filename:	msd14.i / 14042413
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected
Ethyl Benzene	100-41-4	470	1400	2300	230000
Freon 11	75-69-4	450	1800	3000	Not Detected U
Freon 113	76-13-1	740	2500	4100	Not Detected U
Freon 12	75-71-8	590	1600	2700	Not Detected U
Heptane	142-82-5	750	1300	2200	4700000 J
Hexane	110-54-3	470	1100	1900	6300000 J
m,p-Xylene	108-38-3	440	1400	2300	550000
Methylene Chloride	75-09-2	1200	3800	7500	Not Detected U
Naphthalene	91-20-3	870	5700	11000	Not Detected U
o-Xylene	95-47-6	630	1400	2300	140000
Propylene	115-07-1	640	1800	3700	42000
Styrene	100-42-5	440	1400	2300	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3700	Not Detected U
Tetrahydrofuran	109-99-9	560	960	1600	Not Detected U
Toluene	108-88-3	370	1200	2000	2800000
Total Xylene	1330-20-7	10000	D	2300	690000
Trichloroethene	79-01-6	860	1700	2900	Not Detected U
Vinyl Chloride	75-01-4	480	830	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	4/24/19 05:52 PM
Lab ID:	1904325A-05A	Dilution Factor:	108
Date/Time Collected:	4/11/19 10:15 AM	Instrument/Filename:	msd14.i / 14042413
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	124
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	4/24/19 06:36 PM
Lab ID:	1904325A-06A	Dilution Factor:	101
Date/Time Collected:	4/11/19 10:47 AM	Instrument/File Name:	msd14.i / 14042414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	570	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6000	7500	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	470	1500	2500	65000
1,2-Dibromoethane (EDB)	106-93-4	680	2300	3900	12000
1,2-Dichlorobenzene	95-50-1	730	1800	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	410	1500	2500	21000
1,3-Butadiene	106-99-0	350	670	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	3600	7300	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	3000	6000	340000 J
2-Hexanone	591-78-6	3100	4100	8300	Not Detected U
2-Propanol	67-63-0	630	2500	5000	130000
4-Methyl-2-pentanone	108-10-1	1000	1200	2100	Not Detected U
Acetone	67-64-1	700	2400	4800	2300000
Benzene	71-43-2	220	970	1600	650000
Bromodichloromethane	75-27-4	340	2000	3400	Not Detected U
Bromoform	75-25-2	720	3100	5200	Not Detected U
Carbon Disulfide	75-15-0	960	3100	6300	Not Detected U
Carbon Tetrachloride	56-23-5	760	1900	3200	Not Detected U
Chloroethane	75-00-3	1500	2700	5300	Not Detected U
Chloroform	67-66-3	420	1500	2500	Not Detected U
Chloromethane	74-87-3	880	2100	4200	Not Detected U
Cyclohexane	110-82-7	380	1000	1700	2600000
Dibromochloromethane	124-48-1	890	2600	4300	Not Detected U
Ethanol	64-17-5	830	1900	3800	13000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	4/24/19 06:36 PM
Lab ID:	1904325A-06A	Dilution Factor:	101
Date/Time Collected:	4/11/19 10:47 AM	Instrument/File Name:	msd14.i / 14042414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7300	Not Detected
Ethyl Benzene	100-41-4	440	1300	2200	230000
Freon 11	75-69-4	420	1700	2800	Not Detected U
Freon 113	76-13-1	690	2300	3900	Not Detected U
Freon 12	75-71-8	550	1500	2500	Not Detected U
Heptane	142-82-5	700	1200	2100	4700000 J
Hexane	110-54-3	440	1100	1800	1700000
m,p-Xylene	108-38-3	410	1300	2200	540000
Methylene Chloride	75-09-2	1100	3500	7000	Not Detected U
Naphthalene	91-20-3	820	5300	10000	890 J
o-Xylene	95-47-6	590	1300	2200	140000
Propylene	115-07-1	590	1700	3500	37000
Styrene	100-42-5	410	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3400	Not Detected U
Tetrahydrofuran	109-99-9	530	890	1500	Not Detected U
Toluene	108-88-3	340	1100	1900	3400000
Total Xylene	1330-20-7	9400	D	2200	680000
Trichloroethene	79-01-6	800	1600	2700	Not Detected U
Vinyl Chloride	75-01-4	450	770	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	4/24/19 06:36 PM
Lab ID:	1904325A-06A	Dilution Factor:	101
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	msd14.i / 14042414
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	128
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 DUP	Date/Time Analyzed:	4/24/19 07:08 PM
Lab ID:	1904325A-07A	Dilution Factor:	100
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	msd14.i / 14042415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	560	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6000	7400	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	470	1500	2400	73000
1,2-Dibromoethane (EDB)	106-93-4	680	2300	3800	14000
1,2-Dichlorobenzene	95-50-1	730	1800	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	410	1500	2400	24000
1,3-Butadiene	106-99-0	350	660	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	3600	7200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	2900	5900	340000 J
2-Hexanone	591-78-6	3100	4100	8200	Not Detected U
2-Propanol	67-63-0	630	2400	4900	130000
4-Methyl-2-pentanone	108-10-1	1000	1200	2000	Not Detected U
Acetone	67-64-1	690	2400	4800	2300000
Benzene	71-43-2	220	960	1600	660000
Bromodichloromethane	75-27-4	340	2000	3400	Not Detected U
Bromoform	75-25-2	710	3100	5200	Not Detected U
Carbon Disulfide	75-15-0	950	3100	6200	Not Detected U
Carbon Tetrachloride	56-23-5	750	1900	3100	Not Detected U
Chloroethane	75-00-3	1500	2600	5300	Not Detected U
Chloroform	67-66-3	420	1500	2400	Not Detected U
Chloromethane	74-87-3	870	2100	4100	Not Detected U
Cyclohexane	110-82-7	380	1000	1700	2500000
Dibromochloromethane	124-48-1	880	2600	4200	Not Detected U
Ethanol	64-17-5	820	1900	3800	12000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 DUP	Date/Time Analyzed:	4/24/19 07:08 PM
Lab ID:	1904325A-07A	Dilution Factor:	100
Date/Time Collected:	4/11/19 10:47 AM	Instrument/File Name:	msd14.i / 14042415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7200	Not Detected
Ethyl Benzene	100-41-4	430	1300	2200	270000
Freon 11	75-69-4	420	1700	2800	Not Detected U
Freon 113	76-13-1	680	2300	3800	Not Detected U
Freon 12	75-71-8	550	1500	2500	Not Detected U
Heptane	142-82-5	690	1200	2000	4900000 J
Hexane	110-54-3	430	1000	1800	1600000
m,p-Xylene	108-38-3	410	1300	2200	640000
Methylene Chloride	75-09-2	1100	3500	6900	Not Detected U
Naphthalene	91-20-3	810	5200	10000	1300 J
o-Xylene	95-47-6	590	1300	2200	170000
Propylene	115-07-1	590	1700	3400	37000
Styrene	100-42-5	400	1300	2100	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3400	Not Detected U
Tetrahydrofuran	109-99-9	520	880	1500	Not Detected U
Toluene	108-88-3	340	1100	1900	3600000
Total Xylene	1330-20-7	9300	D	2200	810000
Trichloroethene	79-01-6	800	1600	2700	Not Detected U
Vinyl Chloride	75-01-4	440	770	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 DUP	Date/Time Analyzed:	4/24/19 07:08 PM
Lab ID:	1904325A-07A	Dilution Factor:	100
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	msd14.i / 14042415
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	126
4-Bromofluorobenzene	460-00-4	83-115	96
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	4/24/19 07:46 PM
Lab ID:	1904325A-08A	Dilution Factor:	102
Date/Time Collected:	4/11/19 11:46 AM	Instrument/Filename:	msd14.i / 14042416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	570	1200	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6100	7600	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	480	1500	2500	48000
1,2-Dibromoethane (EDB)	106-93-4	690	2400	3900	9200
1,2-Dichlorobenzene	95-50-1	740	1800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	420	1500	2500	17000
1,3-Butadiene	106-99-0	350	680	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	3700	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	3000	6000	340000 J
2-Hexanone	591-78-6	3100	4200	8400	Not Detected U
2-Propanol	67-63-0	640	2500	5000	78000
4-Methyl-2-pentanone	108-10-1	1000	1200	2100	Not Detected U
Acetone	67-64-1	710	2400	4800	1800000
Benzene	71-43-2	230	980	1600	440000
Bromodichloromethane	75-27-4	340	2000	3400	Not Detected U
Bromoform	75-25-2	730	3200	5300	Not Detected U
Carbon Disulfide	75-15-0	960	3200	6400	Not Detected U
Carbon Tetrachloride	56-23-5	760	1900	3200	Not Detected U
Chloroethane	75-00-3	1500	2700	5400	Not Detected U
Chloroform	67-66-3	430	1500	2500	Not Detected U
Chloromethane	74-87-3	880	2100	4200	Not Detected U
Cyclohexane	110-82-7	390	1000	1800	2000000
Dibromochloromethane	124-48-1	900	2600	4300	Not Detected U
Ethanol	64-17-5	840	1900	3800	10000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	4/24/19 07:46 PM
Lab ID:	1904325A-08A	Dilution Factor:	102
Date/Time Collected:	4/11/19 11:46 AM	Instrument/File Name:	msd14.i / 14042416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	440	1300	2200	190000
Freon 11	75-69-4	420	1700	2900	Not Detected U
Freon 113	76-13-1	700	2300	3900	Not Detected U
Freon 12	75-71-8	560	1500	2500	Not Detected U
Heptane	142-82-5	710	1200	2100	4200000
Hexane	110-54-3	440	1100	1800	1200000
m,p-Xylene	108-38-3	420	1300	2200	440000
Methylene Chloride	75-09-2	1100	3500	7100	Not Detected U
Naphthalene	91-20-3	820	5300	11000	Not Detected U
o-Xylene	95-47-6	600	1300	2200	100000
Propylene	115-07-1	600	1800	3500	33000
Styrene	100-42-5	410	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2100	3400	Not Detected U
Tetrahydrofuran	109-99-9	530	900	1500	Not Detected U
Toluene	108-88-3	340	1200	1900	3000000
Total Xylene	1330-20-7	9500	D	2200	540000
Trichloroethene	79-01-6	810	1600	2700	Not Detected U
Vinyl Chloride	75-01-4	450	780	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	4/24/19 07:46 PM
Lab ID:	1904325A-08A	Dilution Factor:	102
Date/Time Collected:	4/11/19 11:46 AM	Instrument/Filename:	msd14.i / 14042416
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	121
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/24/19 12:28 PM
Lab ID:	1904325A-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	29	59	Not Detected U
2-Hexanone	591-78-6	31	41	82	Not Detected U
2-Propanol	67-63-0	6.3	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	24	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	26	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	21	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	19	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/24/19 12:28 PM
Lab ID:	1904325A-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	35	69	Not Detected U
Naphthalene	91-20-3	8.1	52	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	17	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	93	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/24/19 12:28 PM
Lab ID:	1904325A-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042406a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/25/19 11:27 AM
Lab ID:	1904325A-09B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042507a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	108-88-3	3.4	11	19	5.7 J

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	94
4-Bromofluorobenzene	460-00-4	83-115	97
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 09:21 AM
Lab ID:	1904325A-10A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	106
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	99
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	102
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	101
4-Methyl-2-pentanone	108-10-1	105
Acetone	67-64-1	102
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	96
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	100
Carbon Tetrachloride	56-23-5	101
Chloroethane	75-00-3	110
Chloroform	67-66-3	98
Chloromethane	74-87-3	103
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	99
Ethanol	64-17-5	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 09:21 AM
Lab ID:	1904325A-10A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	110
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	103
Freon 113	76-13-1	101
Freon 12	75-71-8	102
Heptane	142-82-5	94
Hexane	110-54-3	102
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	125
o-Xylene	95-47-6	97
Propylene	115-07-1	94
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	96
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	95
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 09:21 AM
Lab ID:	1904325A-10A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/25/19 07:38 AM
Lab ID:	1904325A-10B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042502a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	93
4-Bromofluorobenzene	460-00-4	83-115	104
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 11:51 PM
Lab ID:	1904325A-10C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042423
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	95
1,2,4-Trimethylbenzene	95-63-6	98
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	106
1,3-Butadiene	106-99-0	98
1,4-Dioxane	123-91-1	106
2-Butanone (Methyl Ethyl Ketone)	78-93-3	111
2-Hexanone	591-78-6	105
2-Propanol	67-63-0	102
4-Methyl-2-pentanone	108-10-1	110
Acetone	67-64-1	117
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	94
Chloroethane	75-00-3	110
Chloroform	67-66-3	99
Chloromethane	74-87-3	100
Cyclohexane	110-82-7	112
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	111

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 11:51 PM
Lab ID:	1904325A-10C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042423
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	99
Freon 11	75-69-4	99
Freon 113	76-13-1	104
Freon 12	75-71-8	99
Heptane	142-82-5	105
Hexane	110-54-3	110
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	98
Naphthalene	91-20-3	107
o-Xylene	95-47-6	99
Propylene	115-07-1	97
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	98
Tetrahydrofuran	109-99-9	100
Toluene	108-88-3	104
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	93

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/24/19 11:51 PM
Lab ID:	1904325A-10C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042423
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/25/19 03:02 PM
Lab ID:	1904325A-10D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042510a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	95

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	94
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/24/19 10:16 AM
Lab ID:	1904325A-11A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	107
1,2,4-Trichlorobenzene	120-82-1	132
1,2,4-Trimethylbenzene	95-63-6	103
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	109
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	106
1,4-Dioxane	123-91-1	116
2-Butanone (Methyl Ethyl Ketone)	78-93-3	106
2-Hexanone	591-78-6	126
2-Propanol	67-63-0	110
4-Methyl-2-pentanone	108-10-1	109
Acetone	67-64-1	109
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	105
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	106
Chloroethane	75-00-3	115
Chloroform	67-66-3	103
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	107
Dibromochloromethane	124-48-1	103
Ethanol	64-17-5	118

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/24/19 10:16 AM
Lab ID:	1904325A-11A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	111
Freon 113	76-13-1	104
Freon 12	75-71-8	109
Heptane	142-82-5	102
Hexane	110-54-3	106
m,p-Xylene	108-38-3	99
Methylene Chloride	75-09-2	104
Naphthalene	91-20-3	114
o-Xylene	95-47-6	101
Propylene	115-07-1	95
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	104
Toluene	108-88-3	99
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	110

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/24/19 10:16 AM
Lab ID:	1904325A-11A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/24/19 10:54 AM
Lab ID:	1904325A-11AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	103
1,2,4-Trichlorobenzene	120-82-1	121
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	108
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	118
2-Butanone (Methyl Ethyl Ketone)	78-93-3	109
2-Hexanone	591-78-6	124
2-Propanol	67-63-0	111
4-Methyl-2-pentanone	108-10-1	112
Acetone	67-64-1	107
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	106
Carbon Disulfide	75-15-0	92
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	106
Chloroform	67-66-3	103
Chloromethane	74-87-3	105
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	104
Ethanol	64-17-5	124

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/24/19 10:54 AM
Lab ID:	1904325A-11AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	111
Freon 113	76-13-1	103
Freon 12	75-71-8	105
Heptane	142-82-5	100
Hexane	110-54-3	102
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	105
o-Xylene	95-47-6	104
Propylene	115-07-1	98
Styrene	100-42-5	105
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	103
Toluene	108-88-3	100
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	108

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/24/19 10:54 AM
Lab ID:	1904325A-11AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/25/19 08:59 AM
Lab ID:	1904325A-11B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042504a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	92
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/25/19 09:35 AM
Lab ID:	1904325A-11BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042505a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Toluene	108-88-3	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	92
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	103

* % Recovery is calculated using unrounded analytical results.

4/24/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1904325B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/12/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

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F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1904325B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/12/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 102.2	Modified TO-3	9.2 "Hg	5.1 psi
02A	KAFB-106V2 117.1	Modified TO-3	9.4 "Hg	4.8 psi
03A	KAFB-106V2 117.1 DUP	Modified TO-3	9.4 "Hg	5 psi
04A	KAFB-106V2 159.9	Modified TO-3	10.6 "Hg	5 psi
04AA	KAFB-106V2 159.9 Lab Duplicate	Modified TO-3	10.6 "Hg	5 psi
05A	KAFB-106V2 217.1	Modified TO-3	11.2 "Hg	5.1 psi
06A	KAFB-106V2 252.2	Modified TO-3	9.8 "Hg	5.3 psi
07A	KAFB-106V2 252.2 DUP	Modified TO-3	9.6 "Hg	5.3 psi
08A	KAFB-106V2 269.5	Modified TO-3	10.4 "Hg	4.9 psi
09A	Lab Blank	Modified TO-3	NA	NA
10A	LCS	Modified TO-3	NA	NA
10AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/24/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 TO-3
EA Engineering
Workorder# 1904325B

Eight 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on April 12, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

The Chain of Custody (COC) information for samples KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2, KAFB-106V2 252.2 DUP and KAFB-106V2 269.5 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used to process and report the samples.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound

hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

TPH (Gasoline Range) and Fluorobenzene (FID) were manually integrated in sample KAFB-106V2 102.2.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	4/18/19 09:05 AM
Lab ID:	1904325B-01A	Dilution Factor:	3880
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	gcd.i / d041807
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	320000	400000	370000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	112

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	4/18/19 09:54 AM
Lab ID:	1904325B-02A	Dilution Factor:	3860
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	gcd.i / d041808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	220000	320000	390000	180000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	100

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	4/18/19 10:44 AM
Lab ID:	1904325B-03A	Dilution Factor:	3900
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	gcd.i / d041809
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	320000	400000	170000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	4/18/19 11:35 AM
Lab ID:	1904325B-04A	Dilution Factor:	2760
Date/Time Collected:	4/11/19 09:33 AM	Instrument/Filename:	gcd.i / d041810
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	43000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	96

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 159.9 Lab Duplicate	Date/Time Analyzed:	4/18/19 06:05 PM
Lab ID:	1904325B-04AA	Dilution Factor:	2760
Date/Time Collected:	4/11/19 09:33 AM	Instrument/Filename:	gcd.i / d041819
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	46000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	91

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	4/18/19 02:30 PM
Lab ID:	1904325B-05A	Dilution Factor:	2870
Date/Time Collected:	4/11/19 10:15 AM	Instrument/Filename:	gcd.i / d041814
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	170000	230000	290000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	111

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	4/18/19 03:58 PM
Lab ID:	1904325B-06A	Dilution Factor:	4040
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	gcd.i / d041816
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	240000	330000	410000	90000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2 DUP	Date/Time Analyzed:	4/18/19 04:41 PM
Lab ID:	1904325B-07A	Dilution Factor:	4000
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	gcd.i / d041817
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	330000	410000	90000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	101

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	4/18/19 05:24 PM
Lab ID:	1904325B-08A	Dilution Factor:	2720
Date/Time Collected:	4/11/19 11:46 AM	Instrument/Filename:	gcd.i / d041818
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	94000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/17/19 10:33 PM
Lab ID:	1904325B-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041805a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	97

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/17/19 08:24 PM
Lab ID:	1904325B-10A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041802a
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		98

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	99

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/17/19 09:03 PM
Lab ID:	1904325B-10AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041803a
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		99

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	101

* % Recovery is calculated using unrounded analytical results.

8/1/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1904325CR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/12/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

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F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1904325CR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/12/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/25/2019		
DATE REISSUED:	08/01/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 102.2	Modified ASTM D-1945	9.2 "Hg	5.1 psi
01AA	KAFB-106V2 102.2 Lab Duplicate	Modified ASTM D-1945	9.2 "Hg	5.1 psi
02A	KAFB-106V2 117.1	Modified ASTM D-1945	9.4 "Hg	4.8 psi
03A	KAFB-106V2 117.1 DUP	Modified ASTM D-1945	9.4 "Hg	5 psi
04A	KAFB-106V2 159.9	Modified ASTM D-1945	10.6 "Hg	5 psi
05A	KAFB-106V2 217.1	Modified ASTM D-1945	11.2 "Hg	5.1 psi
06A	KAFB-106V2 252.2	Modified ASTM D-1945	9.8 "Hg	5.3 psi
07A	KAFB-106V2 252.2 DUP	Modified ASTM D-1945	9.6 "Hg	5.3 psi
08A	KAFB-106V2 269.5	Modified ASTM D-1945	10.4 "Hg	4.9 psi
09A	Lab Blank	Modified ASTM D-1945	NA	NA
09B	Lab Blank	Modified ASTM D-1945	NA	NA
10A	LCS	Modified ASTM D-1945	NA	NA
10AA	LCSD	Modified ASTM D-1945	NA	NA
10B	LCS	Modified ASTM D-1945	NA	NA
10BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 08/01/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
DoD QSM 5.1 ASTM D1945
EA Engineering
Workorder# 1904325CR1

Eight 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on April 12, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD <= 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V2 117.1 did not match the information on the canister with regard to canister barcode. The sample labeled 2712 on the COC is labeled as 9267 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

The Chain of Custody (COC) information for samples KAFB-106V2 102.2, KAFB-106V2 117.1,

KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2, KAFB-106V2 252.2 DUP and KAFB-106V2 269.5 did not match the entries on the sample tags with regard to sample identification. Therefore the information on the COC was used to process and report the samples.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Methane was manually integrated in sample KAFB-106V2 159.9.

Methane and Ethane were manually integrated in samples KAFB-106V2 102.2, KAFB-106V2 102.2 Lab Duplicate, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 217.1, KAFB-106V2 252.2, KAFB-106V2 252.2 DUP and KAFB-106V2 269.5.

The workorder was reissued on 08/01/2019 to report Pentane for KAFB-106V2 159.9 as required by the project specifications.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	4/17/19 08:42 PM
Lab ID:	1904325CR1-01A	Dilution Factor:	1.94
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	gc10.i / 10041808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0095
Carbon Dioxide	124-38-9	0.0021	0.0093	0.019	13
Carbon Monoxide	630-08-0	0.0026	0.0093	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.0029
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000097	0.00019	0.021
Nitrogen	7727-37-9	0.13	0.13	0.19	84
Oxygen	7782-44-7	0.036	0.036	0.19	1.2
Pentane	109-66-0	0.000048	0.00021	0.0019	0.21
Propane	74-98-6	0.000058	0.00021	0.0019	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 100

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 102.2 Lab Duplicate	Date/Time Analyzed:	4/17/19 09:13 PM
Lab ID:	1904325CR1-01AA	Dilution Factor:	1.94
Date/Time Collected:	4/11/19 08:33 AM	Instrument/Filename:	gc10.i / 10041809
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0097
Carbon Dioxide	124-38-9	0.0021	0.0093	0.019	13
Carbon Monoxide	630-08-0	0.0026	0.0093	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.0030
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000097	0.00019	0.022
Nitrogen	7727-37-9	0.13	0.13	0.19	83
Oxygen	7782-44-7	0.036	0.036	0.19	1.2
Pentane	109-66-0	0.000048	0.00021	0.0019	0.23
Propane	74-98-6	0.000058	0.00021	0.0019	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 120

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	4/17/19 10:12 PM
Lab ID:	1904325CR1-02A	Dilution Factor:	1.93
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	gc10.i / 10041811
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0093
Carbon Dioxide	124-38-9	0.0021	0.0093	0.019	13
Carbon Monoxide	630-08-0	0.0026	0.0093	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.0028
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000096	0.00019	0.020
Nitrogen	7727-37-9	0.13	0.13	0.19	84
Oxygen	7782-44-7	0.036	0.036	0.19	1.3
Pentane	109-66-0	0.000048	0.00021	0.0019	0.21
Propane	74-98-6	0.000058	0.00021	0.0019	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 100

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	4/17/19 10:42 PM
Lab ID:	1904325CR1-03A	Dilution Factor:	1.95
Date/Time Collected:	4/11/19 09:03 AM	Instrument/Filename:	gc10.i / 10041812
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0020	0.0091
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	13
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000049	0.00021	0.0020	0.0028
Hydrogen	1333-74-0	0.0029	0.012	0.020	Not Detected U
Methane	74-82-8	0.000053	0.000098	0.00020	0.020
Nitrogen	7727-37-9	0.13	0.13	0.20	83
Oxygen	7782-44-7	0.036	0.036	0.20	1.2
Pentane	109-66-0	0.000049	0.00021	0.0020	0.22
Propane	74-98-6	0.000058	0.00021	0.0020	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 100

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	4/17/19 11:06 PM
Lab ID:	1904325CR1-04A	Dilution Factor:	2.07
Date/Time Collected:	4/11/19 09:33 AM	Instrument/Filename:	gc10.i / 10041813R1
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0035
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	12
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0023
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.0088
Nitrogen	7727-37-9	0.14	0.14	0.21	86
Oxygen	7782-44-7	0.038	0.038	0.21	1.6
Pentane	109-66-0	0.000052	0.00023	0.0021	0.085
Propane	74-98-6	0.000062	0.00023	0.0021	0.00096 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 40

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	4/17/19 11:32 PM
Lab ID:	1904325CR1-05A	Dilution Factor:	2.15
Date/Time Collected:	4/11/19 10:15 AM	Instrument/Filename:	gc10.i / 10041814
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0018 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	12
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0021 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0050
Nitrogen	7727-37-9	0.14	0.14	0.22	85
Oxygen	7782-44-7	0.040	0.040	0.22	1.4
Pentane	109-66-0	0.000054	0.00024	0.0022	0.063
Propane	74-98-6	0.000064	0.00024	0.0022	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 80

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	4/18/19 10:08 AM
Lab ID:	1904325CR1-06A	Dilution Factor:	2.02
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	gc10.i / 10041818
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0018 J
Carbon Dioxide	124-38-9	0.0022	0.0097	0.020	7.6
Carbon Monoxide	630-08-0	0.0027	0.0097	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0021
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0032
Nitrogen	7727-37-9	0.14	0.14	0.20	84
Oxygen	7782-44-7	0.037	0.037	0.20	7.9
Pentane	109-66-0	0.000050	0.00022	0.0020	0.027
Propane	74-98-6	0.000061	0.00022	0.0020	0.0020 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 42

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 DUP	Date/Time Analyzed:	4/18/19 11:52 AM
Lab ID:	1904325CR1-07A	Dilution Factor:	2.00
Date/Time Collected:	4/11/19 10:47 AM	Instrument/Filename:	gc10.i / 10041821
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0018 J
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	7.5
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0020
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0032
Nitrogen	7727-37-9	0.14	0.14	0.20	84
Oxygen	7782-44-7	0.037	0.037	0.20	8.0
Pentane	109-66-0	0.000050	0.00022	0.0020	0.028
Propane	74-98-6	0.000060	0.00022	0.0020	0.0020 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 44

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	4/18/19 01:06 PM
Lab ID:	1904325CR1-08A	Dilution Factor:	2.04
Date/Time Collected:	4/11/19 11:46 AM	Instrument/Filename:	gc10.i / 10041823
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0017 J
Carbon Dioxide	124-38-9	0.0022	0.0098	0.020	6.8
Carbon Monoxide	630-08-0	0.0027	0.0098	0.020	Not Detected U
Ethane	74-84-0	0.000051	0.00022	0.0020	0.0017 J
Hydrogen	1333-74-0	0.0031	0.013	0.020	Not Detected U
Methane	74-82-8	0.000055	0.00010	0.00020	0.0026
Nitrogen	7727-37-9	0.14	0.14	0.20	83
Oxygen	7782-44-7	0.038	0.038	0.20	9.6
Pentane	109-66-0	0.000051	0.00022	0.0020	0.024
Propane	74-98-6	0.000061	0.00022	0.0020	0.0018 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 42

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/17/19 07:49 PM
Lab ID:	1904325CR1-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041807
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/17/19 07:25 PM
Lab ID:	1904325CR1-09B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041806c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/17/19 04:38 PM
Lab ID:	1904325CR1-10A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041802a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	99
Carbon Dioxide	124-38-9	99
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	100
Methane	74-82-8	101
Nitrogen	7727-37-9	91
Oxygen	7782-44-7	105
Pentane	109-66-0	101
Propane	74-98-6	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/17/19 05:55 PM
Lab ID:	1904325CR1-10AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041803a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	101
Methane	74-82-8	102
Nitrogen	7727-37-9	91
Oxygen	7782-44-7	104
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/17/19 06:54 PM
Lab ID:	1904325CR1-10B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041805c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/18/19 02:05 PM
Lab ID:	1904325CR1-10BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10041824c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

5/30/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1905302A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 5/15/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1905302A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-15	12.2 "Hg	5.1 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified TO-15	12.2 "Hg	5.1 psi
02A	KAFB-106V1 112.6	Modified TO-15	10.4 "Hg	4.9 psi
03A	KAFB-106V1 159.6	Modified TO-15	11.2 "Hg	4.9 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-15	11.4 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-15	11 "Hg	5 psi
05B	KAFB-106V1 217.1	Modified TO-15	11 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-15	12.4 "Hg	4.9 psi
06B	KAFB-106V1 252.1	Modified TO-15	12.4 "Hg	4.9 psi
07A	KAFB-106V1 262.6	Modified TO-15	11.6 "Hg	4.9 psi
07B	KAFB-106V1 262.6	Modified TO-15	11.6 "Hg	4.9 psi
08A	KAFB-106V2 102.2	Modified TO-15	11.4 "Hg	4.9 psi
08B	KAFB-106V2 102.2	Modified TO-15	11.4 "Hg	4.9 psi
09A	KAFB-106V2 117.1	Modified TO-15	13.3 "Hg	5 psi
09B	KAFB-106V2 117.1	Modified TO-15	13.3 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-15	11.2 "Hg	5 psi
10B	KAFB-106V2 117.1 DUP	Modified TO-15	11.2 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-15	11.4 "Hg	4.9 psi
11AA	KAFB-106V2 159.9 Lab Duplicate	Modified TO-15	11.4 "Hg	4.9 psi
12A	KAFB-106V2 217.1	Modified TO-15	10.8 "Hg	4.9 psi
12B	KAFB-106V2 217.1	Modified TO-15	10.8 "Hg	4.9 psi
13A	Lab Blank	Modified TO-15	NA	NA
13B	Lab Blank	Modified TO-15	NA	NA

Continued on next page

WORK ORDER #: 1905302A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
14A	CCV	Modified TO-15	NA	NA
14B	CCV	Modified TO-15	NA	NA
14C	CCV	Modified TO-15	NA	NA
14D	CCV	Modified TO-15	NA	NA
15A	LCS	Modified TO-15	NA	NA
15AA	LCSD	Modified TO-15	NA	NA
15B	LCS	Modified TO-15	NA	NA
15BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/30/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 TO-15 LL/SIM
EA Engineering
Workorder# 1905302A

Twelve 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on May 15, 2019. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modification taken to run these samples is summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-15 LL/SIM</i>	<i>ATL Modifications</i>
Blank and standards	Zero air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Samples were analyzed in two analytical batches on instrument MSD-14 on 5/23/19 and 5/24/19. The initial continuing calibration verification (CCV) for the batch is reported as lab fractions 14A and 14C and the ending CCV is reported as lab fractions 14B and 14D.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) study and Method Detection Limit (MDL) study are not maintained for

Total Xylenes and non-standard compounds.

All samples were transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on all samples due to the presence of high level target species.

High concentrations of VOCs in samples KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP and KAFB-106V2 217.1 required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags, and a CN-flag was applied to Toluene concentrations to indicate a high bias.

Acetone, Hexane, 2-Butanone and Cyclohexane exceeded the instrument's calibration range for samples KAFB-106V1 102.1 and KAFB-106V1 102.1 Lab Duplicate and were flagged accordingly.

Hexane exceeded the instrument's calibration range for sample KAFB-106V1 112.6 and was flagged accordingly.

Acetone, Hexane and Cyclohexane exceeded the instrument's calibration range for sample KAFB-106V1 159.6 and was flagged accordingly.

Acetone, Hexane, Cyclohexane and Heptane exceeded the instrument's calibration range for sample KAFB-106V1 159.6 DUP and was flagged accordingly.

The Continuing Calibration Verification (CCV) analyzed on 5/23/19 and 5/24/19 did not meet project requirement control limits of 70-130% recovery (R) for Naphthalene.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

CN - See case narrative explanation

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	5/23/19 07:09 PM
Lab ID:	1905302A-01A	Dilution Factor:	114
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	msd14.i / 14052323
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	640	1400	2300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6800	8500	17000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	530	1700	2800	170000
1,2-Dibromoethane (EDB)	106-93-4	770	2600	4400	3500 J
1,2-Dichlorobenzene	95-50-1	830	2000	3400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	460	1700	2800	48000
1,3-Butadiene	106-99-0	400	760	1300	Not Detected U
1,4-Dioxane	123-91-1	2200	4100	8200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	3400	6700	770000 J
2-Hexanone	591-78-6	3500	4700	9300	4800 J
2-Propanol	67-63-0	710	2800	5600	330000
4-Methyl-2-pentanone	108-10-1	1100	1400	2300	7600
Acetone	67-64-1	790	2700	5400	5000000 J
Benzene	71-43-2	250	1100	1800	2300000
Bromodichloromethane	75-27-4	380	2300	3800	Not Detected U
Bromoform	75-25-2	810	3500	5900	Not Detected U
Carbon Disulfide	75-15-0	1100	3600	7100	Not Detected U
Carbon Tetrachloride	56-23-5	850	2200	3600	Not Detected U
Chloroethane	75-00-3	1700	3000	6000	Not Detected U
Chloroform	67-66-3	480	1700	2800	Not Detected U
Chloromethane	74-87-3	990	2400	4700	Not Detected U
Cyclohexane	110-82-7	440	1200	2000	5400000 J
Dibromochloromethane	124-48-1	1000	2900	4800	Not Detected U
Ethanol	64-17-5	940	2100	4300	160000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	5/23/19 07:09 PM
Lab ID:	1905302A-01A	Dilution Factor:	114
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	msd14.i / 14052323
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	8200	Not Detected
Ethyl Benzene	100-41-4	490	1500	2500	280000
Freon 11	75-69-4	470	1900	3200	Not Detected U
Freon 113	76-13-1	780	2600	4400	Not Detected U
Freon 12	75-71-8	620	1700	2800	Not Detected U
Heptane	142-82-5	790	1400	2300	3000000
Hexane	110-54-3	490	1200	2000	8800000 J
m,p-Xylene	108-38-3	460	1500	2500	450000
Methylene Chloride	75-09-2	1200	4000	7900	Not Detected U
Naphthalene	91-20-3	920	6000	12000	1600 JUJ
o-Xylene	95-47-6	670	1500	2500	160000
Propylene	115-07-1	670	2000	3900	35000
Styrene	100-42-5	460	1400	2400	Not Detected U
Tetrachloroethene	127-18-4	1400	2300	3900	Not Detected U
Tetrahydrofuran	109-99-9	600	1000	1700	Not Detected U
Toluene	108-88-3	390	1300	2100	2100000
Total Xylene	1330-20-7	NA	D	2500	610000
Trichloroethene	79-01-6	910	1800	3100	Not Detected U
Vinyl Chloride	75-01-4	500	870	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	5/23/19 07:09 PM
Lab ID:	1905302A-01A	Dilution Factor:	114
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	msd14.i / 14052323
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	126
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	5/23/19 07:33 PM
Lab ID:	1905302A-01AA	Dilution Factor:	114
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	msd14.i / 14052324
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	640	1400	2300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6800	8500	17000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	530	1700	2800	140000
1,2-Dibromoethane (EDB)	106-93-4	770	2600	4400	3200 J
1,2-Dichlorobenzene	95-50-1	830	2000	3400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	460	1700	2800	40000
1,3-Butadiene	106-99-0	400	760	1300	Not Detected U
1,4-Dioxane	123-91-1	2200	4100	8200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	3400	6700	740000 J
2-Hexanone	591-78-6	3500	4700	9300	4200 J
2-Propanol	67-63-0	710	2800	5600	310000
4-Methyl-2-pentanone	108-10-1	1100	1400	2300	6400
Acetone	67-64-1	790	2700	5400	4800000 J
Benzene	71-43-2	250	1100	1800	2200000
Bromodichloromethane	75-27-4	380	2300	3800	Not Detected U
Bromoform	75-25-2	810	3500	5900	Not Detected U
Carbon Disulfide	75-15-0	1100	3600	7100	Not Detected U
Carbon Tetrachloride	56-23-5	850	2200	3600	Not Detected U
Chloroethane	75-00-3	1700	3000	6000	Not Detected U
Chloroform	67-66-3	480	1700	2800	Not Detected U
Chloromethane	74-87-3	990	2400	4700	Not Detected U
Cyclohexane	110-82-7	440	1200	2000	5000000 J
Dibromochloromethane	124-48-1	1000	2900	4800	Not Detected U
Ethanol	64-17-5	940	2100	4300	150000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	5/23/19 07:33 PM
Lab ID:	1905302A-01AA	Dilution Factor:	114
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	msd14.i / 14052324
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	8200	Not Detected
Ethyl Benzene	100-41-4	490	1500	2500	240000
Freon 11	75-69-4	470	1900	3200	Not Detected U
Freon 113	76-13-1	780	2600	4400	Not Detected U
Freon 12	75-71-8	620	1700	2800	Not Detected U
Heptane	142-82-5	790	1400	2300	2800000
Hexane	110-54-3	490	1200	2000	8200000 J
m,p-Xylene	108-38-3	460	1500	2500	380000
Methylene Chloride	75-09-2	1200	4000	7900	Not Detected U
Naphthalene	91-20-3	920	6000	12000	1900 JUJ
o-Xylene	95-47-6	670	1500	2500	130000
Propylene	115-07-1	670	2000	3900	36000
Styrene	100-42-5	460	1400	2400	Not Detected U
Tetrachloroethene	127-18-4	1400	2300	3900	Not Detected U
Tetrahydrofuran	109-99-9	600	1000	1700	Not Detected U
Toluene	108-88-3	390	1300	2100	1900000
Total Xylene	1330-20-7	NA	D	2500	510000
Trichloroethene	79-01-6	910	1800	3100	Not Detected U
Vinyl Chloride	75-01-4	500	870	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	5/23/19 07:33 PM
Lab ID:	1905302A-01AA	Dilution Factor:	114
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	msd14.i / 14052324
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	122
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	5/23/19 07:57 PM
Lab ID:	1905302A-02A	Dilution Factor:	102
Date/Time Collected:	5/9/19 02:55 PM	Instrument/Filename:	msd14.i / 14052325
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	570	1200	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6100	7600	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	480	1500	2500	94000
1,2-Dibromoethane (EDB)	106-93-4	690	2400	3900	2800 J
1,2-Dichlorobenzene	95-50-1	740	1800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	420	1500	2500	27000
1,3-Butadiene	106-99-0	350	680	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	3700	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	3000	6000	270000
2-Hexanone	591-78-6	3100	4200	8400	Not Detected U
2-Propanol	67-63-0	640	2500	5000	100000
4-Methyl-2-pentanone	108-10-1	1000	1200	2100	5700
Acetone	67-64-1	710	2400	4800	2200000
Benzene	71-43-2	230	980	1600	1400000
Bromodichloromethane	75-27-4	340	2000	3400	Not Detected U
Bromoform	75-25-2	730	3200	5300	Not Detected U
Carbon Disulfide	75-15-0	960	3200	6400	Not Detected U
Carbon Tetrachloride	56-23-5	760	1900	3200	Not Detected U
Chloroethane	75-00-3	1500	2700	5400	Not Detected U
Chloroform	67-66-3	430	1500	2500	Not Detected U
Chloromethane	74-87-3	880	2100	4200	Not Detected U
Cyclohexane	110-82-7	390	1000	1800	3300000
Dibromochloromethane	124-48-1	900	2600	4300	Not Detected U
Ethanol	64-17-5	840	1900	3800	80000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	5/23/19 07:57 PM
Lab ID:	1905302A-02A	Dilution Factor:	102
Date/Time Collected:	5/9/19 02:55 PM	Instrument/Filename:	msd14.i / 14052325
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	440	1300	2200	200000
Freon 11	75-69-4	420	1700	2900	Not Detected U
Freon 113	76-13-1	700	2300	3900	Not Detected U
Freon 12	75-71-8	560	1500	2500	Not Detected U
Heptane	142-82-5	710	1200	2100	2200000
Hexane	110-54-3	440	1100	1800	5300000 J
m,p-Xylene	108-38-3	420	1300	2200	310000
Methylene Chloride	75-09-2	1100	3500	7100	Not Detected U
Naphthalene	91-20-3	820	5300	11000	3100 JUJ
o-Xylene	95-47-6	600	1300	2200	100000
Propylene	115-07-1	600	1800	3500	29000
Styrene	100-42-5	410	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2100	3400	Not Detected U
Tetrahydrofuran	109-99-9	530	900	1500	Not Detected U
Toluene	108-88-3	340	1200	1900	1500000
Total Xylene	1330-20-7	NA	D	2200	420000
Trichloroethene	79-01-6	810	1600	2700	Not Detected U
Vinyl Chloride	75-01-4	450	780	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	5/23/19 07:57 PM
Lab ID:	1905302A-02A	Dilution Factor:	102
Date/Time Collected:	5/9/19 02:55 PM	Instrument/Filename:	msd14.i / 14052325
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	117
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	5/23/19 08:21 PM
Lab ID:	1905302A-03A	Dilution Factor:	106
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	msd14.i / 14052326
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	600	1300	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6400	7900	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	180000
1,2-Dibromoethane (EDB)	106-93-4	720	2400	4100	2600 J
1,2-Dichlorobenzene	95-50-1	770	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	430	1600	2600	53000
1,3-Butadiene	106-99-0	370	700	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3800	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3100	6200	150000
2-Hexanone	591-78-6	3200	4300	8700	5700 J
2-Propanol	67-63-0	660	2600	5200	400000
4-Methyl-2-pentanone	108-10-1	1000	1300	2200	6400
Acetone	67-64-1	740	2500	5000	2900000 J
Benzene	71-43-2	240	1000	1700	1600000
Bromodichloromethane	75-27-4	360	2100	3600	Not Detected U
Bromoform	75-25-2	760	3300	5500	Not Detected U
Carbon Disulfide	75-15-0	1000	3300	6600	Not Detected U
Carbon Tetrachloride	56-23-5	790	2000	3300	Not Detected U
Chloroethane	75-00-3	1600	2800	5600	Not Detected U
Chloroform	67-66-3	440	1600	2600	Not Detected U
Chloromethane	74-87-3	920	2200	4400	Not Detected U
Cyclohexane	110-82-7	400	1100	1800	4400000 J
Dibromochloromethane	124-48-1	930	2700	4500	Not Detected U
Ethanol	64-17-5	870	2000	4000	93000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	5/23/19 08:21 PM
Lab ID:	1905302A-03A	Dilution Factor:	106
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	msd14.i / 14052326
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected
Ethyl Benzene	100-41-4	460	1400	2300	390000
Freon 11	75-69-4	440	1800	3000	Not Detected U
Freon 113	76-13-1	720	2400	4100	Not Detected U
Freon 12	75-71-8	580	1600	2600	Not Detected U
Heptane	142-82-5	730	1300	2200	4300000
Hexane	110-54-3	460	1100	1900	5900000 J
m,p-Xylene	108-38-3	430	1400	2300	880000
Methylene Chloride	75-09-2	1100	3700	7400	Not Detected U
Naphthalene	91-20-3	860	5600	11000	Not Detected UJ
o-Xylene	95-47-6	620	1400	2300	280000
Propylene	115-07-1	620	1800	3600	29000
Styrene	100-42-5	430	1400	2200	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3600	Not Detected U
Tetrahydrofuran	109-99-9	550	940	1600	Not Detected U
Toluene	108-88-3	360	1200	2000	2800000
Total Xylene	1330-20-7	NA	D	2300	1200000
Trichloroethene	79-01-6	840	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	470	810	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	5/23/19 08:21 PM
Lab ID:	1905302A-03A	Dilution Factor:	106
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	msd14.i / 14052326
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	124
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	5/23/19 08:45 PM
Lab ID:	1905302A-04A	Dilution Factor:	108
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	msd14.i / 14052327
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	610	1300	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6500	8000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	200000
1,2-Dibromoethane (EDB)	106-93-4	730	2500	4100	2700 J
1,2-Dichlorobenzene	95-50-1	780	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	440	1600	2600	60000
1,3-Butadiene	106-99-0	380	720	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3200	6400	160000
2-Hexanone	591-78-6	3300	4400	8800	7300 J
2-Propanol	67-63-0	680	2600	5300	420000
4-Methyl-2-pentanone	108-10-1	1100	1300	2200	5600
Acetone	67-64-1	750	2600	5100	3000000 J
Benzene	71-43-2	240	1000	1700	1700000
Bromodichloromethane	75-27-4	360	2200	3600	Not Detected U
Bromoform	75-25-2	770	3300	5600	Not Detected U
Carbon Disulfide	75-15-0	1000	3400	6700	Not Detected U
Carbon Tetrachloride	56-23-5	810	2000	3400	Not Detected U
Chloroethane	75-00-3	1600	2800	5700	Not Detected U
Chloroform	67-66-3	450	1600	2600	Not Detected U
Chloromethane	74-87-3	940	2200	4500	Not Detected U
Cyclohexane	110-82-7	410	1100	1800	4600000 J
Dibromochloromethane	124-48-1	950	2800	4600	Not Detected U
Ethanol	64-17-5	890	2000	4100	98000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	5/23/19 08:45 PM
Lab ID:	1905302A-04A	Dilution Factor:	108
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	msd14.i / 14052327
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected
Ethyl Benzene	100-41-4	470	1400	2300	430000
Freon 11	75-69-4	450	1800	3000	Not Detected U
Freon 113	76-13-1	740	2500	4100	Not Detected U
Freon 12	75-71-8	590	1600	2700	Not Detected U
Heptane	142-82-5	750	1300	2200	4700000 J
Hexane	110-54-3	470	1100	1900	6300000 J
m,p-Xylene	108-38-3	440	1400	2300	960000
Methylene Chloride	75-09-2	1200	3800	7500	Not Detected U
Naphthalene	91-20-3	870	5700	11000	Not Detected UJ
o-Xylene	95-47-6	630	1400	2300	320000
Propylene	115-07-1	640	1800	3700	31000
Styrene	100-42-5	440	1400	2300	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3700	Not Detected U
Tetrahydrofuran	109-99-9	560	960	1600	Not Detected U
Toluene	108-88-3	370	1200	2000	3100000
Total Xylene	1330-20-7	NA	D	2300	1200000
Trichloroethene	79-01-6	860	1700	2900	Not Detected U
Vinyl Chloride	75-01-4	480	830	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	5/23/19 08:45 PM
Lab ID:	1905302A-04A	Dilution Factor:	108
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	msd14.i / 14052327
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	126
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	5/24/19 07:05 AM
Lab ID:	1905302A-05A	Dilution Factor:	212
Date/Time Collected:	5/9/19 03:30 PM	Instrument/Filename:	msd14.i / 14052335
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2600	4300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	16000	31000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	990	3100	5200	77000
1,2-Dibromoethane (EDB)	106-93-4	1400	4900	8100	3000 J
1,2-Dichlorobenzene	95-50-1	1500	3800	6400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	860	3100	5200	33000
1,3-Butadiene	106-99-0	740	1400	2300	Not Detected U
1,4-Dioxane	123-91-1	4200	7600	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3000	6200	12000	400000
2-Hexanone	591-78-6	6500	8700	17000	9500 J
2-Propanol	67-63-0	1300	5200	10000	41000
4-Methyl-2-pentanone	108-10-1	2100	2600	4300	9800
Acetone	67-64-1	1500	5000	10000	5000000
Benzene	71-43-2	470	2000	3400	1600000
Bromodichloromethane	75-27-4	710	4300	7100	Not Detected U
Bromoform	75-25-2	1500	6600	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	6600	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	4000	6700	Not Detected U
Chloroethane	75-00-3	3200	5600	11000	Not Detected U
Chloroform	67-66-3	890	3100	5200	Not Detected U
Chloromethane	74-87-3	1800	4400	8800	Not Detected U
Cyclohexane	110-82-7	810	2200	3600	5000000
Dibromochloromethane	124-48-1	1900	5400	9000	Not Detected U
Ethanol	64-17-5	1700	4000	8000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	5/24/19 07:05 AM
Lab ID:	1905302A-05A	Dilution Factor:	212
Date/Time Collected:	5/9/19 03:30 PM	Instrument/Filename:	msd14.i / 14052335
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	920	2800	4600	360000
Freon 11	75-69-4	880	3600	6000	Not Detected U
Freon 113	76-13-1	1400	4900	8100	Not Detected U
Freon 12	75-71-8	1200	3100	5200	Not Detected U
Heptane	142-82-5	1500	2600	4300	5600000
Hexane	110-54-3	920	2200	3700	6400000
m,p-Xylene	108-38-3	860	2800	4600	1100000
Methylene Chloride	75-09-2	2300	7400	15000	Not Detected U
o-Xylene	95-47-6	1200	2800	4600	320000
Propylene	115-07-1	1200	3600	7300	57000
Styrene	100-42-5	860	2700	4500	Not Detected U
Tetrachloroethene	127-18-4	2500	4300	7200	Not Detected U
Tetrahydrofuran	109-99-9	1100	1900	3100	Not Detected U
Toluene	108-88-3	720	2400	4000	3400000 CN
Total Xylene	1330-20-7	NA	D	4600	1400000
Trichloroethene	79-01-6	1700	3400	5700	Not Detected U
Vinyl Chloride	75-01-4	940	1600	2700	Not Detected U

U = The analyte was not detected above the MDL.

CN =See Case Narrative explanation

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	5/24/19 07:05 AM
Lab ID:	1905302A-05A	Dilution Factor:	212
Date/Time Collected:	5/9/19 03:30 PM	Instrument/Filename:	msd14.i / 14052335
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	114
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	5/23/19 09:09 PM
Lab ID:	1905302A-05B	Dilution Factor:	106
Date/Time Collected:	5/9/19 03:30 PM	Instrument/Filename:	msd14.i / 14052328
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	860	5600	11000	Not Detected UJ

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	136
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	5/24/19 07:30 AM
Lab ID:	1905302A-06A	Dilution Factor:	228
Date/Time Collected:	5/9/19 03:43 PM	Instrument/File Name:	msd14.i / 14052336
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1300	2800	4600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	14000	17000	34000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1100	3400	5600	58000
1,2-Dibromoethane (EDB)	106-93-4	1500	5200	8800	12000
1,2-Dichlorobenzene	95-50-1	1600	4100	6800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	930	3400	5600	26000
1,3-Butadiene	106-99-0	790	1500	2500	Not Detected U
1,4-Dioxane	123-91-1	4500	8200	16000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3300	6700	13000	230000
2-Hexanone	591-78-6	7000	9300	19000	28000
2-Propanol	67-63-0	1400	5600	11000	22000
4-Methyl-2-pentanone	108-10-1	2300	2800	4700	17000
Acetone	67-64-1	1600	5400	11000	1000000
Benzene	71-43-2	510	2200	3600	810000
Bromodichloromethane	75-27-4	760	4600	7600	Not Detected U
Bromoform	75-25-2	1600	7100	12000	Not Detected U
Carbon Disulfide	75-15-0	2200	7100	14000	Not Detected U
Carbon Tetrachloride	56-23-5	1700	4300	7200	Not Detected U
Chloroethane	75-00-3	3400	6000	12000	Not Detected U
Chloroform	67-66-3	960	3300	5600	Not Detected U
Chloromethane	74-87-3	2000	4700	9400	Not Detected U
Cyclohexane	110-82-7	870	2400	3900	3000000
Dibromochloromethane	124-48-1	2000	5800	9700	Not Detected U
Ethanol	64-17-5	1900	4300	8600	3900 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	5/24/19 07:30 AM
Lab ID:	1905302A-06A	Dilution Factor:	228
Date/Time Collected:	5/9/19 03:43 PM	Instrument/Filename:	msd14.i / 14052336
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	16000	Not Detected
Ethyl Benzene	100-41-4	990	3000	4900	360000
Freon 11	75-69-4	950	3800	6400	Not Detected U
Freon 113	76-13-1	1600	5200	8700	Not Detected U
Freon 12	75-71-8	1200	3400	5600	Not Detected U
Heptane	142-82-5	1600	2800	4700	6300000
Hexane	110-54-3	990	2400	4000	3300000
m,p-Xylene	108-38-3	930	3000	5000	1100000
Methylene Chloride	75-09-2	2400	7900	16000	Not Detected U
o-Xylene	95-47-6	1300	3000	5000	300000
Propylene	115-07-1	1300	3900	7800	85000
Styrene	100-42-5	920	2900	4800	Not Detected U
Tetrachloroethene	127-18-4	2700	4600	7700	Not Detected U
Tetrahydrofuran	109-99-9	1200	2000	3400	Not Detected U
Toluene	108-88-3	770	2600	4300	4200000 CN
Total Xylene	1330-20-7	NA	D	5000	1400000
Trichloroethene	79-01-6	1800	3700	6100	Not Detected U
Vinyl Chloride	75-01-4	1000	1700	2900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	5/24/19 07:30 AM
Lab ID:	1905302A-06A	Dilution Factor:	228
Date/Time Collected:	5/9/19 03:43 PM	Instrument/Filename:	msd14.i / 14052336
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	110
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	5/23/19 09:37 PM
Lab ID:	1905302A-06B	Dilution Factor:	114
Date/Time Collected:	5/9/19 03:43 PM	Instrument/Filename:	msd14.i / 14052329
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	920	6000	12000	Not Detected UJ

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	127
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	113

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	5/24/19 07:56 AM
Lab ID:	1905302A-07A	Dilution Factor:	218
Date/Time Collected:	5/9/19 03:54 PM	Instrument/Filename:	msd14.i / 14052337
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2600	4400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	16000	32000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	3200	5400	52000
1,2-Dibromoethane (EDB)	106-93-4	1500	5000	8400	15000
1,2-Dichlorobenzene	95-50-1	1600	3900	6600	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	890	3200	5400	20000
1,3-Butadiene	106-99-0	760	1400	2400	Not Detected U
1,4-Dioxane	123-91-1	4300	7800	16000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3100	6400	13000	430000
2-Hexanone	591-78-6	6700	8900	18000	31000
2-Propanol	67-63-0	1400	5400	11000	48000
4-Methyl-2-pentanone	108-10-1	2200	2700	4500	21000
Acetone	67-64-1	1500	5200	10000	1800000
Benzene	71-43-2	490	2100	3500	840000
Bromodichloromethane	75-27-4	730	4400	7300	Not Detected U
Bromoform	75-25-2	1600	6800	11000	Not Detected U
Carbon Disulfide	75-15-0	2100	6800	14000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	4100	6800	Not Detected U
Chloroethane	75-00-3	3300	5800	12000	Not Detected U
Chloroform	67-66-3	920	3200	5300	Not Detected U
Chloromethane	74-87-3	1900	4500	9000	Not Detected U
Cyclohexane	110-82-7	830	2200	3800	2900000
Dibromochloromethane	124-48-1	1900	5600	9300	Not Detected U
Ethanol	64-17-5	1800	4100	8200	12000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	5/24/19 07:56 AM
Lab ID:	1905302A-07A	Dilution Factor:	218
Date/Time Collected:	5/9/19 03:54 PM	Instrument/Filename:	msd14.i / 14052337
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	16000	Not Detected
Ethyl Benzene	100-41-4	950	2800	4700	320000
Freon 11	75-69-4	910	3700	6100	Not Detected U
Freon 113	76-13-1	1500	5000	8400	Not Detected U
Freon 12	75-71-8	1200	3200	5400	Not Detected U
Heptane	142-82-5	1500	2700	4500	7000000
Hexane	110-54-3	940	2300	3800	2800000
m,p-Xylene	108-38-3	890	2800	4700	860000
Methylene Chloride	75-09-2	2300	7600	15000	Not Detected U
o-Xylene	95-47-6	1300	2800	4700	220000
Propylene	115-07-1	1300	3800	7500	88000
Styrene	100-42-5	880	2800	4600	Not Detected U
Tetrachloroethene	127-18-4	2600	4400	7400	Not Detected U
Tetrahydrofuran	109-99-9	1100	1900	3200	Not Detected U
Toluene	108-88-3	740	2500	4100	4700000 CN
Total Xylene	1330-20-7	NA	D	4700	1100000
Trichloroethene	79-01-6	1700	3500	5800	Not Detected U
Vinyl Chloride	75-01-4	960	1700	2800	Not Detected U

U = The analyte was not detected above the MDL.

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	5/24/19 07:56 AM
Lab ID:	1905302A-07A	Dilution Factor:	218
Date/Time Collected:	5/9/19 03:54 PM	Instrument/Filename:	msd14.i / 14052337
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	5/23/19 10:01 PM
Lab ID:	1905302A-07B	Dilution Factor:	109
Date/Time Collected:	5/9/19 03:54 PM	Instrument/Filename:	msd14.i / 14052330
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	880	5700	11000	Not Detected UJ

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	131
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	114

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	5/24/19 06:36 PM
Lab ID:	1905302A-08A	Dilution Factor:	215
Date/Time Collected:	5/9/19 12:42 PM	Instrument/Filename:	msd14.i / 14052420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2600	4400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	16000	32000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	3200	5300	64000
1,2-Dibromoethane (EDB)	106-93-4	1400	5000	8300	15000
1,2-Dichlorobenzene	95-50-1	1600	3900	6500	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	880	3200	5300	29000
1,3-Butadiene	106-99-0	750	1400	2400	Not Detected U
1,4-Dioxane	123-91-1	4300	7700	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3100	6300	13000	630000
2-Hexanone	591-78-6	6600	8800	18000	16000 J
2-Propanol	67-63-0	1300	5300	10000	300000
4-Methyl-2-pentanone	108-10-1	2100	2600	4400	26000
Acetone	67-64-1	1500	5100	10000	4200000
Benzene	71-43-2	480	2100	3400	1800000
Bromodichloromethane	75-27-4	720	4300	7200	Not Detected U
Bromoform	75-25-2	1500	6700	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	6700	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	4000	6800	Not Detected U
Chloroethane	75-00-3	3200	5700	11000	Not Detected U
Chloroform	67-66-3	900	3100	5200	Not Detected U
Chloromethane	74-87-3	1900	4400	8900	Not Detected U
Cyclohexane	110-82-7	820	2200	3700	6000000
Dibromochloromethane	124-48-1	1900	5500	9200	Not Detected U
Ethanol	64-17-5	1800	4000	8100	49000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	5/24/19 06:36 PM
Lab ID:	1905302A-08A	Dilution Factor:	215
Date/Time Collected:	5/9/19 12:42 PM	Instrument/Filename:	msd14.i / 14052420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	930	2800	4700	330000
Freon 11	75-69-4	890	3600	6000	Not Detected U
Freon 113	76-13-1	1500	4900	8200	Not Detected U
Freon 12	75-71-8	1200	3200	5300	Not Detected U
Heptane	142-82-5	1500	2600	4400	6600000
Hexane	110-54-3	930	2300	3800	6700000
m,p-Xylene	108-38-3	880	2800	4700	820000
Methylene Chloride	75-09-2	2300	7500	15000	Not Detected U
o-Xylene	95-47-6	1300	2800	4700	230000
Propylene	115-07-1	1300	3700	7400	20000
Styrene	100-42-5	870	2700	4600	Not Detected U
Tetrachloroethene	127-18-4	2600	4400	7300	Not Detected U
Tetrahydrofuran	109-99-9	1100	1900	3200	Not Detected U
Toluene	108-88-3	730	2400	4000	4400000 CN
Total Xylene	1330-20-7	NA	D	4700	1000000
Trichloroethene	79-01-6	1700	3500	5800	Not Detected U
Vinyl Chloride	75-01-4	950	1600	2700	Not Detected U

U = The analyte was not detected above the MDL.

CN =See Case Narrative explanation

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	5/24/19 06:36 PM
Lab ID:	1905302A-08A	Dilution Factor:	215
Date/Time Collected:	5/9/19 12:42 PM	Instrument/Filename:	msd14.i / 14052420
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	122
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	5/24/19 01:58 PM
Lab ID:	1905302A-08B	Dilution Factor:	108
Date/Time Collected:	5/9/19 12:42 PM	Instrument/Filename:	msd14.i / 14052410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	870	5700	11000	Not Detected UJ

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	139
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	5/24/19 06:57 PM
Lab ID:	1905302A-09A	Dilution Factor:	400
Date/Time Collected:	5/9/19 12:57 PM	Instrument/File Name:	msd14.i / 14052421
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2200	4800	8100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	24000	30000	59000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	5900	9800	140000
1,2-Dibromoethane (EDB)	106-93-4	2700	9200	15000	9900 J
1,2-Dichlorobenzene	95-50-1	2900	7200	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5900	9800	60000
1,3-Butadiene	106-99-0	1400	2600	4400	Not Detected U
1,4-Dioxane	123-91-1	7900	14000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5700	12000	24000	350000
2-Hexanone	591-78-6	12000	16000	33000	Not Detected U
2-Propanol	67-63-0	2500	9800	20000	75000
4-Methyl-2-pentanone	108-10-1	4000	4900	8200	14000
Acetone	67-64-1	2800	9500	19000	2200000
Benzene	71-43-2	890	3800	6400	2100000
Bromodichloromethane	75-27-4	1300	8000	13000	Not Detected U
Bromoform	75-25-2	2800	12000	21000	Not Detected U
Carbon Disulfide	75-15-0	3800	12000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3000	7600	12000	Not Detected U
Chloroethane	75-00-3	6000	10000	21000	Not Detected U
Chloroform	67-66-3	1700	5800	9800	Not Detected U
Chloromethane	74-87-3	3500	8300	16000	Not Detected U
Cyclohexane	110-82-7	1500	4100	6900	6100000
Dibromochloromethane	124-48-1	3500	10000	17000	Not Detected U
Ethanol	64-17-5	3300	7500	15000	11000 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	5/24/19 06:57 PM
Lab ID:	1905302A-09A	Dilution Factor:	400
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052421
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	5200	8700	350000
Freon 11	75-69-4	1700	6700	11000	Not Detected U
Freon 113	76-13-1	2700	9200	15000	Not Detected U
Freon 12	75-71-8	2200	5900	9900	Not Detected U
Heptane	142-82-5	2800	4900	8200	5900000
Hexane	110-54-3	1700	4200	7000	7700000
m,p-Xylene	108-38-3	1600	5200	8700	1200000
Methylene Chloride	75-09-2	4300	14000	28000	Not Detected U
o-Xylene	95-47-6	2300	5200	8700	390000
Propylene	115-07-1	2400	6900	14000	21000
Styrene	100-42-5	1600	5100	8500	Not Detected U
Tetrachloroethene	127-18-4	4800	8100	14000	Not Detected U
Tetrahydrofuran	109-99-9	2100	3500	5900	Not Detected U
Toluene	108-88-3	1400	4500	7500	3900000 CN
Total Xylene	1330-20-7	NA	D	8700	1600000
Trichloroethene	79-01-6	3200	6400	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3100	5100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	5/24/19 06:57 PM
Lab ID:	1905302A-09A	Dilution Factor:	400
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052421
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	106
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	5/24/19 02:28 PM
Lab ID:	1905302A-09B	Dilution Factor:	120
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	970	6300	12000	Not Detected UJ

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	132
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	5/24/19 07:20 PM
Lab ID:	1905302A-10A	Dilution Factor:	357
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052422a
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2000	4300	7200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	21000	26000	53000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1700	5300	8800	130000
1,2-Dibromoethane (EDB)	106-93-4	2400	8200	14000	8900 J
1,2-Dichlorobenzene	95-50-1	2600	6400	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1400	5300	8800	61000
1,3-Butadiene	106-99-0	1200	2400	3900	Not Detected U
1,4-Dioxane	123-91-1	7100	13000	26000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5100	10000	21000	340000
2-Hexanone	591-78-6	11000	15000	29000	Not Detected U
2-Propanol	67-63-0	2200	8800	18000	70000
4-Methyl-2-pentanone	108-10-1	3600	4400	7300	15000
Acetone	67-64-1	2500	8500	17000	2100000
Benzene	71-43-2	800	3400	5700	2000000
Bromodichloromethane	75-27-4	1200	7200	12000	Not Detected U
Bromoform	75-25-2	2500	11000	18000	Not Detected U
Carbon Disulfide	75-15-0	3400	11000	22000	Not Detected U
Carbon Tetrachloride	56-23-5	2700	6700	11000	Not Detected U
Chloroethane	75-00-3	5400	9400	19000	Not Detected U
Chloroform	67-66-3	1500	5200	8700	Not Detected U
Chloromethane	74-87-3	3100	7400	15000	Not Detected U
Cyclohexane	110-82-7	1400	3700	6100	6100000
Dibromochloromethane	124-48-1	3100	9100	15000	Not Detected U
Ethanol	64-17-5	2900	6700	13000	11000 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	5/24/19 07:20 PM
Lab ID:	1905302A-10A	Dilution Factor:	357
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052422a
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	26000	Not Detected
Ethyl Benzene	100-41-4	1600	4600	7800	320000
Freon 11	75-69-4	1500	6000	10000	Not Detected U
Freon 113	76-13-1	2400	8200	14000	Not Detected U
Freon 12	75-71-8	2000	5300	8800	Not Detected U
Heptane	142-82-5	2500	4400	7300	5700000
Hexane	110-54-3	1500	3800	6300	7700000
m,p-Xylene	108-38-3	1400	4600	7800	1000000
Methylene Chloride	75-09-2	3800	12000	25000	Not Detected U
o-Xylene	95-47-6	2100	4600	7800	340000
Propylene	115-07-1	2100	6100	12000	20000
Styrene	100-42-5	1400	4600	7600	Not Detected U
Tetrachloroethene	127-18-4	4300	7300	12000	Not Detected U
Tetrahydrofuran	109-99-9	1900	3200	5300	Not Detected U
Toluene	108-88-3	1200	4000	6700	3800000 CN
Total Xylene	1330-20-7	NA	D	7800	1400000
Trichloroethene	79-01-6	2800	5800	9600	Not Detected U
Vinyl Chloride	75-01-4	1600	2700	4600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	5/24/19 07:20 PM
Lab ID:	1905302A-10A	Dilution Factor:	357
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052422a
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	108
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	5/24/19 02:54 PM
Lab ID:	1905302A-10B	Dilution Factor:	107
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	msd14.i / 14052412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	860	5600	11000	Not Detected UJ

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	135
4-Bromofluorobenzene	460-00-4	83-115	100
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	5/24/19 06:09 PM
Lab ID:	1905302A-11A	Dilution Factor:	108
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	msd14.i / 14052419
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	610	1300	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6500	8000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	210000
1,2-Dibromoethane (EDB)	106-93-4	730	2500	4100	1900 J
1,2-Dichlorobenzene	95-50-1	780	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	440	1600	2600	61000
1,3-Butadiene	106-99-0	380	720	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3200	6400	14000
2-Hexanone	591-78-6	3300	4400	8800	Not Detected U
2-Propanol	67-63-0	680	2600	5300	5700
4-Methyl-2-pentanone	108-10-1	1100	1300	2200	3800
Acetone	67-64-1	750	2600	5100	420000
Benzene	71-43-2	240	1000	1700	630000
Bromodichloromethane	75-27-4	360	2200	3600	Not Detected U
Bromoform	75-25-2	770	3300	5600	Not Detected U
Carbon Disulfide	75-15-0	1000	3400	6700	Not Detected U
Carbon Tetrachloride	56-23-5	810	2000	3400	Not Detected U
Chloroethane	75-00-3	1600	2800	5700	Not Detected U
Chloroform	67-66-3	450	1600	2600	Not Detected U
Chloromethane	74-87-3	940	2200	4500	Not Detected U
Cyclohexane	110-82-7	410	1100	1800	1700000
Dibromochloromethane	124-48-1	950	2800	4600	Not Detected U
Ethanol	64-17-5	890	2000	4100	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	5/24/19 06:09 PM
Lab ID:	1905302A-11A	Dilution Factor:	108
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	msd14.i / 14052419
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected
Ethyl Benzene	100-41-4	470	1400	2300	170000
Freon 11	75-69-4	450	1800	3000	Not Detected U
Freon 113	76-13-1	740	2500	4100	Not Detected U
Freon 12	75-71-8	590	1600	2700	Not Detected U
Heptane	142-82-5	750	1300	2200	1800000
Hexane	110-54-3	470	1100	1900	2300000
m,p-Xylene	108-38-3	440	1400	2300	520000
Methylene Chloride	75-09-2	1200	3800	7500	Not Detected U
Naphthalene	91-20-3	870	5700	11000	Not Detected UJ
o-Xylene	95-47-6	630	1400	2300	190000
Propylene	115-07-1	640	1800	3700	8300
Styrene	100-42-5	440	1400	2300	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3700	Not Detected U
Tetrahydrofuran	109-99-9	560	960	1600	Not Detected U
Toluene	108-88-3	370	1200	2000	1300000
Total Xylene	1330-20-7	NA	D	2300	720000
Trichloroethene	79-01-6	860	1700	2900	Not Detected U
Vinyl Chloride	75-01-4	480	830	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	5/24/19 06:09 PM
Lab ID:	1905302A-11A	Dilution Factor:	108
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	msd14.i / 14052419
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	115
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9 Lab Duplicate	Date/Time Analyzed:	5/24/19 04:20 PM
Lab ID:	1905302A-11AA	Dilution Factor:	108
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	msd14.i / 14052415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	610	1300	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6500	8000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	200000
1,2-Dibromoethane (EDB)	106-93-4	730	2500	4100	2000 J
1,2-Dichlorobenzene	95-50-1	780	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	440	1600	2600	60000
1,3-Butadiene	106-99-0	380	720	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3200	6400	13000
2-Hexanone	591-78-6	3300	4400	8800	Not Detected U
2-Propanol	67-63-0	680	2600	5300	8200
4-Methyl-2-pentanone	108-10-1	1100	1300	2200	4200
Acetone	67-64-1	750	2600	5100	430000
Benzene	71-43-2	240	1000	1700	660000
Bromodichloromethane	75-27-4	360	2200	3600	Not Detected U
Bromoform	75-25-2	770	3300	5600	Not Detected U
Carbon Disulfide	75-15-0	1000	3400	6700	Not Detected U
Carbon Tetrachloride	56-23-5	810	2000	3400	Not Detected U
Chloroethane	75-00-3	1600	2800	5700	Not Detected U
Chloroform	67-66-3	450	1600	2600	Not Detected U
Chloromethane	74-87-3	940	2200	4500	Not Detected U
Cyclohexane	110-82-7	410	1100	1800	1700000
Dibromochloromethane	124-48-1	950	2800	4600	Not Detected U
Ethanol	64-17-5	890	2000	4100	960 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9 Lab Duplicate	Date/Time Analyzed:	5/24/19 04:20 PM
Lab ID:	1905302A-11AA	Dilution Factor:	108
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	msd14.i / 14052415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected
Ethyl Benzene	100-41-4	470	1400	2300	180000
Freon 11	75-69-4	450	1800	3000	Not Detected U
Freon 113	76-13-1	740	2500	4100	Not Detected U
Freon 12	75-71-8	590	1600	2700	Not Detected U
Heptane	142-82-5	750	1300	2200	1800000
Hexane	110-54-3	470	1100	1900	2300000
m,p-Xylene	108-38-3	440	1400	2300	560000
Methylene Chloride	75-09-2	1200	3800	7500	Not Detected U
Naphthalene	91-20-3	870	5700	11000	Not Detected UJ
o-Xylene	95-47-6	630	1400	2300	200000
Propylene	115-07-1	640	1800	3700	8100
Styrene	100-42-5	440	1400	2300	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3700	Not Detected U
Tetrahydrofuran	109-99-9	560	960	1600	Not Detected U
Toluene	108-88-3	370	1200	2000	1300000
Total Xylene	1330-20-7	NA	D	2300	760000
Trichloroethene	79-01-6	860	1700	2900	Not Detected U
Vinyl Chloride	75-01-4	480	830	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9 Lab Duplicate	Date/Time Analyzed:	5/24/19 04:20 PM
Lab ID:	1905302A-11AA	Dilution Factor:	108
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	msd14.i / 14052415
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	117
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	5/24/19 07:42 PM
Lab ID:	1905302A-12A	Dilution Factor:	208
Date/Time Collected:	5/9/19 01:27 PM	Instrument/Filename:	msd14.i / 14052423
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2500	4200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	15000	31000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	970	3100	5100	120000
1,2-Dibromoethane (EDB)	106-93-4	1400	4800	8000	4800 J
1,2-Dichlorobenzene	95-50-1	1500	3800	6200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	850	3100	5100	39000
1,3-Butadiene	106-99-0	720	1400	2300	Not Detected U
1,4-Dioxane	123-91-1	4100	7500	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3000	6100	12000	320000
2-Hexanone	591-78-6	6400	8500	17000	9400 J
2-Propanol	67-63-0	1300	5100	10000	400000
4-Methyl-2-pentanone	108-10-1	2100	2600	4300	7400
Acetone	67-64-1	1400	4900	9900	4700000
Benzene	71-43-2	460	2000	3300	1600000
Bromodichloromethane	75-27-4	700	4200	7000	Not Detected U
Bromoform	75-25-2	1500	6400	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	6500	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	3900	6500	Not Detected U
Chloroethane	75-00-3	3200	5500	11000	Not Detected U
Chloroform	67-66-3	870	3000	5100	Not Detected U
Chloromethane	74-87-3	1800	4300	8600	Not Detected U
Cyclohexane	110-82-7	790	2100	3600	4500000
Dibromochloromethane	124-48-1	1800	5300	8800	Not Detected U
Ethanol	64-17-5	1700	3900	7800	4900 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	5/24/19 07:42 PM
Lab ID:	1905302A-12A	Dilution Factor:	208
Date/Time Collected:	5/9/19 01:27 PM	Instrument/Filename:	msd14.i / 14052423
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	900	2700	4500	300000
Freon 11	75-69-4	860	3500	5800	Not Detected U
Freon 113	76-13-1	1400	4800	8000	Not Detected U
Freon 12	75-71-8	1100	3100	5100	Not Detected U
Heptane	142-82-5	1400	2600	4300	4700000
Hexane	110-54-3	900	2200	3700	5800000
m,p-Xylene	108-38-3	850	2700	4500	690000
Methylene Chloride	75-09-2	2200	7200	14000	Not Detected U
o-Xylene	95-47-6	1200	2700	4500	200000
Propylene	115-07-1	1200	3600	7200	39000
Styrene	100-42-5	840	2600	4400	Not Detected U
Tetrachloroethene	127-18-4	2500	4200	7000	Not Detected U
Tetrahydrofuran	109-99-9	1100	1800	3100	Not Detected U
Toluene	108-88-3	700	2400	3900	3000000 CN
Total Xylene	1330-20-7	NA	D	4500	900000
Trichloroethene	79-01-6	1600	3400	5600	Not Detected U
Vinyl Chloride	75-01-4	920	1600	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	5/24/19 07:42 PM
Lab ID:	1905302A-12A	Dilution Factor:	208
Date/Time Collected:	5/9/19 01:27 PM	Instrument/Filename:	msd14.i / 14052423
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	109
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	5/24/19 03:51 PM
Lab ID:	1905302A-12B	Dilution Factor:	104
Date/Time Collected:	5/9/19 01:27 PM	Instrument/Filename:	msd14.i / 14052414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	840	5400	11000	1000 JUJ

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	132
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	109

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/23/19 12:18 PM
Lab ID:	1905302A-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052308c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	29	59	Not Detected U
2-Hexanone	591-78-6	31	41	82	Not Detected U
2-Propanol	67-63-0	6.3	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	24	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	26	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	21	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	19	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/23/19 12:18 PM
Lab ID:	1905302A-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052308c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	35	69	Not Detected U
Naphthalene	91-20-3	8.1	52	100	Not Detected UJ
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	17	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/23/19 12:18 PM
Lab ID:	1905302A-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052308c
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	99
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/24/19 12:52 PM
Lab ID:	1905302A-13B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052408a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	29	59	Not Detected U
2-Hexanone	591-78-6	31	41	82	Not Detected U
2-Propanol	67-63-0	6.3	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	24	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	26	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	21	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	19	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/24/19 12:52 PM
Lab ID:	1905302A-13B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052408a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	35	69	Not Detected U
Naphthalene	91-20-3	8.1	52	100	Not Detected UJ
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	17	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/24/19 12:52 PM
Lab ID:	1905302A-13B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052408a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	99
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/23/19 11:49 AM
Lab ID:	1905302A-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052307a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	109
1,2,4-Trichlorobenzene	120-82-1	102
1,2,4-Trimethylbenzene	95-63-6	103
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	94
1,4-Dioxane	123-91-1	93
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	92
2-Propanol	67-63-0	104
4-Methyl-2-pentanone	108-10-1	99
Acetone	67-64-1	122
Benzene	71-43-2	107
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	96
Carbon Disulfide	75-15-0	96
Carbon Tetrachloride	56-23-5	107
Chloroethane	75-00-3	98
Chloroform	67-66-3	111
Chloromethane	74-87-3	97
Cyclohexane	110-82-7	106
Dibromochloromethane	124-48-1	97
Ethanol	64-17-5	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/23/19 11:49 AM
Lab ID:	1905302A-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052307a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	125
Ethyl Benzene	100-41-4	113
Freon 11	75-69-4	107
Freon 113	76-13-1	106
Freon 12	75-71-8	91
Heptane	142-82-5	103
Hexane	110-54-3	104
m,p-Xylene	108-38-3	114
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	64 Q
o-Xylene	95-47-6	116
Propylene	115-07-1	101
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	114
Tetrahydrofuran	109-99-9	95
Toluene	108-88-3	113
Total Xylene	1330-20-7	115
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	96

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/23/19 11:49 AM
Lab ID:	1905302A-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052307a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 08:22 AM
Lab ID:	1905302A-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052338
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	106
1,2,4-Trichlorobenzene	120-82-1	111
1,2,4-Trimethylbenzene	95-63-6	111
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	93
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	99
2-Hexanone	591-78-6	87
2-Propanol	67-63-0	100
4-Methyl-2-pentanone	108-10-1	95
Acetone	67-64-1	115
Benzene	71-43-2	108
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	94
Carbon Tetrachloride	56-23-5	106
Chloroethane	75-00-3	105
Chloroform	67-66-3	107
Chloromethane	74-87-3	91
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	94

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 08:22 AM
Lab ID:	1905302A-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052338
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	125
Ethyl Benzene	100-41-4	114
Freon 11	75-69-4	104
Freon 113	76-13-1	102
Freon 12	75-71-8	94
Heptane	142-82-5	103
Hexane	110-54-3	101
m,p-Xylene	108-38-3	118
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	68 Q
o-Xylene	95-47-6	114
Propylene	115-07-1	88
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	110
Tetrahydrofuran	109-99-9	91
Toluene	108-88-3	114
Total Xylene	1330-20-7	116
Trichloroethene	79-01-6	108
Vinyl Chloride	75-01-4	91

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 08:22 AM
Lab ID:	1905302A-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052338
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:24 AM
Lab ID:	1905302A-14C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	100
1,2,4-Trichlorobenzene	120-82-1	102
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	92
1,2-Dichlorobenzene	95-50-1	95
1,3,5-Trimethylbenzene	108-67-8	102
1,3-Butadiene	106-99-0	85
1,4-Dioxane	123-91-1	91
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	85
2-Propanol	67-63-0	94
4-Methyl-2-pentanone	108-10-1	93
Acetone	67-64-1	110
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	89
Bromoform	75-25-2	93
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	100
Chloroethane	75-00-3	92
Chloroform	67-66-3	103
Chloromethane	74-87-3	88
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	90
Ethanol	64-17-5	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:24 AM
Lab ID:	1905302A-14C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	117
Ethyl Benzene	100-41-4	108
Freon 11	75-69-4	100
Freon 113	76-13-1	98
Freon 12	75-71-8	88
Heptane	142-82-5	96
Hexane	110-54-3	96
m,p-Xylene	108-38-3	110
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	67 Q
o-Xylene	95-47-6	109
Propylene	115-07-1	91
Styrene	100-42-5	89
Tetrachloroethene	127-18-4	107
Tetrahydrofuran	109-99-9	92
Toluene	108-88-3	109
Total Xylene	1330-20-7	110
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	90

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:24 AM
Lab ID:	1905302A-14C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:46 PM
Lab ID:	1905302A-14D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052427
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	105
1,2,4-Trichlorobenzene	120-82-1	105
1,2,4-Trimethylbenzene	95-63-6	108
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	91
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	99
2-Hexanone	591-78-6	92
2-Propanol	67-63-0	97
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	120
Benzene	71-43-2	108
Bromodichloromethane	75-27-4	93
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	92
Carbon Tetrachloride	56-23-5	107
Chloroethane	75-00-3	103
Chloroform	67-66-3	108
Chloromethane	74-87-3	89
Cyclohexane	110-82-7	108
Dibromochloromethane	124-48-1	95
Ethanol	64-17-5	92

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:46 PM
Lab ID:	1905302A-14D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052427
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	117
Ethyl Benzene	100-41-4	114
Freon 11	75-69-4	102
Freon 113	76-13-1	103
Freon 12	75-71-8	92
Heptane	142-82-5	110
Hexane	110-54-3	101
m,p-Xylene	108-38-3	118
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	73
o-Xylene	95-47-6	116
Propylene	115-07-1	93
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	111
Tetrahydrofuran	109-99-9	92
Toluene	108-88-3	118
Total Xylene	1330-20-7	117
Trichloroethene	79-01-6	111
Vinyl Chloride	75-01-4	88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:46 PM
Lab ID:	1905302A-14D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052427
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/23/19 10:00 AM
Lab ID:	1905302A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	130
1,2,4-Trimethylbenzene	95-63-6	111
1,2-Dibromoethane (EDB)	106-93-4	94
1,2-Dichlorobenzene	95-50-1	104
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	87
1,4-Dioxane	123-91-1	88
2-Butanone (Methyl Ethyl Ketone)	78-93-3	93
2-Hexanone	591-78-6	74
2-Propanol	67-63-0	97
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	110
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	93
Bromoform	75-25-2	96
Carbon Disulfide	75-15-0	80
Carbon Tetrachloride	56-23-5	104
Chloroethane	75-00-3	112
Chloroform	67-66-3	104
Chloromethane	74-87-3	90
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/23/19 10:00 AM
Lab ID:	1905302A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	111
Freon 11	75-69-4	103
Freon 113	76-13-1	98
Freon 12	75-71-8	91
Heptane	142-82-5	106
Hexane	110-54-3	98
m,p-Xylene	108-38-3	111
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	99
o-Xylene	95-47-6	115
Propylene	115-07-1	86
Styrene	100-42-5	100
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	90
Toluene	108-88-3	107
Total Xylene	1330-20-7	113
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	92

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/23/19 10:00 AM
Lab ID:	1905302A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052303a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/23/19 10:25 AM
Lab ID:	1905302A-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052304a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	103
1,2,4-Trichlorobenzene	120-82-1	128
1,2,4-Trimethylbenzene	95-63-6	112
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	108
1,3,5-Trimethylbenzene	108-67-8	111
1,3-Butadiene	106-99-0	86
1,4-Dioxane	123-91-1	89
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	77
2-Propanol	67-63-0	97
4-Methyl-2-pentanone	108-10-1	88
Acetone	67-64-1	111
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	100
Carbon Disulfide	75-15-0	80
Carbon Tetrachloride	56-23-5	104
Chloroethane	75-00-3	108
Chloroform	67-66-3	104
Chloromethane	74-87-3	87
Cyclohexane	110-82-7	101
Dibromochloromethane	124-48-1	95
Ethanol	64-17-5	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/23/19 10:25 AM
Lab ID:	1905302A-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052304a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	114
Freon 11	75-69-4	102
Freon 113	76-13-1	99
Freon 12	75-71-8	90
Heptane	142-82-5	105
Hexane	110-54-3	96
m,p-Xylene	108-38-3	114
Methylene Chloride	75-09-2	98
Naphthalene	91-20-3	98
o-Xylene	95-47-6	121
Propylene	115-07-1	87
Styrene	100-42-5	104
Tetrachloroethene	127-18-4	107
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	109
Total Xylene	1330-20-7	118
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	90

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/23/19 10:25 AM
Lab ID:	1905302A-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052304a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	103
Toluene-d8	2037-26-5	86-115	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/24/19 09:48 AM
Lab ID:	1905302A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	138
1,2,4-Trimethylbenzene	95-63-6	112
1,2-Dibromoethane (EDB)	106-93-4	94
1,2-Dichlorobenzene	95-50-1	105
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	83
1,4-Dioxane	123-91-1	87
2-Butanone (Methyl Ethyl Ketone)	78-93-3	93
2-Hexanone	591-78-6	74
2-Propanol	67-63-0	95
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	114
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	96
Carbon Disulfide	75-15-0	79
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	112
Chloroform	67-66-3	102
Chloromethane	74-87-3	86
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/24/19 09:48 AM
Lab ID:	1905302A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	112
Freon 11	75-69-4	102
Freon 113	76-13-1	99
Freon 12	75-71-8	92
Heptane	142-82-5	108
Hexane	110-54-3	97
m,p-Xylene	108-38-3	114
Methylene Chloride	75-09-2	96
Naphthalene	91-20-3	101
o-Xylene	95-47-6	118
Propylene	115-07-1	87
Styrene	100-42-5	99
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	106
Total Xylene	1330-20-7	116
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	89

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/24/19 09:48 AM
Lab ID:	1905302A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/24/19 10:15 AM
Lab ID:	1905302A-15BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	127
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	92
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	81
1,4-Dioxane	123-91-1	84
2-Butanone (Methyl Ethyl Ketone)	78-93-3	90
2-Hexanone	591-78-6	74
2-Propanol	67-63-0	89
4-Methyl-2-pentanone	108-10-1	85
Acetone	67-64-1	112
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	91
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	77
Carbon Tetrachloride	56-23-5	97
Chloroethane	75-00-3	103
Chloroform	67-66-3	100
Chloromethane	74-87-3	82
Cyclohexane	110-82-7	99
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/24/19 10:15 AM
Lab ID:	1905302A-15BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	111
Freon 11	75-69-4	98
Freon 113	76-13-1	95
Freon 12	75-71-8	86
Heptane	142-82-5	104
Hexane	110-54-3	90
m,p-Xylene	108-38-3	114
Methylene Chloride	75-09-2	95
Naphthalene	91-20-3	98
o-Xylene	95-47-6	115
Propylene	115-07-1	84
Styrene	100-42-5	99
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	82
Toluene	108-88-3	108
Total Xylene	1330-20-7	114
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	86

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/24/19 10:15 AM
Lab ID:	1905302A-15BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	103

* % Recovery is calculated using unrounded analytical results.

5/30/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1905302B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 5/15/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1905302B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/22/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-3	12.2 "Hg	5.1 psi
02A	KAFB-106V1 112.6	Modified TO-3	10.4 "Hg	4.9 psi
02AA	KAFB-106V1 112.6 Lab Duplicate	Modified TO-3	10.4 "Hg	4.9 psi
03A	KAFB-106V1 159.6	Modified TO-3	11.2 "Hg	4.9 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-3	11.4 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-3	11 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-3	12.4 "Hg	4.9 psi
07A	KAFB-106V1 262.6	Modified TO-3	11.6 "Hg	4.9 psi
08A	KAFB-106V2 102.2	Modified TO-3	11.4 "Hg	4.9 psi
09A	KAFB-106V2 117.1	Modified TO-3	13.3 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-3	11.2 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-3	11.4 "Hg	4.9 psi
12A	KAFB-106V2 217.1	Modified TO-3	10.8 "Hg	4.9 psi
13A	Lab Blank	Modified TO-3	NA	NA
14A	LCS	Modified TO-3	NA	NA
14AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/22/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 TO-3
EA Engineering
Workorder# 1905302B

Twelve 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on May 15, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	TO-3	ATL Modifications
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

TPH (Gasoline Range) was manually integrated in samples KAFB-106V1 102.1 and KAFB-106V1 112.6.

Fluorobenzene (FID) was manually integrated in samples KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP and KAFB-106V2 217.1.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	5/17/19 03:28 PM
Lab ID:	1905302B-01A	Dilution Factor:	2280
Date/Time Collected:	5/9/19 02:42 PM	Instrument/Filename:	gcd.i / d051709
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	190000	230000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	113

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	5/17/19 02:16 PM
Lab ID:	1905302B-02A	Dilution Factor:	2040
Date/Time Collected:	5/9/19 02:55 PM	Instrument/Filename:	gcd.i / d051707
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	74000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	114

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 112.6 Lab Duplicate	Date/Time Analyzed:	5/17/19 02:56 PM
Lab ID:	1905302B-02AA	Dilution Factor:	2040
Date/Time Collected:	5/9/19 02:55 PM	Instrument/Filename:	gcd.i / d051708
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	70000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	119

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	5/17/19 04:51 PM
Lab ID:	1905302B-03A	Dilution Factor:	2130
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	gcd.i / d051710
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	220000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	104

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	5/17/19 05:43 PM
Lab ID:	1905302B-04A	Dilution Factor:	2160
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	gcd.i / d051711
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	220000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	91

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	5/17/19 06:20 PM
Lab ID:	1905302B-05A	Dilution Factor:	2120
Date/Time Collected:	5/9/19 03:30 PM	Instrument/Filename:	gcd.i / d051712
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	220000	170000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	100

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	5/17/19 06:53 PM
Lab ID:	1905302B-06A	Dilution Factor:	2280
Date/Time Collected:	5/9/19 03:43 PM	Instrument/Filename:	gcd.i / d051713
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	190000	230000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	99

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	5/17/19 07:25 PM
Lab ID:	1905302B-07A	Dilution Factor:	2180
Date/Time Collected:	5/9/19 03:54 PM	Instrument/Filename:	gcd.i / d051714
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	220000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	5/17/19 08:03 PM
Lab ID:	1905302B-08A	Dilution Factor:	2150
Date/Time Collected:	5/9/19 12:42 PM	Instrument/Filename:	gcd.i / d051715
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	180000	220000	210000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	106

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	5/17/19 08:37 PM
Lab ID:	1905302B-09A	Dilution Factor:	2400
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	gcd.i / d051716
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	140000	200000	240000	210000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	108

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	5/17/19 09:14 PM
Lab ID:	1905302B-10A	Dilution Factor:	2140
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	gcd.i / d051717
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	180000	220000	210000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	106

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	5/17/19 09:50 PM
Lab ID:	1905302B-11A	Dilution Factor:	2150
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	gcd.i / d051718
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	180000	220000	52000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	98

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	5/17/19 10:22 PM
Lab ID:	1905302B-12A	Dilution Factor:	2080
Date/Time Collected:	5/9/19 01:27 PM	Instrument/Filename:	gcd.i / d051719
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	99

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/17/19 12:28 PM
Lab ID:	1905302B-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d051705
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/17/19 09:59 AM
Lab ID:	1905302B-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d051702
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		96

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	120

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/17/19 10:39 AM
Lab ID:	1905302B-14AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d051703
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		100

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	116

* % Recovery is calculated using unrounded analytical results.

5/30/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1905302C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 5/15/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1905302C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified ASTM D-1945	12.2 "Hg	5.1 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified ASTM D-1945	12.2 "Hg	5.1 psi
02A	KAFB-106V1 112.6	Modified ASTM D-1945	10.4 "Hg	4.9 psi
03A	KAFB-106V1 159.6	Modified ASTM D-1945	11.2 "Hg	4.9 psi
04A	KAFB-106V1 159.6 DUP	Modified ASTM D-1945	11.4 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified ASTM D-1945	11 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified ASTM D-1945	12.4 "Hg	4.9 psi
07A	KAFB-106V1 262.6	Modified ASTM D-1945	11.6 "Hg	4.9 psi
08A	KAFB-106V2 102.2	Modified ASTM D-1945	11.4 "Hg	4.9 psi
09A	KAFB-106V2 117.1	Modified ASTM D-1945	13.3 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified ASTM D-1945	11.2 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified ASTM D-1945	11.4 "Hg	4.9 psi
11AA	KAFB-106V2 159.9 Lab Duplicate	Modified ASTM D-1945	11.4 "Hg	4.9 psi
12A	KAFB-106V2 217.1	Modified ASTM D-1945	10.8 "Hg	4.9 psi
13A	Lab Blank	Modified ASTM D-1945	NA	NA
13B	Lab Blank	Modified ASTM D-1945	NA	NA
13C	Lab Blank	Modified ASTM D-1945	NA	NA
13D	Lab Blank	Modified ASTM D-1945	NA	NA
14A	LCS	Modified ASTM D-1945	NA	NA
14AA	LCSD	Modified ASTM D-1945	NA	NA
14B	LCS	Modified ASTM D-1945	NA	NA
14BB	LCSD	Modified ASTM D-1945	NA	NA
14C	LCS	Modified ASTM D-1945	NA	NA

Continued on next page

WORK ORDER #: 1905302C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
14CC	LCSD	Modified ASTM D-1945	NA	NA
14D	LCS	Modified ASTM D-1945	NA	NA
14DD	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/30/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 ASTM D1945
EA Engineering
Workorder# 1905302C

Twelve 6 Liter Summa Canister samples were received on May 15, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Methane and Ethane were manually integrated in samples KAFB-106V1 102.1, KAFB-106V1 102.1

Lab Duplicate, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 159.9 Lab Duplicate and KAFB-106V2 217.1.

Carbon Monoxide was manually integrated in samples KAFB-106V1 262.6 and KAFB-106V1 217.1.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	5/16/19 09:12 PM
Lab ID:	1905302C-01A	Dilution Factor:	2.28
Date/Time Collected:	5/9/19 02:42 PM	Instrument/File Name:	gc10.i / 10051611
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000032	0.00025	0.0023	0.0056
Carbon Dioxide	124-38-9	0.0025	0.011	0.023	9.5
Carbon Monoxide	630-08-0	0.0030	0.011	0.023	Not Detected U
Ethane	74-84-0	0.000057	0.00025	0.0023	0.0031
Hydrogen	1333-74-0	0.0034	0.014	0.023	Not Detected U
Methane	74-82-8	0.000062	0.00011	0.00023	0.020
Nitrogen	7727-37-9	0.15	0.15	0.23	80
Oxygen	7782-44-7	0.042	0.042	0.23	8.8
Pentane	109-66-0	0.000057	0.00025	0.0023	0.12
Propane	74-98-6	0.000068	0.00025	0.0023	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 75

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	5/16/19 10:19 PM
Lab ID:	1905302C-01AA	Dilution Factor:	2.28
Date/Time Collected:	5/9/19 02:42 PM	Instrument/File Name:	gc10.i / 10051614
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000032	0.00025	0.0023	0.0060
Carbon Dioxide	124-38-9	0.0025	0.011	0.023	9.5
Carbon Monoxide	630-08-0	0.0030	0.011	0.023	Not Detected U
Ethane	74-84-0	0.000057	0.00025	0.0023	0.0034
Hydrogen	1333-74-0	0.0034	0.014	0.023	Not Detected U
Methane	74-82-8	0.000062	0.00011	0.00023	0.021
Nitrogen	7727-37-9	0.15	0.15	0.23	80
Oxygen	7782-44-7	0.042	0.042	0.23	8.8
Pentane	109-66-0	0.000057	0.00025	0.0023	0.13
Propane	74-98-6	0.000068	0.00025	0.0023	0.0017 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 78

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	5/17/19 08:38 AM
Lab ID:	1905302C-02A	Dilution Factor:	2.04
Date/Time Collected:	5/9/19 02:55 PM	Instrument/File Name:	gc10.i / 10051617
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0067
Carbon Dioxide	124-38-9	0.0022	0.0098	0.020	8.7
Carbon Monoxide	630-08-0	0.0027	0.0098	0.020	Not Detected U
Ethane	74-84-0	0.000051	0.00022	0.0020	0.0027
Hydrogen	1333-74-0	0.0031	0.013	0.020	Not Detected U
Methane	74-82-8	0.000055	0.00010	0.00020	0.017
Nitrogen	7727-37-9	0.14	0.14	0.20	81
Oxygen	7782-44-7	0.038	0.038	0.20	8.9
Pentane	109-66-0	0.000051	0.00022	0.0020	0.15
Propane	74-98-6	0.000061	0.00022	0.0020	0.0012 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 58

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	5/17/19 10:02 AM
Lab ID:	1905302C-03A	Dilution Factor:	2.13
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	gc10.i / 10051620
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0068
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	7.7
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	0.0015 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00021	0.0052
Nitrogen	7727-37-9	0.14	0.14	0.21	78
Oxygen	7782-44-7	0.039	0.039	0.21	12
Pentane	109-66-0	0.000053	0.00023	0.0021	0.18
Propane	74-98-6	0.000064	0.00023	0.0021	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 79

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	5/17/19 11:26 AM
Lab ID:	1905302C-04A	Dilution Factor:	2.16
Date/Time Collected:	5/9/19 03:09 PM	Instrument/Filename:	gc10.i / 10051623
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0068
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	7.8
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0015 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0053
Nitrogen	7727-37-9	0.15	0.15	0.22	78
Oxygen	7782-44-7	0.040	0.040	0.22	12
Pentane	109-66-0	0.000054	0.00024	0.0022	0.18
Propane	74-98-6	0.000065	0.00024	0.0022	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 79

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	5/17/19 12:50 PM
Lab ID:	1905302C-05A	Dilution Factor:	2.12
Date/Time Collected:	5/9/19 03:30 PM	Instrument/Filename:	gc10.i / 10051626
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0026
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	12
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	0.012 J
Ethane	74-84-0	0.000053	0.00023	0.0021	0.0032
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.0054
Nitrogen	7727-37-9	0.14	0.14	0.21	85
Oxygen	7782-44-7	0.039	0.039	0.21	1.2
Pentane	109-66-0	0.000053	0.00023	0.0021	0.087
Propane	74-98-6	0.000064	0.00023	0.0021	0.0022

J = Estimated value.

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 91

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	5/22/19 12:38 PM
Lab ID:	1905302C-06A	Dilution Factor:	2.28
Date/Time Collected:	5/9/19 03:43 PM	Instrument/File Name:	gc10.i / 10052209
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000032	0.00025	0.0023	0.0040
Carbon Dioxide	124-38-9	0.0025	0.011	0.023	8.2
Carbon Monoxide	630-08-0	0.0030	0.011	0.023	Not Detected U
Ethane	74-84-0	0.000057	0.00025	0.0023	0.0039
Hydrogen	1333-74-0	0.0034	0.014	0.023	Not Detected U
Methane	74-82-8	0.000062	0.00011	0.00023	0.0037
Nitrogen	7727-37-9	0.15	0.15	0.23	80
Oxygen	7782-44-7	0.042	0.042	0.23	10
Pentane	109-66-0	0.000057	0.00025	0.0023	0.052
Propane	74-98-6	0.000068	0.00025	0.0023	0.0056

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 65

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	5/22/19 02:07 PM
Lab ID:	1905302C-07A	Dilution Factor:	2.18
Date/Time Collected:	5/9/19 03:54 PM	Instrument/Filename:	gc10.i / 10052212
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0058
Carbon Dioxide	124-38-9	0.0024	0.010	0.022	8.0
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	0.011 J
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0046
Hydrogen	1333-74-0	0.0033	0.014	0.022	Not Detected U
Methane	74-82-8	0.000059	0.00011	0.00022	0.0039
Nitrogen	7727-37-9	0.15	0.15	0.22	80
Oxygen	7782-44-7	0.040	0.040	0.22	10
Pentane	109-66-0	0.000054	0.00024	0.0022	0.064
Propane	74-98-6	0.000065	0.00024	0.0022	0.0066

J = Estimated value.

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 71

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	5/22/19 04:53 PM
Lab ID:	1905302C-08A	Dilution Factor:	2.15
Date/Time Collected:	5/9/19 12:42 PM	Instrument/Filename:	gc10.i / 10052216
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0056
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	11
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0022
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.018
Nitrogen	7727-37-9	0.14	0.14	0.22	82
Oxygen	7782-44-7	0.040	0.040	0.22	4.3
Pentane	109-66-0	0.000054	0.00024	0.0022	0.15
Propane	74-98-6	0.000064	0.00024	0.0022	0.0012 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 110

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	5/22/19 06:32 PM
Lab ID:	1905302C-09A	Dilution Factor:	2.40
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	gc10.i / 10052219
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000034	0.00026	0.0024	0.0069
Carbon Dioxide	124-38-9	0.0026	0.012	0.024	9.7
Carbon Monoxide	630-08-0	0.0032	0.012	0.024	Not Detected U
Ethane	74-84-0	0.000060	0.00026	0.0024	0.0021 J
Hydrogen	1333-74-0	0.0036	0.015	0.024	Not Detected U
Methane	74-82-8	0.000065	0.00012	0.00024	0.017
Nitrogen	7727-37-9	0.16	0.16	0.24	83
Oxygen	7782-44-7	0.044	0.044	0.24	5.1
Pentane	109-66-0	0.000060	0.00026	0.0024	0.21
Propane	74-98-6	0.000072	0.00026	0.0024	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 120

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	5/22/19 07:51 PM
Lab ID:	1905302C-10A	Dilution Factor:	2.14
Date/Time Collected:	5/9/19 12:57 PM	Instrument/Filename:	gc10.i / 10052222
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0021	0.0067
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	9.6
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0021	0.0020 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00021	0.016
Nitrogen	7727-37-9	0.14	0.14	0.21	83
Oxygen	7782-44-7	0.040	0.040	0.21	5.1
Pentane	109-66-0	0.000054	0.00024	0.0021	0.20
Propane	74-98-6	0.000064	0.00024	0.0021	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 110

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	5/22/19 09:13 PM
Lab ID:	1905302C-11A	Dilution Factor:	2.15
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	gc10.i / 10052225
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0023
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	3.9
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.00046 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0020
Nitrogen	7727-37-9	0.14	0.14	0.22	81
Oxygen	7782-44-7	0.040	0.040	0.22	14
Pentane	109-66-0	0.000054	0.00024	0.0022	0.083
Propane	74-98-6	0.000064	0.00024	0.0022	0.00029 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 35

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 159.9 Lab Duplicate	Date/Time Analyzed:	5/22/19 10:03 PM
Lab ID:	1905302C-11AA	Dilution Factor:	2.15
Date/Time Collected:	5/9/19 01:17 PM	Instrument/Filename:	gc10.i / 10052227
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0023
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	3.9
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.00046 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0020
Nitrogen	7727-37-9	0.14	0.14	0.22	81
Oxygen	7782-44-7	0.040	0.040	0.22	14
Pentane	109-66-0	0.000054	0.00024	0.0022	0.086
Propane	74-98-6	0.000064	0.00024	0.0022	0.00028 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 35

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	5/22/19 11:11 PM
Lab ID:	1905302C-12A	Dilution Factor:	2.08
Date/Time Collected:	5/9/19 01:27 PM	Instrument/Filename:	gc10.i / 10052230
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0019 J
Carbon Dioxide	124-38-9	0.0022	0.010	0.021	12
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0021
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.0046
Nitrogen	7727-37-9	0.14	0.14	0.21	84
Oxygen	7782-44-7	0.038	0.038	0.21	2.5
Pentane	109-66-0	0.000052	0.00023	0.0021	0.060
Propane	74-98-6	0.000062	0.00023	0.0021	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 80

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/16/19 07:25 PM
Lab ID:	1905302C-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051608
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/16/19 07:02 PM
Lab ID:	1905302C-13B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051607c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/22/19 11:38 AM
Lab ID:	1905302C-13C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10052207
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/22/19 12:04 PM
Lab ID:	1905302C-13D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10052208c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/16/19 04:29 PM
Lab ID:	1905302C-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051602DOD
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	97
Carbon Monoxide	630-08-0	88
Ethane	74-84-0	101
Methane	74-82-8	102
Nitrogen	7727-37-9	99
Oxygen	7782-44-7	103
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/16/19 05:13 PM
Lab ID:	1905302C-14AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051603DOD
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	102
Carbon Dioxide	124-38-9	97
Carbon Monoxide	630-08-0	88
Ethane	74-84-0	103
Methane	74-82-8	104
Nitrogen	7727-37-9	99
Oxygen	7782-44-7	103
Pentane	109-66-0	103
Propane	74-98-6	104

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/22/19 09:01 AM
Lab ID:	1905302C-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10052202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	97
Carbon Monoxide	630-08-0	88
Ethane	74-84-0	101
Methane	74-82-8	102
Nitrogen	7727-37-9	99
Oxygen	7782-44-7	103
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/22/19 09:27 AM
Lab ID:	1905302C-14BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10052203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	99
Carbon Dioxide	124-38-9	97
Carbon Monoxide	630-08-0	89
Ethane	74-84-0	99
Methane	74-82-8	100
Nitrogen	7727-37-9	99
Oxygen	7782-44-7	103
Pentane	109-66-0	100
Propane	74-98-6	100

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/16/19 06:14 PM
Lab ID:	1905302C-14C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051605c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/16/19 06:39 PM
Lab ID:	1905302C-14CC	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051606c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/22/19 10:30 AM
Lab ID:	1905302C-14D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10052205c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	94

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/22/19 11:07 AM
Lab ID:	1905302C-14DD	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10052206c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	100

* % Recovery is calculated using unrounded analytical results.

5/30/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1905303A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 5/15/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
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WORK ORDER #: 1905303A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 252.2	Modified TO-15	11.2 "Hg	4.8 psi
01AA	KAFB-106V2 252.2 Lab Duplicate	Modified TO-15	11.2 "Hg	4.8 psi
02A	KAFB-106V2 269.5	Modified TO-15	9.6 "Hg	4.9 psi
02B	KAFB-106V2 269.5	Modified TO-15	9.6 "Hg	4.9 psi
03A	Lab Blank	Modified TO-15	NA	NA
04A	CCV	Modified TO-15	NA	NA
04B	CCV	Modified TO-15	NA	NA
05A	LCS	Modified TO-15	NA	NA
05AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/30/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE
DoD QSM 5.1 TO-15 LL/SIM
EA Engineering
Workorder# 1905303A**

Two 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on May 15, 2019. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liter of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modification taken to run these samples is summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-15 LL/SIM</i>	<i>ATL Modifications</i>
Blank and standards	Zero air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Samples were analyzed in one analytical batch on instrument MSD-14 on 5/24/19. The initial continuing calibration verification (CCV) for the batch is reported as lab fraction 04A and the ending CCV is reported as lab fraction 04B.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) study and Method Detection Limit (MDL) study are not maintained for

Total Xylenes and non-standard compounds.

Samples KAFB-106V2 252.2 and KAFB-106V2 269.5 were transferred from SIM/Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on samples KAFB-106V2 252.2 and KAFB-106V2 269.5 due to the presence of high level target species.

Surrogate 1,2-Dichloroethane-d4 did not meet in-house generated control limits of 65-140% Recovery (%R) for sample KAFB-106V2 269.5 (02B). However, recovery was within maximum exceedance limits of 52-152%R.

Acetone exceeded the instrument's calibration range for sample KAFB-106V2 252.2 Lab Duplicate and was flagged accordingly.

High concentrations of VOCs in sample KAFB-106V2 269.5 required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags, and a CN-flag was applied to the Toluene concentration to indicate a high bias.

The Continuing Calibration Verification (CCV) analyzed on 5/24/19 did not meet project requirement control limits of 70-130% recovery (R) for Naphthalene.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

CN - See case narrative explanation

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	5/24/19 04:46 PM
Lab ID:	1905303A-01A	Dilution Factor:	106
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	msd14.i / 14052416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	600	1300	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6400	7900	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	170000
1,2-Dibromoethane (EDB)	106-93-4	720	2400	4100	11000
1,2-Dichlorobenzene	95-50-1	770	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	430	1600	2600	47000
1,3-Butadiene	106-99-0	370	700	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3800	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3100	6200	290000
2-Hexanone	591-78-6	3200	4300	8700	12000
2-Propanol	67-63-0	660	2600	5200	130000
4-Methyl-2-pentanone	108-10-1	1000	1300	2200	11000
Acetone	67-64-1	740	2500	5000	2500000
Benzene	71-43-2	240	1000	1700	770000
Bromodichloromethane	75-27-4	360	2100	3600	Not Detected U
Bromoform	75-25-2	760	3300	5500	Not Detected U
Carbon Disulfide	75-15-0	1000	3300	6600	Not Detected U
Carbon Tetrachloride	56-23-5	790	2000	3300	Not Detected U
Chloroethane	75-00-3	1600	2800	5600	Not Detected U
Chloroform	67-66-3	440	1600	2600	Not Detected U
Chloromethane	74-87-3	920	2200	4400	Not Detected U
Cyclohexane	110-82-7	400	1100	1800	2500000
Dibromochloromethane	124-48-1	930	2700	4500	Not Detected U
Ethanol	64-17-5	870	2000	4000	6100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	5/24/19 04:46 PM
Lab ID:	1905303A-01A	Dilution Factor:	106
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	msd14.i / 14052416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected
Ethyl Benzene	100-41-4	460	1400	2300	310000
Freon 11	75-69-4	440	1800	3000	Not Detected U
Freon 113	76-13-1	720	2400	4100	Not Detected U
Freon 12	75-71-8	580	1600	2600	Not Detected U
Heptane	142-82-5	730	1300	2200	3900000
Hexane	110-54-3	460	1100	1900	2100000
m,p-Xylene	108-38-3	430	1400	2300	750000
Methylene Chloride	75-09-2	1100	3700	7400	Not Detected U
Naphthalene	91-20-3	860	5600	11000	Not Detected UJ
o-Xylene	95-47-6	620	1400	2300	230000
Propylene	115-07-1	620	1800	3600	40000
Styrene	100-42-5	430	1400	2200	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3600	Not Detected U
Tetrahydrofuran	109-99-9	550	940	1600	Not Detected U
Toluene	108-88-3	360	1200	2000	3500000
Total Xylene	1330-20-7	NA	D	2300	980000
Trichloroethene	79-01-6	840	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	470	810	1400	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	5/24/19 04:46 PM
Lab ID:	1905303A-01A	Dilution Factor:	106
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	msd14.i / 14052416
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	125
4-Bromofluorobenzene	460-00-4	83-115	99
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	5/24/19 05:40 PM
Lab ID:	1905303A-01AA	Dilution Factor:	106
Date/Time Collected:	5/9/19 01:43 PM	Instrument/File Name:	msd14.i / 14052418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	600	1300	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6400	7900	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	190000
1,2-Dibromoethane (EDB)	106-93-4	720	2400	4100	12000
1,2-Dichlorobenzene	95-50-1	770	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	430	1600	2600	53000
1,3-Butadiene	106-99-0	370	700	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	3800	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	3100	6200	300000
2-Hexanone	591-78-6	3200	4300	8700	13000
2-Propanol	67-63-0	660	2600	5200	140000
4-Methyl-2-pentanone	108-10-1	1000	1300	2200	14000
Acetone	67-64-1	740	2500	5000	2600000 J
Benzene	71-43-2	240	1000	1700	800000
Bromodichloromethane	75-27-4	360	2100	3600	Not Detected U
Bromoform	75-25-2	760	3300	5500	Not Detected U
Carbon Disulfide	75-15-0	1000	3300	6600	Not Detected U
Carbon Tetrachloride	56-23-5	790	2000	3300	Not Detected U
Chloroethane	75-00-3	1600	2800	5600	Not Detected U
Chloroform	67-66-3	440	1600	2600	Not Detected U
Chloromethane	74-87-3	920	2200	4400	Not Detected U
Cyclohexane	110-82-7	400	1100	1800	2600000
Dibromochloromethane	124-48-1	930	2700	4500	Not Detected U
Ethanol	64-17-5	870	2000	4000	6800

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	5/24/19 05:40 PM
Lab ID:	1905303A-01AA	Dilution Factor:	106
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	msd14.i / 14052418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected
Ethyl Benzene	100-41-4	460	1400	2300	340000
Freon 11	75-69-4	440	1800	3000	Not Detected U
Freon 113	76-13-1	720	2400	4100	Not Detected U
Freon 12	75-71-8	580	1600	2600	Not Detected U
Heptane	142-82-5	730	1300	2200	4200000
Hexane	110-54-3	460	1100	1900	2200000
m,p-Xylene	108-38-3	430	1400	2300	810000
Methylene Chloride	75-09-2	1100	3700	7400	Not Detected U
Naphthalene	91-20-3	860	5600	11000	1100 JUJ
o-Xylene	95-47-6	620	1400	2300	250000
Propylene	115-07-1	620	1800	3600	43000
Styrene	100-42-5	430	1400	2200	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3600	Not Detected U
Tetrahydrofuran	109-99-9	550	940	1600	Not Detected U
Toluene	108-88-3	360	1200	2000	3700000
Total Xylene	1330-20-7	NA	D	2300	1100000
Trichloroethene	79-01-6	840	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	470	810	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	5/24/19 05:40 PM
Lab ID:	1905303A-01AA	Dilution Factor:	106
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	msd14.i / 14052418
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	126
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	5/24/19 08:03 PM
Lab ID:	1905303A-02A	Dilution Factor:	196
Date/Time Collected:	5/9/19 01:55 PM	Instrument/Filename:	msd14.i / 14052424
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1100	2400	4000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	14000	29000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	920	2900	4800	100000
1,2-Dibromoethane (EDB)	106-93-4	1300	4500	7500	7500
1,2-Dichlorobenzene	95-50-1	1400	3500	5900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	800	2900	4800	33000
1,3-Butadiene	106-99-0	680	1300	2200	Not Detected U
1,4-Dioxane	123-91-1	3900	7100	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2800	5800	12000	390000
2-Hexanone	591-78-6	6000	8000	16000	11000 J
2-Propanol	67-63-0	1200	4800	9600	100000
4-Methyl-2-pentanone	108-10-1	2000	2400	4000	17000
Acetone	67-64-1	1400	4600	9300	2400000
Benzene	71-43-2	440	1900	3100	590000
Bromodichloromethane	75-27-4	660	3900	6600	Not Detected U
Bromoform	75-25-2	1400	6100	10000	Not Detected U
Carbon Disulfide	75-15-0	1800	6100	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1500	3700	6200	Not Detected U
Chloroethane	75-00-3	3000	5200	10000	Not Detected U
Chloroform	67-66-3	820	2900	4800	Not Detected U
Chloromethane	74-87-3	1700	4000	8100	Not Detected U
Cyclohexane	110-82-7	750	2000	3400	2500000
Dibromochloromethane	124-48-1	1700	5000	8300	Not Detected U
Ethanol	64-17-5	1600	3700	7400	11000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	5/24/19 08:03 PM
Lab ID:	1905303A-02A	Dilution Factor:	196
Date/Time Collected:	5/9/19 01:55 PM	Instrument/Filename:	msd14.i / 14052424
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	850	2600	4200	180000
Freon 11	75-69-4	810	3300	5500	Not Detected U
Freon 113	76-13-1	1300	4500	7500	Not Detected U
Freon 12	75-71-8	1100	2900	4800	Not Detected U
Heptane	142-82-5	1400	2400	4000	5800000
Hexane	110-54-3	850	2100	3400	1200000
m,p-Xylene	108-38-3	800	2600	4200	430000
Methylene Chloride	75-09-2	2100	6800	14000	Not Detected U
o-Xylene	95-47-6	1100	2600	4200	120000
Propylene	115-07-1	1200	3400	6700	30000
Styrene	100-42-5	790	2500	4200	Not Detected U
Tetrachloroethene	127-18-4	2300	4000	6600	Not Detected U
Tetrahydrofuran	109-99-9	1000	1700	2900	Not Detected U
Toluene	108-88-3	660	2200	3700	3900000 CN
Total Xylene	1330-20-7	NA	D	4200	550000
Trichloroethene	79-01-6	1600	3200	5300	Not Detected U
Vinyl Chloride	75-01-4	870	1500	2500	Not Detected U

U = The analyte was not detected above the MDL.

CN =See Case Narrative explanation

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	5/24/19 08:03 PM
Lab ID:	1905303A-02A	Dilution Factor:	196
Date/Time Collected:	5/9/19 01:55 PM	Instrument/Filename:	msd14.i / 14052424
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	133
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	5/24/19 05:11 PM
Lab ID:	1905303A-02B	Dilution Factor:	98.0
Date/Time Collected:	5/9/19 01:55 PM	Instrument/Filename:	msd14.i / 14052417
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	91-20-3	790	5100	10000	970 JUJ

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	144 Q
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/24/19 12:52 PM
Lab ID:	1905303A-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052408a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	29	59	Not Detected U
2-Hexanone	591-78-6	31	41	82	Not Detected U
2-Propanol	67-63-0	6.3	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	24	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	26	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	21	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	19	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID: Lab Blank
Lab ID: 1905303A-03A
Date/Time Collected: NA - Not Applicable
Media: NA - Not Applicable

Date/Time Analyzed: 5/24/19 12:52 PM
Dilution Factor: 1.00
Instrument/Filename: msd14.i / 14052408a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	35	69	Not Detected U
Naphthalene	91-20-3	8.1	52	100	Not Detected UJ
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	17	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/24/19 12:52 PM
Lab ID:	1905303A-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052408a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	99
4-Bromofluorobenzene	460-00-4	83-115	98
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:24 AM
Lab ID:	1905303A-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	100
1,2,4-Trichlorobenzene	120-82-1	102
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	92
1,2-Dichlorobenzene	95-50-1	95
1,3,5-Trimethylbenzene	108-67-8	102
1,3-Butadiene	106-99-0	85
1,4-Dioxane	123-91-1	91
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	85
2-Propanol	67-63-0	94
4-Methyl-2-pentanone	108-10-1	93
Acetone	67-64-1	110
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	89
Bromoform	75-25-2	93
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	100
Chloroethane	75-00-3	92
Chloroform	67-66-3	103
Chloromethane	74-87-3	88
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	90
Ethanol	64-17-5	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:24 AM
Lab ID:	1905303A-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	117
Ethyl Benzene	100-41-4	108
Freon 11	75-69-4	100
Freon 113	76-13-1	98
Freon 12	75-71-8	88
Heptane	142-82-5	96
Hexane	110-54-3	96
m,p-Xylene	108-38-3	110
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	67 Q
o-Xylene	95-47-6	109
Propylene	115-07-1	91
Styrene	100-42-5	89
Tetrachloroethene	127-18-4	107
Tetrahydrofuran	109-99-9	92
Toluene	108-88-3	109
Total Xylene	1330-20-7	110
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	90

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:24 AM
Lab ID:	1905303A-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	102
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:46 PM
Lab ID:	1905303A-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052427
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	105
1,2,4-Trichlorobenzene	120-82-1	105
1,2,4-Trimethylbenzene	95-63-6	108
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	91
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	99
2-Hexanone	591-78-6	92
2-Propanol	67-63-0	97
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	120
Benzene	71-43-2	108
Bromodichloromethane	75-27-4	93
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	92
Carbon Tetrachloride	56-23-5	107
Chloroethane	75-00-3	103
Chloroform	67-66-3	108
Chloromethane	74-87-3	89
Cyclohexane	110-82-7	108
Dibromochloromethane	124-48-1	95
Ethanol	64-17-5	92

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:46 PM
Lab ID:	1905303A-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052427
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	117
Ethyl Benzene	100-41-4	114
Freon 11	75-69-4	102
Freon 113	76-13-1	103
Freon 12	75-71-8	92
Heptane	142-82-5	110
Hexane	110-54-3	101
m,p-Xylene	108-38-3	118
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	73
o-Xylene	95-47-6	116
Propylene	115-07-1	93
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	111
Tetrahydrofuran	109-99-9	92
Toluene	108-88-3	118
Total Xylene	1330-20-7	117
Trichloroethene	79-01-6	111
Vinyl Chloride	75-01-4	88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	5/24/19 09:46 PM
Lab ID:	1905303A-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052427
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/24/19 09:48 AM
Lab ID:	1905303A-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	138
1,2,4-Trimethylbenzene	95-63-6	112
1,2-Dibromoethane (EDB)	106-93-4	94
1,2-Dichlorobenzene	95-50-1	105
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	83
1,4-Dioxane	123-91-1	87
2-Butanone (Methyl Ethyl Ketone)	78-93-3	93
2-Hexanone	591-78-6	74
2-Propanol	67-63-0	95
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	114
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	96
Carbon Disulfide	75-15-0	79
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	112
Chloroform	67-66-3	102
Chloromethane	74-87-3	86
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/24/19 09:48 AM
Lab ID:	1905303A-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	112
Freon 11	75-69-4	102
Freon 113	76-13-1	99
Freon 12	75-71-8	92
Heptane	142-82-5	108
Hexane	110-54-3	97
m,p-Xylene	108-38-3	114
Methylene Chloride	75-09-2	96
Naphthalene	91-20-3	101
o-Xylene	95-47-6	118
Propylene	115-07-1	87
Styrene	100-42-5	99
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	106
Total Xylene	1330-20-7	116
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	89

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/24/19 09:48 AM
Lab ID:	1905303A-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/24/19 10:15 AM
Lab ID:	1905303A-05AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	127
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	92
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	81
1,4-Dioxane	123-91-1	84
2-Butanone (Methyl Ethyl Ketone)	78-93-3	90
2-Hexanone	591-78-6	74
2-Propanol	67-63-0	89
4-Methyl-2-pentanone	108-10-1	85
Acetone	67-64-1	112
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	91
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	77
Carbon Tetrachloride	56-23-5	97
Chloroethane	75-00-3	103
Chloroform	67-66-3	100
Chloromethane	74-87-3	82
Cyclohexane	110-82-7	99
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/24/19 10:15 AM
Lab ID:	1905303A-05AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	111
Freon 11	75-69-4	98
Freon 113	76-13-1	95
Freon 12	75-71-8	86
Heptane	142-82-5	104
Hexane	110-54-3	90
m,p-Xylene	108-38-3	114
Methylene Chloride	75-09-2	95
Naphthalene	91-20-3	98
o-Xylene	95-47-6	115
Propylene	115-07-1	84
Styrene	100-42-5	99
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	82
Toluene	108-88-3	108
Total Xylene	1330-20-7	114
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	86

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-140	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/24/19 10:15 AM
Lab ID:	1905303A-05AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14052404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-115	101
Toluene-d8	2037-26-5	86-115	103

* % Recovery is calculated using unrounded analytical results.

5/30/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1905303B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 5/15/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1905303B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/22/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 252.2	Modified TO-3	11.2 "Hg	4.8 psi
01AA	KAFB-106V2 252.2 Lab Duplicate	Modified TO-3	11.2 "Hg	4.8 psi
02A	KAFB-106V2 269.5	Modified TO-3	9.6 "Hg	4.9 psi
03A	Lab Blank	Modified TO-3	NA	NA
04A	LCS	Modified TO-3	NA	NA
04AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/22/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 TO-3
EA Engineering
Workorder# 1905303B

Two 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on May 15, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Fluorobenzene (FID) was manually integrated in sample KAFB-106V2 269.5.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	5/18/19 11:59 AM
Lab ID:	1905303B-01A	Dilution Factor:	2120
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	gcd.i / d051806
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	220000	89000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	122

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	5/18/19 12:43 PM
Lab ID:	1905303B-01AA	Dilution Factor:	2120
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	gcd.i / d051807
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	220000	98000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	119

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	5/18/19 01:25 PM
Lab ID:	1905303B-02A	Dilution Factor:	1960
Date/Time Collected:	5/9/19 01:55 PM	Instrument/Filename:	gcd.i / d051808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	160000	200000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	125

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/18/19 10:11 AM
Lab ID:	1905303B-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d051804
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	101

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/18/19 08:41 AM
Lab ID:	1905303B-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d051802
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		96

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	114

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/18/19 09:23 AM
Lab ID:	1905303B-04AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d051803
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		100

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	128

* % Recovery is calculated using unrounded analytical results.

5/30/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1905303C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 5/15/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

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WORK ORDER #: 1905303C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	05/15/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	05/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 252.2	Modified ASTM D-1945	11.2 "Hg	4.8 psi
01AA	KAFB-106V2 252.2 Lab Duplicate	Modified ASTM D-1945	11.2 "Hg	4.8 psi
02A	KAFB-106V2 269.5	Modified ASTM D-1945	9.6 "Hg	4.9 psi
03A	Lab Blank	Modified ASTM D-1945	NA	NA
03B	Lab Blank	Modified ASTM D-1945	NA	NA
04A	LCS	Modified ASTM D-1945	NA	NA
04AA	LCSD	Modified ASTM D-1945	NA	NA
04B	LCS	Modified ASTM D-1945	NA	NA
04BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 05/30/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM 5.1 ASTM D1945
EA Engineering
Workorder# 1905303C

Two 6 Liter Summa Canister samples were received on May 15, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM Version 5.1 waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the

sample components and subtracting from 100%.

Methane and Ethane were manually integrated in samples KAFB-106V2 252.2, KAFB-106V2 252.2 Lab Duplicate and KAFB-106V2 269.5.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	5/18/19 08:37 AM
Lab ID:	1905303C-01A	Dilution Factor:	2.12
Date/Time Collected:	5/9/19 01:43 PM	Instrument/Filename:	gc10.i / 10051719
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0021
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	5.0
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	0.0015 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.0021
Nitrogen	7727-37-9	0.14	0.14	0.21	81
Oxygen	7782-44-7	0.039	0.039	0.21	13
Pentane	109-66-0	0.000053	0.00023	0.0021	0.037
Propane	74-98-6	0.000064	0.00023	0.0021	0.0022

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 42

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	5/18/19 11:46 AM
Lab ID:	1905303C-01AA	Dilution Factor:	2.12
Date/Time Collected:	5/9/19 01:43 PM	Instrument/File Name:	gc10.i / 10051725
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0021
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	5.0
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	0.0014 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.0021
Nitrogen	7727-37-9	0.14	0.14	0.21	81
Oxygen	7782-44-7	0.039	0.039	0.21	13
Pentane	109-66-0	0.000053	0.00023	0.0021	0.036
Propane	74-98-6	0.000064	0.00023	0.0021	0.0022

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 48

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	5/18/19 10:14 AM
Lab ID:	1905303C-02A	Dilution Factor:	1.96
Date/Time Collected:	5/9/19 01:55 PM	Instrument/Filename:	gc10.i / 10051722
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00022	0.0020	0.0020
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	5.8
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000049	0.00022	0.0020	0.0017 J
Hydrogen	1333-74-0	0.0029	0.012	0.020	Not Detected U
Methane	74-82-8	0.000053	0.000098	0.00020	0.0023
Nitrogen	7727-37-9	0.13	0.13	0.20	81
Oxygen	7782-44-7	0.036	0.036	0.20	12
Pentane	109-66-0	0.000049	0.00022	0.0020	0.029
Propane	74-98-6	0.000059	0.00022	0.0020	0.0021

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 64

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/17/19 05:30 PM
Lab ID:	1905303C-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051707
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	5/17/19 05:55 PM
Lab ID:	1905303C-03B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051708c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/17/19 03:40 PM
Lab ID:	1905303C-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051703a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	101
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	102
Methane	74-82-8	102
Nitrogen	7727-37-9	100
Oxygen	7782-44-7	104
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/17/19 04:08 PM
Lab ID:	1905303C-04AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051704a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	99
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	100
Methane	74-82-8	101
Nitrogen	7727-37-9	100
Oxygen	7782-44-7	104
Pentane	109-66-0	100
Propane	74-98-6	100

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	5/17/19 04:41 PM
Lab ID:	1905303C-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051705ac
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	5/17/19 05:08 PM
Lab ID:	1905303C-04BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10051706ac
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

7/24/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1907216A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/10/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

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www.airtoxics.com

WORK ORDER #: 1907216A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
01B	KAFB-106V1 102.1	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
02B	KAFB-106V1 112.6	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
05B	KAFB-106V1 217.1	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
06B	KAFB-106V1 252.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
06BB	KAFB-106V1 252.1 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
07B	KAFB-106V1 262.6	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
08B	KAFB-106V2 102.2	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
09B	KAFB-106V2 117.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
10B	KAFB-106V2 117.1 DUP	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
12B	KAFB-106V2 217.1	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi

Continued on next page

WORK ORDER #: 1907216A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
13A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
13B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
14A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
14B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
14C	CCV	Modified TO-15 (5&20 ppbv	NA	NA
14D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
15A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
15AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
15B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
15BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/24/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

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LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 1907216A

Twelve 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on July 10, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for non-standard compounds.

High concentrations of VOCs in samples KAFB-106V1 217.1 (Sample Fraction 05B), KAFB-106V1 252.1 (Sample Fraction 06B), KAFB-106V1 262.6 (Sample Fraction 07B), KAFB-106V2 102.2 (Sample Fraction 08B), KAFB-106V2 117.1 (Sample Fraction 09B), KAFB-106V2 117.1 DUP (Sample Fraction 10B), and KAFB-106V2 217.1 (Sample Fraction 12B) required an off-line dilution using a Tedlar bag. Toluene is a common contaminant in Tedlar bags, and a CN-flag was applied to Toluene concentrations to indicate a high bias.

Dilution was performed on samples KAFB-106V1 102.1, KAFB-106V1 102.1 Lab Duplicate, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, and KAFB-106V2 217.1 due to the presence of high level target species.

Due to high-level target compounds, samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, and KAFB-106V2 217.1 were analyzed twice. Both analysis and associated QC's are reported. The first analysis, file number designated with "A", includes compounds that exceeded the instrument calibration level. A second analysis, file number designated with "B", was performed using further dilution to bring Benzene and Toluene within the calibration range.

Acetone, 2-Propanol, Hexane, 2-Butanone (Methyl Ethyl Ketone), Cyclohexane, and Heptane exceeded the instrument's calibration range for samples KAFB-106V1 102.1, KAFB-106V2 102.2, and KAFB-106V2 217.1. Data is reported as qualified.

Acetone, 2-Propanol, Hexane, 2-Butanone (Methyl Ethyl Ketone), and Cyclohexane exceeded the instrument's calibration range for sample KAFB-106V1 102.1 Lab Duplicate. Data is reported as qualified.

Acetone, Hexane, 2-Butanone (Methyl Ethyl Ketone), Cyclohexane, and Heptane exceeded the instrument's calibration range for samples KAFB-106V1 112.6, KAFB-106V1 217.1, KAFB-106V1 262.6, KAFB-106V2 117.1, and KAFB-106V2 117.1 DUP. Data is reported as qualified.

Acetone, 2-Propanol, Hexane, Cyclohexane, and Heptane exceeded the instrument's calibration range for samples KAFB-106V1 159.6 and KAFB-106V1 159.6 DUP. Data is reported as qualified.

Acetone, Hexane, Cyclohexane, and Heptane exceeded the instrument's calibration range for sample KAFB-106V1 252.1. Data is reported as qualified.

Hexane exceeded the instrument's calibration range for sample KAFB-106V2 159.9. Data is reported as qualified.

Hexane exceeded the instrument's calibration range at saturated levels for samples KAFB-106V1 102.1, KAFB-106V1 102.1 Lab Duplicate, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, and KAFB-106V2 217.1. Data is reported as qualified.

Heptane exceeded the instrument's calibration range at saturated levels for sample KAFB-106V2 117.1 DUP. Data is reported as qualified.

Cyclohexane exceeded the instrument's calibration range at saturated levels for samples KAFB-106V2 117.1 and KAFB-106V2 117.1 DUP. Data is reported as qualified.

The recovery of surrogate Toluene-d8 in samples KAFB-106V1 102.1 (Sample Fraction 01A),

KAFB-106V1 102.1 Lab Duplicate, KAFB-106V1 112.6 (Sample Fraction 02A), KAFB-106V1 159.6 (Sample Fraction 03A), KAFB-106V1 159.6 DUP (Sample Fraction 04A), KAFB-106V1 217.1 (Sample Fraction 05A), KAFB-106V1 252.1 (Sample Fraction 06A), KAFB-106V1 262.6 (Sample Fractions 07A & 07B), KAFB-106V2 102.2 (Sample Fraction 08A), KAFB-106V2 117.1 (Sample Fractions 09A & 09B), KAFB-106V2 117.1 DUP (Sample Fraction 10A), KAFB-106V2 159.9 (Sample Fraction 11A) and KAFB-106V2 217.1 (Sample Fraction 12A) were outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Samples were analyzed in one analytical batch on MSD-J on 07/18/2019. The initial continuing calibration verification (CCV) for the batch is reported as lab fraction 14A and the ending CCV is reported as lab fraction 14B.

Samples were analyzed in one analytical batch on MSD-14 on 07/22/2019. The initial continuing calibration verification (CCV) for the batch is reported as lab fraction 14C and the ending CCV is reported as lab fraction 14D.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	7/18/19 03:37 PM
Lab ID:	1907216A-01A	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/File Name:	msdj.i / j071807
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	390	2000	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5500	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	2400	2700	110000
1,2-Dibromoethane (EDB)	106-93-4	440	3800	4200	3100 J
1,2-Dichlorobenzene	95-50-1	360	2900	3300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2300	2400	2700	34000
1,3-Butadiene	106-99-0	510	1100	1200	Not Detected U
1,4-Dioxane	123-91-1	2200	5900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	4800	6400	710000 J
2-Hexanone	591-78-6	3000	6700	8900	Not Detected U
2-Propanol	67-63-0	1500	4000	5400	280000 J
4-Methyl-2-pentanone	108-10-1	500	2000	2200	Not Detected U
Acetone	67-64-1	1500	3900	5200	5100000 J
Bromodichloromethane	75-27-4	360	3300	3600	Not Detected U
Bromoform	75-25-2	430	5100	5600	Not Detected U
Carbon Disulfide	75-15-0	990	5100	6800	Not Detected U
Carbon Tetrachloride	56-23-5	360	3100	3400	Not Detected U
Chloroethane	75-00-3	1400	4300	5800	Not Detected U
Chloroform	67-66-3	250	2400	2700	Not Detected U
Chloromethane	74-87-3	820	3400	4500	Not Detected U
Cyclohexane	110-82-7	220	1700	1900	4400000 J
Dibromochloromethane	124-48-1	360	4200	4600	Not Detected U
Ethanol	64-17-5	2600	3100	4100	180000
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	7/18/19 03:37 PM
Lab ID:	1907216A-01A	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	msdj.i / j071807
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	270	2100	2400	190000
Freon 11	75-69-4	470	2800	3100	Not Detected U
Freon 113	76-13-1	750	3800	4200	Not Detected U
Freon 12	75-71-8	310	2400	2700	Not Detected U
Heptane	142-82-5	650	2000	2200	2200000 J
Hexane	110-54-3	450	1700	1900	5400000 J
m,p-Xylene	108-38-3	290	2100	2400	300000
Methylene Chloride	75-09-2	1300	5700	7600	Not Detected U
Naphthalene	91-20-3	790	5700	11000	Not Detected U
o-Xylene	95-47-6	500	2100	2400	100000
Propylene	115-07-1	990	2800	3800	26000
Styrene	100-42-5	290	2100	2300	Not Detected U
Tetrachloroethene	127-18-4	390	3300	3700	Not Detected U
Tetrahydrofuran	109-99-9	330	1400	1600	Not Detected U
Total Xylene	1330-20-7	NA	D	2400	400000
Trichloroethene	79-01-6	330	2600	2900	Not Detected U
Vinyl Chloride	75-01-4	580	1200	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	89

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	7/18/19 03:37 PM
Lab ID:	1907216A-01A	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	msdj.i / j071807
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	135 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	7/18/19 04:10 PM
Lab ID:	1907216A-01AA	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	msdj.i / j071808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	390	2000	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5500	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	2400	2700	110000
1,2-Dibromoethane (EDB)	106-93-4	440	3800	4200	2900 J
1,2-Dichlorobenzene	95-50-1	360	2900	3300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2300	2400	2700	34000
1,3-Butadiene	106-99-0	510	1100	1200	Not Detected U
1,4-Dioxane	123-91-1	2200	5900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	4800	6400	700000 J
2-Hexanone	591-78-6	3000	6700	8900	Not Detected U
2-Propanol	67-63-0	1500	4000	5400	270000 J
4-Methyl-2-pentanone	108-10-1	500	2000	2200	Not Detected U
Acetone	67-64-1	1500	3900	5200	5000000 J
Bromodichloromethane	75-27-4	360	3300	3600	Not Detected U
Bromoform	75-25-2	430	5100	5600	Not Detected U
Carbon Disulfide	75-15-0	990	5100	6800	Not Detected U
Carbon Tetrachloride	56-23-5	360	3100	3400	Not Detected U
Chloroethane	75-00-3	1400	4300	5800	Not Detected U
Chloroform	67-66-3	250	2400	2700	Not Detected U
Chloromethane	74-87-3	820	3400	4500	Not Detected U
Cyclohexane	110-82-7	220	1700	1900	4300000 J
Dibromochloromethane	124-48-1	360	4200	4600	Not Detected U
Ethanol	64-17-5	2600	3100	4100	180000
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	7/18/19 04:10 PM
Lab ID:	1907216A-01AA	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	msdj.i / j071808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	270	2100	2400	190000
Freon 11	75-69-4	470	2800	3100	Not Detected U
Freon 113	76-13-1	750	3800	4200	Not Detected U
Freon 12	75-71-8	310	2400	2700	Not Detected U
Heptane	142-82-5	650	2000	2200	2200000
Hexane	110-54-3	450	1700	1900	5400000 J
m,p-Xylene	108-38-3	290	2100	2400	290000
Methylene Chloride	75-09-2	1300	5700	7600	Not Detected U
Naphthalene	91-20-3	790	5700	11000	Not Detected U
o-Xylene	95-47-6	500	2100	2400	100000
Propylene	115-07-1	990	2800	3800	25000
Styrene	100-42-5	290	2100	2300	Not Detected U
Tetrachloroethene	127-18-4	390	3300	3700	Not Detected U
Tetrahydrofuran	109-99-9	330	1400	1600	Not Detected U
Total Xylene	1330-20-7	NA	D	2400	390000
Trichloroethene	79-01-6	330	2600	2900	Not Detected U
Vinyl Chloride	75-01-4	580	1200	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	7/18/19 04:10 PM
Lab ID:	1907216A-01AA	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	msdj.i / j071808
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	135 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	7/22/19 12:35 PM
Lab ID:	1907216A-01B	Dilution Factor:	109
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	msd14.i / 14072209
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	240	1000	1700	2000000
Toluene	108-88-3	370	1200	2000	1800000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	7/18/19 04:42 PM
Lab ID:	1907216A-02A	Dilution Factor:	100
Date/Time Collected:	7/5/19 08:46 AM	Instrument/Filename:	msdj.i / j071809
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	360	1800	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5100	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2200	2400	110000
1,2-Dibromoethane (EDB)	106-93-4	410	3400	3800	5000
1,2-Dichlorobenzene	95-50-1	330	2700	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	2200	2400	33000
1,3-Butadiene	106-99-0	470	1000	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5400	7200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	4400	5900	560000 J
2-Hexanone	591-78-6	2800	6100	8200	Not Detected U
2-Propanol	67-63-0	1400	3700	4900	190000
4-Methyl-2-pentanone	108-10-1	460	1800	2000	Not Detected U
Acetone	67-64-1	1400	3600	4800	4100000 J
Bromodichloromethane	75-27-4	340	3000	3400	Not Detected U
Bromoform	75-25-2	390	4600	5200	Not Detected U
Carbon Disulfide	75-15-0	910	4700	6200	1200 J
Carbon Tetrachloride	56-23-5	330	2800	3100	Not Detected U
Chloroethane	75-00-3	1200	4000	5300	Not Detected U
Chloroform	67-66-3	230	2200	2400	Not Detected U
Chloromethane	74-87-3	760	3100	4100	Not Detected U
Cyclohexane	110-82-7	200	1500	1700	4600000 J
Dibromochloromethane	124-48-1	330	3800	4200	Not Detected U
Ethanol	64-17-5	2400	2800	3800	160000
Ethyl Acetate	141-78-6	NA	D	7200	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	7/18/19 04:42 PM
Lab ID:	1907216A-02A	Dilution Factor:	100
Date/Time Collected:	7/5/19 08:46 AM	Instrument/Filename:	msdj.i / j071809
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	250	2000	2200	220000
Freon 11	75-69-4	430	2500	2800	Not Detected U
Freon 113	76-13-1	690	3400	3800	Not Detected U
Freon 12	75-71-8	290	2200	2500	Not Detected U
Heptane	142-82-5	590	1800	2000	2700000 J
Hexane	110-54-3	410	1600	1800	5100000 J
m,p-Xylene	108-38-3	260	2000	2200	340000
Methylene Chloride	75-09-2	1200	5200	6900	Not Detected U
Naphthalene	91-20-3	720	5200	10000	Not Detected U
o-Xylene	95-47-6	460	2000	2200	120000
Propylene	115-07-1	900	2600	3400	30000
Styrene	100-42-5	260	1900	2100	Not Detected U
Tetrachloroethene	127-18-4	360	3000	3400	Not Detected U
Tetrahydrofuran	109-99-9	310	1300	1500	Not Detected U
Total Xylene	1330-20-7	NA	D	2200	460000
Trichloroethene	79-01-6	300	2400	2700	Not Detected U
Vinyl Chloride	75-01-4	530	1200	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	7/18/19 04:42 PM
Lab ID:	1907216A-02A	Dilution Factor:	100
Date/Time Collected:	7/5/19 08:46 AM	Instrument/Filename:	msdj.i / j071809
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	148 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	7/22/19 01:59 PM
Lab ID:	1907216A-02B	Dilution Factor:	100
Date/Time Collected:	7/5/19 08:46 AM	Instrument/Filename:	msd14.i / 14072211
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	220	960	1600	1500000
Toluene	108-88-3	340	1100	1900	2200000

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	7/18/19 08:20 PM
Lab ID:	1907216A-03A	Dilution Factor:	103
Date/Time Collected:	7/5/19 09:07 AM	Instrument/Filename:	msdj.i / j071811
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	370	1900	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5200	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2300	2500	150000
1,2-Dibromoethane (EDB)	106-93-4	420	3600	4000	2700 J
1,2-Dichlorobenzene	95-50-1	340	2800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	2300	2500	51000
1,3-Butadiene	106-99-0	480	1000	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5600	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4600	6100	140000
2-Hexanone	591-78-6	2900	6300	8400	Not Detected U
2-Propanol	67-63-0	1400	3800	5100	350000 J
4-Methyl-2-pentanone	108-10-1	480	1900	2100	Not Detected U
Acetone	67-64-1	1400	3700	4900	3100000 J
Benzene	71-43-2	210	1500	1600	1600000
Bromodichloromethane	75-27-4	340	3100	3400	Not Detected U
Bromoform	75-25-2	400	4800	5300	Not Detected U
Carbon Disulfide	75-15-0	940	4800	6400	1000 J
Carbon Tetrachloride	56-23-5	340	2900	3200	Not Detected U
Chloroethane	75-00-3	1300	4100	5400	Not Detected U
Chloroform	67-66-3	240	2300	2500	Not Detected U
Chloromethane	74-87-3	780	3200	4200	Not Detected U
Cyclohexane	110-82-7	200	1600	1800	4200000 J
Dibromochloromethane	124-48-1	340	3900	4400	Not Detected U
Ethanol	64-17-5	2400	2900	3900	97000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	7/18/19 08:20 PM
Lab ID:	1907216A-03A	Dilution Factor:	103
Date/Time Collected:	7/5/19 09:07 AM	Instrument/Filename:	msdj.i / j071811
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	250	2000	2200	330000
Freon 11	75-69-4	440	2600	2900	Not Detected U
Freon 113	76-13-1	710	3600	3900	Not Detected U
Freon 12	75-71-8	300	2300	2500	Not Detected U
Heptane	142-82-5	610	1900	2100	3500000 J
Hexane	110-54-3	420	1600	1800	4800000 J
m,p-Xylene	108-38-3	270	2000	2200	690000
Methylene Chloride	75-09-2	1300	5400	7200	Not Detected U
Naphthalene	91-20-3	740	5400	11000	Not Detected U
o-Xylene	95-47-6	470	2000	2200	230000
Propylene	115-07-1	930	2600	3500	20000
Styrene	100-42-5	270	2000	2200	Not Detected U
Tetrachloroethene	127-18-4	370	3100	3500	Not Detected U
Tetrahydrofuran	109-99-9	320	1400	1500	Not Detected U
Toluene	108-88-3	280	1700	1900	1800000
Total Xylene	1330-20-7	NA	D	2200	920000
Trichloroethene	79-01-6	310	2500	2800	Not Detected U
Vinyl Chloride	75-01-4	540	1200	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	7/18/19 08:20 PM
Lab ID:	1907216A-03A	Dilution Factor:	103
Date/Time Collected:	7/5/19 09:07 AM	Instrument/Filename:	msdj.i / j071811
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	93
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	183 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	7/18/19 08:53 PM
Lab ID:	1907216A-04A	Dilution Factor:	106
Date/Time Collected:	7/5/19 09:18 AM	Instrument/Filename:	msdj.i / j071812
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	380	1900	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5400	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	2300	2600	160000
1,2-Dibromoethane (EDB)	106-93-4	430	3700	4100	2700 J
1,2-Dichlorobenzene	95-50-1	350	2900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2200	2300	2600	53000
1,3-Butadiene	106-99-0	500	1000	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	5700	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4700	6200	140000
2-Hexanone	591-78-6	3000	6500	8700	Not Detected U
2-Propanol	67-63-0	1500	3900	5200	350000 J
4-Methyl-2-pentanone	108-10-1	490	2000	2200	Not Detected U
Acetone	67-64-1	1400	3800	5000	3100000 J
Benzene	71-43-2	210	1500	1700	1600000
Bromodichloromethane	75-27-4	360	3200	3600	Not Detected U
Bromoform	75-25-2	420	4900	5500	Not Detected U
Carbon Disulfide	75-15-0	970	5000	6600	980 J
Carbon Tetrachloride	56-23-5	350	3000	3300	Not Detected U
Chloroethane	75-00-3	1300	4200	5600	Not Detected U
Chloroform	67-66-3	240	2300	2600	Not Detected U
Chloromethane	74-87-3	800	3300	4400	Not Detected U
Cyclohexane	110-82-7	210	1600	1800	4200000 J
Dibromochloromethane	124-48-1	350	4100	4500	Not Detected U
Ethanol	64-17-5	2500	3000	4000	98000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	7/18/19 08:53 PM
Lab ID:	1907216A-04A	Dilution Factor:	106
Date/Time Collected:	7/5/19 09:18 AM	Instrument/Filename:	msdj.i / j071812
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected
Ethyl Benzene	100-41-4	260	2100	2300	330000
Freon 11	75-69-4	460	2700	3000	Not Detected U
Freon 113	76-13-1	730	3600	4100	Not Detected U
Freon 12	75-71-8	300	2400	2600	Not Detected U
Heptane	142-82-5	630	2000	2200	3500000 J
Hexane	110-54-3	440	1700	1900	4800000 J
m,p-Xylene	108-38-3	280	2100	2300	740000
Methylene Chloride	75-09-2	1300	5500	7400	Not Detected U
Naphthalene	91-20-3	770	5600	11000	Not Detected U
o-Xylene	95-47-6	490	2100	2300	240000
Propylene	115-07-1	960	2700	3600	20000
Styrene	100-42-5	280	2000	2200	Not Detected U
Tetrachloroethene	127-18-4	380	3200	3600	Not Detected U
Tetrahydrofuran	109-99-9	320	1400	1600	Not Detected U
Toluene	108-88-3	290	1800	2000	1800000
Total Xylene	1330-20-7	NA	D	2300	980000
Trichloroethene	79-01-6	320	2600	2800	Not Detected U
Vinyl Chloride	75-01-4	560	1200	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	7/18/19 08:53 PM
Lab ID:	1907216A-04A	Dilution Factor:	106
Date/Time Collected:	7/5/19 09:18 AM	Instrument/Filename:	msdj.i / j071812
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	180 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	7/18/19 09:26 PM
Lab ID:	1907216A-05A	Dilution Factor:	98.0
Date/Time Collected:	7/5/19 09:34 AM	Instrument/Filename:	msdj.i / j071813
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	350	1800	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5000	11000	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2200	2400	160000
1,2-Dibromoethane (EDB)	106-93-4	400	3400	3800	4400
1,2-Dichlorobenzene	95-50-1	320	2600	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2000	2200	2400	64000
1,3-Butadiene	106-99-0	460	980	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5300	7100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	4300	5800	500000 J
2-Hexanone	591-78-6	2700	6000	8000	Not Detected U
2-Propanol	67-63-0	1400	3600	4800	40000
4-Methyl-2-pentanone	108-10-1	450	1800	2000	Not Detected U
Acetone	67-64-1	1300	3500	4600	6000000 J
Bromodichloromethane	75-27-4	330	3000	3300	Not Detected U
Bromoform	75-25-2	380	4600	5100	Not Detected U
Carbon Disulfide	75-15-0	890	4600	6100	Not Detected U
Carbon Tetrachloride	56-23-5	320	2800	3100	Not Detected U
Chloroethane	75-00-3	1200	3900	5200	Not Detected U
Chloroform	67-66-3	220	2200	2400	Not Detected U
Chloromethane	74-87-3	740	3000	4000	Not Detected U
Cyclohexane	110-82-7	200	1500	1700	5100000 J
Dibromochloromethane	124-48-1	330	3800	4200	Not Detected U
Ethanol	64-17-5	2300	2800	3700	Not Detected U
Ethyl Acetate	141-78-6	NA	D	7100	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	7/18/19 09:26 PM
Lab ID:	1907216A-05A	Dilution Factor:	98.0
Date/Time Collected:	7/5/19 09:34 AM	Instrument/Filename:	msdj.i / j071813
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	240	1900	2100	470000
Freon 11	75-69-4	420	2500	2800	Not Detected U
Freon 113	76-13-1	680	3400	3800	Not Detected U
Freon 12	75-71-8	280	2200	2400	Not Detected U
Heptane	142-82-5	580	1800	2000	5200000 J
Hexane	110-54-3	400	1600	1700	5000000 J
m,p-Xylene	108-38-3	260	1900	2100	1400000
Methylene Chloride	75-09-2	1200	5100	6800	Not Detected U
Naphthalene	91-20-3	710	5100	10000	Not Detected U
o-Xylene	95-47-6	450	1900	2100	430000
Propylene	115-07-1	890	2500	3400	68000
Styrene	100-42-5	260	1900	2100	Not Detected U
Tetrachloroethene	127-18-4	350	3000	3300	Not Detected U
Tetrahydrofuran	109-99-9	300	1300	1400	Not Detected U
Total Xylene	1330-20-7	NA	D	2100	1800000
Trichloroethene	79-01-6	290	2400	2600	Not Detected U
Vinyl Chloride	75-01-4	520	1100	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	92

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	7/18/19 09:26 PM
Lab ID:	1907216A-05A	Dilution Factor:	98.0
Date/Time Collected:	7/5/19 09:34 AM	Instrument/Filename:	msdj.i / j071813
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	244 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	7/22/19 04:35 PM
Lab ID:	1907216A-05B	Dilution Factor:	196
Date/Time Collected:	7/5/19 09:34 AM	Instrument/Filename:	msd14.i / 14072215
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	440	1900	3100	1600000
Toluene	108-88-3	660	2200	3700	3200000 CN

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	7/18/19 09:58 PM
Lab ID:	1907216A-06A	Dilution Factor:	103
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	msdj.i / j071814
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	370	1900	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5200	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2300	2500	120000
1,2-Dibromoethane (EDB)	106-93-4	420	3600	4000	18000
1,2-Dichlorobenzene	95-50-1	340	2800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	2300	2500	51000
1,3-Butadiene	106-99-0	480	1000	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5600	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4600	6100	280000
2-Hexanone	591-78-6	2900	6300	8400	Not Detected U
2-Propanol	67-63-0	1400	3800	5100	20000
4-Methyl-2-pentanone	108-10-1	480	1900	2100	Not Detected U
Acetone	67-64-1	1400	3700	4900	1300000 J
Bromodichloromethane	75-27-4	340	3100	3400	Not Detected U
Bromoform	75-25-2	400	4800	5300	Not Detected U
Carbon Disulfide	75-15-0	940	4800	6400	Not Detected U
Carbon Tetrachloride	56-23-5	340	2900	3200	Not Detected U
Chloroethane	75-00-3	1300	4100	5400	Not Detected U
Chloroform	67-66-3	240	2300	2500	Not Detected U
Chloromethane	74-87-3	780	3200	4200	Not Detected U
Cyclohexane	110-82-7	200	1600	1800	3400000 J
Dibromochloromethane	124-48-1	340	3900	4400	Not Detected U
Ethanol	64-17-5	2400	2900	3900	4600
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	7/18/19 09:58 PM
Lab ID:	1907216A-06A	Dilution Factor:	103
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	msdj.i / j071814
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	250	2000	2200	470000
Freon 11	75-69-4	440	2600	2900	Not Detected U
Freon 113	76-13-1	710	3600	3900	Not Detected U
Freon 12	75-71-8	300	2300	2500	Not Detected U
Heptane	142-82-5	610	1900	2100	5700000 J
Hexane	110-54-3	420	1600	1800	3800000 J
m,p-Xylene	108-38-3	270	2000	2200	1400000
Methylene Chloride	75-09-2	1300	5400	7200	Not Detected U
Naphthalene	91-20-3	740	5400	11000	Not Detected U
o-Xylene	95-47-6	470	2000	2200	410000
Propylene	115-07-1	930	2600	3500	69000
Styrene	100-42-5	270	2000	2200	Not Detected U
Tetrachloroethene	127-18-4	370	3100	3500	Not Detected U
Tetrahydrofuran	109-99-9	320	1400	1500	Not Detected U
Total Xylene	1330-20-7	NA	D	2200	1800000
Trichloroethene	79-01-6	310	2500	2800	Not Detected U
Vinyl Chloride	75-01-4	540	1200	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	94

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	7/18/19 09:58 PM
Lab ID:	1907216A-06A	Dilution Factor:	103
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	msdj.i / j071814
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	299 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	7/22/19 05:07 PM
Lab ID:	1907216A-06B	Dilution Factor:	206
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	msd14.i / 14072216
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	460	2000	3300	800000
Toluene	108-88-3	700	2300	3900	4200000 CN

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1 Lab Duplicate	Date/Time Analyzed:	7/22/19 05:34 PM
Lab ID:	1907216A-06BB	Dilution Factor:	206
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	msd14.i / 14072217
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	460	2000	3300	760000
Toluene	108-88-3	700	2300	3900	3900000 CN

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	7/18/19 10:31 PM
Lab ID:	1907216A-07A	Dilution Factor:	100
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	msdj.i / j071815
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	360	1800	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5100	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2200	2400	110000
1,2-Dibromoethane (EDB)	106-93-4	410	3400	3800	24000
1,2-Dichlorobenzene	95-50-1	330	2700	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	2200	2400	42000
1,3-Butadiene	106-99-0	470	1000	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5400	7200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	4400	5900	540000 J
2-Hexanone	591-78-6	2800	6100	8200	Not Detected U
2-Propanol	67-63-0	1400	3700	4900	51000
4-Methyl-2-pentanone	108-10-1	460	1800	2000	Not Detected U
Acetone	67-64-1	1400	3600	4800	2200000 J
Bromodichloromethane	75-27-4	340	3000	3400	Not Detected U
Bromoform	75-25-2	390	4600	5200	Not Detected U
Carbon Disulfide	75-15-0	910	4700	6200	Not Detected U
Carbon Tetrachloride	56-23-5	330	2800	3100	Not Detected U
Chloroethane	75-00-3	1200	4000	5300	Not Detected U
Chloroform	67-66-3	230	2200	2400	Not Detected U
Chloromethane	74-87-3	760	3100	4100	Not Detected U
Cyclohexane	110-82-7	200	1500	1700	3400000 J
Dibromochloromethane	124-48-1	330	3800	4200	Not Detected U
Ethanol	64-17-5	2400	2800	3800	16000
Ethyl Acetate	141-78-6	NA	D	7200	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	7/18/19 10:31 PM
Lab ID:	1907216A-07A	Dilution Factor:	100
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	msdj.i / j071815
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	250	2000	2200	460000
Freon 11	75-69-4	430	2500	2800	Not Detected U
Freon 113	76-13-1	690	3400	3800	Not Detected U
Freon 12	75-71-8	290	2200	2500	Not Detected U
Heptane	142-82-5	590	1800	2000	6100000 J
Hexane	110-54-3	410	1600	1800	3300000 J
m,p-Xylene	108-38-3	260	2000	2200	1200000
Methylene Chloride	75-09-2	1200	5200	6900	Not Detected U
Naphthalene	91-20-3	720	5200	10000	Not Detected U
o-Xylene	95-47-6	460	2000	2200	330000
Propylene	115-07-1	900	2600	3400	72000
Styrene	100-42-5	260	1900	2100	Not Detected U
Tetrachloroethene	127-18-4	360	3000	3400	Not Detected U
Tetrahydrofuran	109-99-9	310	1300	1500	Not Detected U
Total Xylene	1330-20-7	NA	D	2200	1500000
Trichloroethene	79-01-6	300	2400	2700	Not Detected U
Vinyl Chloride	75-01-4	530	1200	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	94

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	7/18/19 10:31 PM
Lab ID:	1907216A-07A	Dilution Factor:	100
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	msdj.i / j071815
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	308 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	7/22/19 06:24 PM
Lab ID:	1907216A-07B	Dilution Factor:	201
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	msd14.i / 14072219
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	450	1900	3200	780000
Toluene	108-88-3	680	2300	3800	5500000 CN

CN =See Case Narrative explanation

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	125 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	7/18/19 11:04 PM
Lab ID:	1907216A-08A	Dilution Factor:	109
Date/Time Collected:	7/5/19 10:24 AM	Instrument/Filename:	msdj.i / j071816
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	390	2000	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5500	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	2400	2700	150000
1,2-Dibromoethane (EDB)	106-93-4	440	3800	4200	24000
1,2-Dichlorobenzene	95-50-1	360	2900	3300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2300	2400	2700	57000
1,3-Butadiene	106-99-0	510	1100	1200	Not Detected U
1,4-Dioxane	123-91-1	2200	5900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	4800	6400	880000 J
2-Hexanone	591-78-6	3000	6700	8900	Not Detected U
2-Propanol	67-63-0	1500	4000	5400	340000 J
4-Methyl-2-pentanone	108-10-1	500	2000	2200	Not Detected U
Acetone	67-64-1	1500	3900	5200	5900000 J
Bromodichloromethane	75-27-4	360	3300	3600	Not Detected U
Bromoform	75-25-2	430	5100	5600	Not Detected U
Carbon Disulfide	75-15-0	990	5100	6800	Not Detected U
Carbon Tetrachloride	56-23-5	360	3100	3400	Not Detected U
Chloroethane	75-00-3	1400	4300	5800	Not Detected U
Chloroform	67-66-3	250	2400	2700	Not Detected U
Chloromethane	74-87-3	820	3400	4500	Not Detected U
Cyclohexane	110-82-7	220	1700	1900	6100000 J
Dibromochloromethane	124-48-1	360	4200	4600	Not Detected U
Ethanol	64-17-5	2600	3100	4100	67000
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	7/18/19 11:04 PM
Lab ID:	1907216A-08A	Dilution Factor:	109
Date/Time Collected:	7/5/19 10:24 AM	Instrument/Filename:	msdj.i / j071816
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	270	2100	2400	440000
Freon 11	75-69-4	470	2800	3100	Not Detected U
Freon 113	76-13-1	750	3800	4200	Not Detected U
Freon 12	75-71-8	310	2400	2700	Not Detected U
Heptane	142-82-5	650	2000	2200	6200000 J
Hexane	110-54-3	450	1700	1900	5600000 J
m,p-Xylene	108-38-3	290	2100	2400	1100000
Methylene Chloride	75-09-2	1300	5700	7600	Not Detected U
Naphthalene	91-20-3	790	5700	11000	Not Detected U
o-Xylene	95-47-6	500	2100	2400	330000
Propylene	115-07-1	990	2800	3800	27000
Styrene	100-42-5	290	2100	2300	Not Detected U
Tetrachloroethene	127-18-4	390	3300	3700	Not Detected U
Tetrahydrofuran	109-99-9	330	1400	1600	Not Detected U
Total Xylene	1330-20-7	NA	D	2400	1400000
Trichloroethene	79-01-6	330	2600	2900	Not Detected U
Vinyl Chloride	75-01-4	580	1200	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	7/18/19 11:04 PM
Lab ID:	1907216A-08A	Dilution Factor:	109
Date/Time Collected:	7/5/19 10:24 AM	Instrument/Filename:	msdj.i / j071816
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	236 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	7/22/19 06:48 PM
Lab ID:	1907216A-08B	Dilution Factor:	217
Date/Time Collected:	7/5/19 10:24 AM	Instrument/Filename:	msd14.i / 14072220
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	480	2100	3500	1800000
Toluene	108-88-3	740	2400	4100	4500000 CN

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	7/18/19 11:37 PM
Lab ID:	1907216A-09A	Dilution Factor:	103
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	msdj.i / j071817
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	370	1900	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5200	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2300	2500	240000
1,2-Dibromoethane (EDB)	106-93-4	420	3600	4000	17000
1,2-Dichlorobenzene	95-50-1	340	2800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	2300	2500	90000
1,3-Butadiene	106-99-0	480	1000	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5600	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4600	6100	710000 J
2-Hexanone	591-78-6	2900	6300	8400	Not Detected U
2-Propanol	67-63-0	1400	3800	5100	90000
4-Methyl-2-pentanone	108-10-1	480	1900	2100	Not Detected U
Acetone	67-64-1	1400	3700	4900	4000000 J
Bromodichloromethane	75-27-4	340	3100	3400	Not Detected U
Bromoform	75-25-2	400	4800	5300	Not Detected U
Carbon Disulfide	75-15-0	940	4800	6400	1700 J
Carbon Tetrachloride	56-23-5	340	2900	3200	Not Detected U
Chloroethane	75-00-3	1300	4100	5400	Not Detected U
Chloroform	67-66-3	240	2300	2500	Not Detected U
Chloromethane	74-87-3	780	3200	4200	Not Detected U
Cyclohexane	110-82-7	200	1600	1800	6000000 J
Dibromochloromethane	124-48-1	340	3900	4400	Not Detected U
Ethanol	64-17-5	2400	2900	3900	8200
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	7/18/19 11:37 PM
Lab ID:	1907216A-09A	Dilution Factor:	103
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	msdj.i / j071817
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	250	2000	2200	430000
Freon 11	75-69-4	440	2600	2900	Not Detected U
Freon 113	76-13-1	710	3600	3900	Not Detected U
Freon 12	75-71-8	300	2300	2500	Not Detected U
Heptane	142-82-5	610	1900	2100	6000000 J
Hexane	110-54-3	420	1600	1800	5500000 J
m,p-Xylene	108-38-3	270	2000	2200	1200000
Methylene Chloride	75-09-2	1300	5400	7200	Not Detected U
Naphthalene	91-20-3	740	5400	11000	Not Detected U
o-Xylene	95-47-6	470	2000	2200	380000
Propylene	115-07-1	930	2600	3500	29000
Styrene	100-42-5	270	2000	2200	Not Detected U
Tetrachloroethene	127-18-4	370	3100	3500	Not Detected U
Tetrahydrofuran	109-99-9	320	1400	1500	Not Detected U
Total Xylene	1330-20-7	NA	D	2200	1600000
Trichloroethene	79-01-6	310	2500	2800	Not Detected U
Vinyl Chloride	75-01-4	540	1200	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	7/18/19 11:37 PM
Lab ID:	1907216A-09A	Dilution Factor:	103
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	msdj.i / j071817
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	244 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	7/22/19 07:47 PM
Lab ID:	1907216A-09B	Dilution Factor:	206
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	msd14.i / 14072222
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	460	2000	3300	2300000
Toluene	108-88-3	700	2300	3900	5200000 CN

CN =See Case Narrative explanation

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	127 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	7/19/19 12:10 AM
Lab ID:	1907216A-10A	Dilution Factor:	103
Date/Time Collected:	7/5/19 10:48 AM	Instrument/Filename:	msdj.i / j071818
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	370	1900	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5200	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	2300	2500	240000
1,2-Dibromoethane (EDB)	106-93-4	420	3600	4000	16000
1,2-Dichlorobenzene	95-50-1	340	2800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	2300	2500	86000
1,3-Butadiene	106-99-0	480	1000	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5600	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4600	6100	730000 J
2-Hexanone	591-78-6	2900	6300	8400	Not Detected U
2-Propanol	67-63-0	1400	3800	5100	95000
4-Methyl-2-pentanone	108-10-1	480	1900	2100	Not Detected U
Acetone	67-64-1	1400	3700	4900	4100000 J
Bromodichloromethane	75-27-4	340	3100	3400	Not Detected U
Bromoform	75-25-2	400	4800	5300	Not Detected U
Carbon Disulfide	75-15-0	940	4800	6400	1700 J
Carbon Tetrachloride	56-23-5	340	2900	3200	Not Detected U
Chloroethane	75-00-3	1300	4100	5400	Not Detected U
Chloroform	67-66-3	240	2300	2500	Not Detected U
Chloromethane	74-87-3	780	3200	4200	Not Detected U
Cyclohexane	110-82-7	200	1600	1800	6000000 J
Dibromochloromethane	124-48-1	340	3900	4400	Not Detected U
Ethanol	64-17-5	2400	2900	3900	8900
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	7/19/19 12:10 AM
Lab ID:	1907216A-10A	Dilution Factor:	103
Date/Time Collected:	7/5/19 10:48 AM	Instrument/Filename:	msdj.i / j071818
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	250	2000	2200	440000
Freon 11	75-69-4	440	2600	2900	Not Detected U
Freon 113	76-13-1	710	3600	3900	Not Detected U
Freon 12	75-71-8	300	2300	2500	Not Detected U
Heptane	142-82-5	610	1900	2100	6200000 J
Hexane	110-54-3	420	1600	1800	5900000 J
m,p-Xylene	108-38-3	270	2000	2200	1200000
Methylene Chloride	75-09-2	1300	5400	7200	Not Detected U
Naphthalene	91-20-3	740	5400	11000	Not Detected U
o-Xylene	95-47-6	470	2000	2200	370000
Propylene	115-07-1	930	2600	3500	29000
Styrene	100-42-5	270	2000	2200	Not Detected U
Tetrachloroethene	127-18-4	370	3100	3500	Not Detected U
Tetrahydrofuran	109-99-9	320	1400	1500	Not Detected U
Total Xylene	1330-20-7	NA	D	2200	1500000
Trichloroethene	79-01-6	310	2500	2800	Not Detected U
Vinyl Chloride	75-01-4	540	1200	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	7/19/19 12:10 AM
Lab ID:	1907216A-10A	Dilution Factor:	103
Date/Time Collected:	7/5/19 10:48 AM	Instrument/Filename:	msdj.i / j071818
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	103
Toluene-d8	2037-26-5	86-115	246 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	7/22/19 08:16 PM
Lab ID:	1907216A-10B	Dilution Factor:	206
Date/Time Collected:	7/5/19 10:48 AM	Instrument/Filename:	msd14.i / 14072223
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	460	2000	3300	2200000
Toluene	108-88-3	700	2300	3900	4200000 CN

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	7/19/19 12:43 AM
Lab ID:	1907216A-11A	Dilution Factor:	106
Date/Time Collected:	7/5/19 11:03 AM	Instrument/Filename:	msdj.i / j071819
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	380	1900	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5400	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	2300	2600	150000
1,2-Dibromoethane (EDB)	106-93-4	430	3700	4100	1600 J
1,2-Dichlorobenzene	95-50-1	350	2900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2200	2300	2600	54000
1,3-Butadiene	106-99-0	500	1000	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	5700	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4700	6200	5200 J
2-Hexanone	591-78-6	3000	6500	8700	Not Detected U
2-Propanol	67-63-0	1500	3900	5200	2100 J
4-Methyl-2-pentanone	108-10-1	490	2000	2200	Not Detected U
Acetone	67-64-1	1400	3800	5000	180000
Benzene	71-43-2	210	1500	1700	660000
Bromodichloromethane	75-27-4	360	3200	3600	Not Detected U
Bromoform	75-25-2	420	4900	5500	Not Detected U
Carbon Disulfide	75-15-0	970	5000	6600	Not Detected U
Carbon Tetrachloride	56-23-5	350	3000	3300	Not Detected U
Chloroethane	75-00-3	1300	4200	5600	Not Detected U
Chloroform	67-66-3	240	2300	2600	Not Detected U
Chloromethane	74-87-3	800	3300	4400	Not Detected U
Cyclohexane	110-82-7	210	1600	1800	1700000
Dibromochloromethane	124-48-1	350	4100	4500	Not Detected U
Ethanol	64-17-5	2500	3000	4000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	7/19/19 12:43 AM
Lab ID:	1907216A-11A	Dilution Factor:	106
Date/Time Collected:	7/5/19 11:03 AM	Instrument/Filename:	msdj.i / j071819
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected
Ethyl Benzene	100-41-4	260	2100	2300	120000
Freon 11	75-69-4	460	2700	3000	Not Detected U
Freon 113	76-13-1	730	3600	4100	Not Detected U
Freon 12	75-71-8	300	2400	2600	Not Detected U
Heptane	142-82-5	630	2000	2200	1400000
Hexane	110-54-3	440	1700	1900	2500000 J
m,p-Xylene	108-38-3	280	2100	2300	360000
Methylene Chloride	75-09-2	1300	5500	7400	Not Detected U
Naphthalene	91-20-3	770	5600	11000	Not Detected U
o-Xylene	95-47-6	490	2100	2300	130000
Propylene	115-07-1	960	2700	3600	5400
Styrene	100-42-5	280	2000	2200	Not Detected U
Tetrachloroethene	127-18-4	380	3200	3600	Not Detected U
Tetrahydrofuran	109-99-9	320	1400	1600	Not Detected U
Toluene	108-88-3	290	1800	2000	990000
Total Xylene	1330-20-7	NA	D	2300	500000
Trichloroethene	79-01-6	320	2600	2800	Not Detected U
Vinyl Chloride	75-01-4	560	1200	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	7/19/19 12:43 AM
Lab ID:	1907216A-11A	Dilution Factor:	106
Date/Time Collected:	7/5/19 11:03 AM	Instrument/Filename:	msdj.i / j071819
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	87
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	134 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	7/18/19 07:47 PM
Lab ID:	1907216A-12A	Dilution Factor:	109
Date/Time Collected:	7/5/19 11:15 AM	Instrument/Filename:	msdj.i / j071810
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	390	2000	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5500	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	2400	2700	160000
1,2-Dibromoethane (EDB)	106-93-4	440	3800	4200	7300
1,2-Dichlorobenzene	95-50-1	360	2900	3300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2300	2400	2700	57000
1,3-Butadiene	106-99-0	510	1100	1200	Not Detected U
1,4-Dioxane	123-91-1	2200	5900	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	4800	6400	370000 J
2-Hexanone	591-78-6	3000	6700	8900	Not Detected U
2-Propanol	67-63-0	1500	4000	5400	300000 J
4-Methyl-2-pentanone	108-10-1	500	2000	2200	Not Detected U
Acetone	67-64-1	1500	3900	5200	5900000 J
Bromodichloromethane	75-27-4	360	3300	3600	Not Detected U
Bromoform	75-25-2	430	5100	5600	Not Detected U
Carbon Disulfide	75-15-0	990	5100	6800	Not Detected U
Carbon Tetrachloride	56-23-5	360	3100	3400	Not Detected U
Chloroethane	75-00-3	1400	4300	5800	Not Detected U
Chloroform	67-66-3	250	2400	2700	Not Detected U
Chloromethane	74-87-3	820	3400	4500	Not Detected U
Cyclohexane	110-82-7	220	1700	1900	4900000 J
Dibromochloromethane	124-48-1	360	4200	4600	Not Detected U
Ethanol	64-17-5	2600	3100	4100	Not Detected U
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	7/18/19 07:47 PM
Lab ID:	1907216A-12A	Dilution Factor:	109
Date/Time Collected:	7/5/19 11:15 AM	Instrument/Filename:	msdj.i / j071810
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Benzene	100-41-4	270	2100	2400	340000
Freon 11	75-69-4	470	2800	3100	Not Detected U
Freon 113	76-13-1	750	3800	4200	Not Detected U
Freon 12	75-71-8	310	2400	2700	Not Detected U
Heptane	142-82-5	650	2000	2200	4500000 J
Hexane	110-54-3	450	1700	1900	5100000 J
m,p-Xylene	108-38-3	290	2100	2400	800000
Methylene Chloride	75-09-2	1300	5700	7600	Not Detected U
Naphthalene	91-20-3	790	5700	11000	Not Detected U
o-Xylene	95-47-6	500	2100	2400	240000
Propylene	115-07-1	990	2800	3800	42000
Styrene	100-42-5	290	2100	2300	Not Detected U
Tetrachloroethene	127-18-4	390	3300	3700	Not Detected U
Tetrahydrofuran	109-99-9	330	1400	1600	Not Detected U
Total Xylene	1330-20-7	NA	D	2400	1000000
Trichloroethene	79-01-6	330	2600	2900	Not Detected U
Vinyl Chloride	75-01-4	580	1200	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	91

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	7/18/19 07:47 PM
Lab ID:	1907216A-12A	Dilution Factor:	109
Date/Time Collected:	7/5/19 11:15 AM	Instrument/Filename:	msdj.i / j071810
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	199 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	7/22/19 09:13 PM
Lab ID:	1907216A-12B	Dilution Factor:	181
Date/Time Collected:	7/5/19 11:15 AM	Instrument/Filename:	msd14.i / 14072225
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	400	1700	2900	1400000
Toluene	108-88-3	610	2000	3400	2600000 CN

CN =See Case Narrative explanation

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/18/19 02:33 PM
Lab ID:	1907216A-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071806a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	3.6	18	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	51	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	12	22	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	4.1	34	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	3.3	27	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	21	22	24	Not Detected U
1,3-Butadiene	106-99-0	4.7	10	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	28	61	82	Not Detected U
2-Propanol	67-63-0	14	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	4.6	18	20	Not Detected U
Acetone	67-64-1	14	36	48	Not Detected U
Benzene	71-43-2	2.0	14	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	30	34	Not Detected U
Bromoform	75-25-2	3.9	46	52	Not Detected U
Carbon Disulfide	75-15-0	9.1	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	3.3	28	31	Not Detected U
Chloroethane	75-00-3	12	40	53	Not Detected U
Chloroform	67-66-3	2.3	22	24	Not Detected U
Chloromethane	74-87-3	7.6	31	41	Not Detected U
Cyclohexane	110-82-7	2.0	15	17	Not Detected U
Dibromochloromethane	124-48-1	3.3	38	42	Not Detected U
Ethanol	64-17-5	24	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/18/19 02:33 PM
Lab ID:	1907216A-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071806a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	2.5	20	22	Not Detected U
Freon 11	75-69-4	4.3	25	28	Not Detected U
Freon 113	76-13-1	6.9	34	38	Not Detected U
Freon 12	75-71-8	2.9	22	25	Not Detected U
Heptane	142-82-5	5.9	18	20	Not Detected U
Hexane	110-54-3	4.1	16	18	Not Detected U
m,p-Xylene	108-38-3	2.6	20	22	Not Detected U
Methylene Chloride	75-09-2	12	52	69	Not Detected U
Naphthalene	91-20-3	7.2	52	100	Not Detected U
o-Xylene	95-47-6	4.6	20	22	Not Detected U
Propylene	115-07-1	9.0	26	34	Not Detected U
Styrene	100-42-5	2.6	19	21	Not Detected U
Tetrachloroethene	127-18-4	3.6	30	34	Not Detected U
Tetrahydrofuran	109-99-9	3.1	13	15	Not Detected U
Toluene	108-88-3	2.7	17	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	3.0	24	27	Not Detected U
Vinyl Chloride	75-01-4	5.3	12	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/18/19 02:33 PM
Lab ID:	1907216A-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071806a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	96
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/22/19 11:19 AM
Lab ID:	1907216A-13B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14072207a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	93

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/18/19 12:02 PM
Lab ID:	1907216A-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msdj.i / j071802a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	103
1,2,4-Trichlorobenzene	120-82-1	88
1,2,4-Trimethylbenzene	95-63-6	101
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	92
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	87
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	92
2-Hexanone	591-78-6	95
2-Propanol	67-63-0	85
4-Methyl-2-pentanone	108-10-1	85
Acetone	67-64-1	109
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	89
Bromoform	75-25-2	93
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	92
Chloroform	67-66-3	101
Chloromethane	74-87-3	83
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	85

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/18/19 12:02 PM
Lab ID:	1907216A-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071802a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	93
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	93
Freon 113	76-13-1	98
Freon 12	75-71-8	84
Heptane	142-82-5	92
Hexane	110-54-3	97
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	107
Naphthalene	91-20-3	96
o-Xylene	95-47-6	102
Propylene	115-07-1	91
Styrene	100-42-5	88
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	93
Toluene	108-88-3	102
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	88

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/18/19 12:02 PM
Lab ID:	1907216A-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071802a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/19/19 10:59 AM
Lab ID:	1907216A-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071826
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	80
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	94
1,2-Dichlorobenzene	95-50-1	89
1,3,5-Trimethylbenzene	108-67-8	98
1,3-Butadiene	106-99-0	85
1,4-Dioxane	123-91-1	91
2-Butanone (Methyl Ethyl Ketone)	78-93-3	92
2-Hexanone	591-78-6	93
2-Propanol	67-63-0	81
4-Methyl-2-pentanone	108-10-1	83
Acetone	67-64-1	113
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	88
Bromoform	75-25-2	90
Carbon Disulfide	75-15-0	88
Carbon Tetrachloride	56-23-5	96
Chloroethane	75-00-3	89
Chloroform	67-66-3	97
Chloromethane	74-87-3	78
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	89
Ethanol	64-17-5	80

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/19/19 10:59 AM
Lab ID:	1907216A-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071826
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	99
Freon 11	75-69-4	89
Freon 113	76-13-1	95
Freon 12	75-71-8	82
Heptane	142-82-5	96
Hexane	110-54-3	97
m,p-Xylene	108-38-3	99
Methylene Chloride	75-09-2	101
Naphthalene	91-20-3	90
o-Xylene	95-47-6	100
Propylene	115-07-1	87
Styrene	100-42-5	86
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	91
Toluene	108-88-3	104
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	85

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	89

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/19/19 10:59 AM
Lab ID:	1907216A-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071826
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/22/19 08:21 AM
Lab ID:	1907216A-14C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14072202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Benzene	71-43-2	100
Toluene	108-88-3	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/22/19 10:01 PM
Lab ID:	1907216A-14D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14072227
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Benzene	71-43-2	78
Toluene	108-88-3	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/18/19 12:30 PM
Lab ID:	1907216A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071803a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	93
1,2,4-Trimethylbenzene	95-63-6	102
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	94
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	88
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	101
2-Propanol	67-63-0	93
4-Methyl-2-pentanone	108-10-1	87
Acetone	67-64-1	116
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	93
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	82
Carbon Tetrachloride	56-23-5	100
Chloroethane	75-00-3	95
Chloroform	67-66-3	102
Chloromethane	74-87-3	86
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	93

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/18/19 12:30 PM
Lab ID:	1907216A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071803a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	103
Freon 11	75-69-4	98
Freon 113	76-13-1	98
Freon 12	75-71-8	88
Heptane	142-82-5	95
Hexane	110-54-3	101
m,p-Xylene	108-38-3	101
Methylene Chloride	75-09-2	109
Naphthalene	91-20-3	66
o-Xylene	95-47-6	102
Propylene	115-07-1	90
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	105
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/18/19 12:30 PM
Lab ID:	1907216A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071803a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/18/19 12:58 PM
Lab ID:	1907216A-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msdj.i / j071804a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	97
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	96
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	87
1,4-Dioxane	123-91-1	94
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	99
2-Propanol	67-63-0	92
4-Methyl-2-pentanone	108-10-1	86
Acetone	67-64-1	108
Benzene	71-43-2	104
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	81
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	95
Chloroform	67-66-3	102
Chloromethane	74-87-3	86
Cyclohexane	110-82-7	99
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	97

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/18/19 12:58 PM
Lab ID:	1907216A-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071804a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	96
Freon 113	76-13-1	98
Freon 12	75-71-8	87
Heptane	142-82-5	95
Hexane	110-54-3	98
m,p-Xylene	108-38-3	101
Methylene Chloride	75-09-2	109
Naphthalene	91-20-3	68
o-Xylene	95-47-6	106
Propylene	115-07-1	86
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	95
Toluene	108-88-3	103
Total Xylene	1330-20-7	104
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	88

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/18/19 12:58 PM
Lab ID:	1907216A-15AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071804a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/22/19 08:46 AM
Lab ID:	1907216A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14072203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Benzene	71-43-2	101
Toluene	108-88-3	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/22/19 09:32 AM
Lab ID:	1907216A-15BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14072204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Benzene	71-43-2	100
Toluene	108-88-3	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

7/23/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1907216B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/10/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

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WORK ORDER #: 1907216B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/23/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-3	11.5 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-3	10.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-3	10.5 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-3	11.0 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-3	9.5 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-3	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified TO-3	10.0 "Hg	5 psi
07AA	KAFB-106V1 262.6 Lab Duplicate	Modified TO-3	10.0 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-3	11.5 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-3	10.5 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-3	10.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-3	11.0 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified TO-3	11.5 "Hg	5 psi
13A	Lab Blank	Modified TO-3	NA	NA
14A	LCS	Modified TO-3	NA	NA
14AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/23/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

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LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 1907216B

Twelve 6 Liter Summa Canister samples were received on July 10, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	TO-3	ATL Modifications
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Fluorobenzene (FID) was manually integrated in samples KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V1 262.6 Lab Duplicate, KAFB-106V2 102.2 and KAFB-106V2

117.1.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	7/16/19 01:05 PM
Lab ID:	1907216B-01A	Dilution Factor:	2170
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	gcd.i / d071608
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	220000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	122

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	7/16/19 01:45 PM
Lab ID:	1907216B-02A	Dilution Factor:	2010
Date/Time Collected:	7/5/19 08:46 AM	Instrument/Filename:	gcd.i / d071609
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	116

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	7/16/19 02:36 PM
Lab ID:	1907216B-03A	Dilution Factor:	2580
Date/Time Collected:	7/5/19 09:07 AM	Instrument/Filename:	gcd.i / d071610
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	150000	210000	260000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	111

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	7/16/19 03:21 PM
Lab ID:	1907216B-04A	Dilution Factor:	2120
Date/Time Collected:	7/5/19 09:18 AM	Instrument/Filename:	gcd.i / d071611
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	220000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	114

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	7/16/19 04:08 PM
Lab ID:	1907216B-05A	Dilution Factor:	1960
Date/Time Collected:	7/5/19 09:34 AM	Instrument/Filename:	gcd.i / d071612
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	160000	200000	170000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	119

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	7/16/19 04:48 PM
Lab ID:	1907216B-06A	Dilution Factor:	2060
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	gcd.i / d071613
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	119

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	7/16/19 05:32 PM
Lab ID:	1907216B-07A	Dilution Factor:	2010
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	gcd.i / d071614
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	127

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6 Lab Duplicate	Date/Time Analyzed:	7/16/19 06:11 PM
Lab ID:	1907216B-07AA	Dilution Factor:	2010
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	gcd.i / d071615
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	125

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	7/16/19 06:49 PM
Lab ID:	1907216B-08A	Dilution Factor:	2170
Date/Time Collected:	7/5/19 10:24 AM	Instrument/Filename:	gcd.i / d071616
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	220000	200000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	128

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	7/16/19 08:09 PM
Lab ID:	1907216B-09A	Dilution Factor:	3430
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	gcd.i / d071618
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	200000	280000	350000	220000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	118

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	7/16/19 08:47 PM
Lab ID:	1907216B-10A	Dilution Factor:	3430
Date/Time Collected:	7/5/19 10:48 AM	Instrument/Filename:	gcd.i / d071619
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	200000	280000	350000	210000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	121

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	7/16/19 11:36 AM
Lab ID:	1907216B-11A	Dilution Factor:	848
Date/Time Collected:	7/5/19 11:03 AM	Instrument/Filename:	gcd.i / d071606
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	50000	69000	87000	76000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	106

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	7/16/19 09:25 PM
Lab ID:	1907216B-12A	Dilution Factor:	2710
Date/Time Collected:	7/5/19 11:15 AM	Instrument/Filename:	gcd.i / d071620
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	118

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/16/19 10:38 AM
Lab ID:	1907216B-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071605
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	96

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/16/19 08:17 AM
Lab ID:	1907216B-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071602
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		102

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	122

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/16/19 08:56 AM
Lab ID:	1907216B-14AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071603
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		103

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	115

* % Recovery is calculated using unrounded analytical results.

7/24/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1907216C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/10/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

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Folsom, CA 95630

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WORK ORDER #: 1907216C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified ASTM D-1945	11.5 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified ASTM D-1945	10.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified ASTM D-1945	10.5 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified ASTM D-1945	11.0 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified ASTM D-1945	9.5 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified ASTM D-1945	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified ASTM D-1945	10.0 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified ASTM D-1945	11.5 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified ASTM D-1945	10.5 "Hg	5 psi
09AA	KAFB-106V2 117.1 Lab Duplicate	Modified ASTM D-1945	10.5 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified ASTM D-1945	10.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified ASTM D-1945	11.0 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified ASTM D-1945	11.5 "Hg	5 psi
13A	Lab Blank	Modified ASTM D-1945	NA	NA
13B	Lab Blank	Modified ASTM D-1945	NA	NA
14A	LCS	Modified ASTM D-1945	NA	NA
14AA	LCSD	Modified ASTM D-1945	NA	NA
14B	LCS	Modified ASTM D-1945	NA	NA
14BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/24/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 1907216C

Twelve 6 Liter Summa Canister samples were received on July 10, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the

sample components and subtracting from 100%.

Methane and Ethane were manually integrated in samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 Lab Duplicate, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9 and KAFB-106V2 217.1.

Pentane was manually integrated in samples KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V2 102.2, KAFB-106V2 117.1 DUP and KAFB-106V2 159.9.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	7/16/19 11:24 AM
Lab ID:	1907216C-01A	Dilution Factor:	2.17
Date/Time Collected:	7/5/19 08:28 AM	Instrument/Filename:	gc10.i / 10071609
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0042
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	7.1
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0022
Hydrogen	1333-74-0	0.0033	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.013
Nitrogen	7727-37-9	0.15	0.15	0.22	79
Oxygen	7782-44-7	0.040	0.039	0.22	12
Pentane	109-66-0	0.000054	0.00024	0.0022	0.10
Propane	74-98-6	0.000065	0.00024	0.0022	0.0012 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 68

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	7/16/19 12:05 PM
Lab ID:	1907216C-02A	Dilution Factor:	2.01
Date/Time Collected:	7/5/19 08:46 AM	Instrument/Filename:	gc10.i / 10071610
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0064
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	8.6
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0026
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.013
Nitrogen	7727-37-9	0.14	0.14	0.20	80
Oxygen	7782-44-7	0.037	0.036	0.20	9.3
Pentane	109-66-0	0.000050	0.00022	0.0020	0.16
Propane	74-98-6	0.000060	0.00022	0.0020	0.0013 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 82

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	7/16/19 12:33 PM
Lab ID:	1907216C-03A	Dilution Factor:	2.06
Date/Time Collected:	7/5/19 09:07 AM	Instrument/Filename:	gc10.i / 10071611
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0064
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	6.8
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.00093 J
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.0032
Nitrogen	7727-37-9	0.14	0.14	0.21	79
Oxygen	7782-44-7	0.038	0.037	0.21	12
Pentane	109-66-0	0.000052	0.00023	0.0021	0.18
Propane	74-98-6	0.000062	0.00023	0.0021	0.00073 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 84

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	7/16/19 01:12 PM
Lab ID:	1907216C-04A	Dilution Factor:	2.12
Date/Time Collected:	7/5/19 09:18 AM	Instrument/Filename:	gc10.i / 10071612
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0064
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	6.9
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	0.00092 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.0033
Nitrogen	7727-37-9	0.14	0.14	0.21	79
Oxygen	7782-44-7	0.039	0.038	0.21	12
Pentane	109-66-0	0.000053	0.00023	0.0021	0.18
Propane	74-98-6	0.000064	0.00023	0.0021	0.00076 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 89

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	7/16/19 01:36 PM
Lab ID:	1907216C-05A	Dilution Factor:	1.96
Date/Time Collected:	7/5/19 09:34 AM	Instrument/Filename:	gc10.i / 10071613
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00022	0.0020	0.0026
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	12
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000049	0.00022	0.0020	0.0028
Hydrogen	1333-74-0	0.0029	0.012	0.020	Not Detected U
Methane	74-82-8	0.000053	0.000098	0.00020	0.0046
Nitrogen	7727-37-9	0.13	0.13	0.20	85
Oxygen	7782-44-7	0.036	0.035	0.20	1.4
Pentane	109-66-0	0.000049	0.00022	0.0020	0.086
Propane	74-98-6	0.000059	0.00022	0.0020	0.0022

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 91

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	7/16/19 02:02 PM
Lab ID:	1907216C-06A	Dilution Factor:	2.06
Date/Time Collected:	7/5/19 09:50 AM	Instrument/Filename:	gc10.i / 10071614
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0038
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	5.5
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0021
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.0022
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.038	0.037	0.21	13
Pentane	109-66-0	0.000052	0.00023	0.0021	0.053
Propane	74-98-6	0.000062	0.00023	0.0021	0.0038

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 75

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	7/16/19 03:53 PM
Lab ID:	1907216C-07A	Dilution Factor:	2.01
Date/Time Collected:	7/5/19 10:05 AM	Instrument/Filename:	gc10.i / 10071616
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0046
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	5.4
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0023
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0021
Nitrogen	7727-37-9	0.14	0.14	0.20	80
Oxygen	7782-44-7	0.037	0.036	0.20	13
Pentane	109-66-0	0.000050	0.00022	0.0020	0.059
Propane	74-98-6	0.000060	0.00022	0.0020	0.0042

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 66

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	7/16/19 04:16 PM
Lab ID:	1907216C-08A	Dilution Factor:	2.17
Date/Time Collected:	7/5/19 10:24 AM	Instrument/Filename:	gc10.i / 10071617
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0040
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	11
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0024
Hydrogen	1333-74-0	0.0033	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.021
Nitrogen	7727-37-9	0.15	0.15	0.22	82
Oxygen	7782-44-7	0.040	0.039	0.22	4.6
Pentane	109-66-0	0.000054	0.00024	0.0022	0.096
Propane	74-98-6	0.000065	0.00024	0.0022	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 120

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	7/16/19 04:51 PM
Lab ID:	1907216C-09A	Dilution Factor:	2.06
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	gc10.i / 10071618
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0062
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	11
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0026
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.021
Nitrogen	7727-37-9	0.14	0.14	0.21	82
Oxygen	7782-44-7	0.038	0.037	0.21	4.2
Pentane	109-66-0	0.000052	0.00023	0.0021	0.20
Propane	74-98-6	0.000062	0.00023	0.0021	0.0016 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 150

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 Lab Duplicate	Date/Time Analyzed:	7/16/19 05:43 PM
Lab ID:	1907216C-09AA	Dilution Factor:	2.06
Date/Time Collected:	7/5/19 10:39 AM	Instrument/Filename:	gc10.i / 10071620
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0059
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	11
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0024
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.020
Nitrogen	7727-37-9	0.14	0.14	0.21	82
Oxygen	7782-44-7	0.038	0.037	0.21	4.2
Pentane	109-66-0	0.000052	0.00023	0.0021	0.18
Propane	74-98-6	0.000062	0.00023	0.0021	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 120

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	7/16/19 06:06 PM
Lab ID:	1907216C-10A	Dilution Factor:	2.06
Date/Time Collected:	7/5/19 10:48 AM	Instrument/File Name:	gc10.i / 10071621
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0060
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	11
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0025
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.020
Nitrogen	7727-37-9	0.14	0.14	0.21	82
Oxygen	7782-44-7	0.038	0.037	0.21	4.3
Pentane	109-66-0	0.000052	0.00023	0.0021	0.18
Propane	74-98-6	0.000062	0.00023	0.0021	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 130

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	7/16/19 06:30 PM
Lab ID:	1907216C-11A	Dilution Factor:	2.12
Date/Time Collected:	7/5/19 11:03 AM	Instrument/Filename:	gc10.i / 10071622
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.0014 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	4.1
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	0.00039 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.0025
Nitrogen	7727-37-9	0.14	0.14	0.21	82
Oxygen	7782-44-7	0.039	0.038	0.21	13
Pentane	109-66-0	0.000053	0.00023	0.0021	0.064
Propane	74-98-6	0.000064	0.00023	0.0021	0.00020 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 56

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	7/16/19 07:08 PM
Lab ID:	1907216C-12A	Dilution Factor:	2.17
Date/Time Collected:	7/5/19 11:15 AM	Instrument/Filename:	gc10.i / 10071623
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0021 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	12
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.0020 J
Hydrogen	1333-74-0	0.0033	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0044
Nitrogen	7727-37-9	0.15	0.15	0.22	84
Oxygen	7782-44-7	0.040	0.039	0.22	2.4
Pentane	109-66-0	0.000054	0.00024	0.0022	0.066
Propane	74-98-6	0.000065	0.00024	0.0022	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 94

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/16/19 10:52 AM
Lab ID:	1907216C-13A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071608
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/16/19 10:28 AM
Lab ID:	1907216C-13B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071607c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/16/19 08:13 AM
Lab ID:	1907216C-14A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071602
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	101
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	85
Ethane	74-84-0	102
Methane	74-82-8	102
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	103
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/16/19 08:37 AM
Lab ID:	1907216C-14AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071603
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	86
Ethane	74-84-0	101
Methane	74-82-8	101
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	103
Pentane	109-66-0	101
Propane	74-98-6	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/16/19 09:34 AM
Lab ID:	1907216C-14B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071605c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	100

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/16/19 10:00 AM
Lab ID:	1907216C-14BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071606c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

7/23/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1907217A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/10/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1907217A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/23/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 252.2	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
01AA	KAFB-106V2 252.2 Lab Duplicate	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
02A	KAFB-106V2 269.5	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
03A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
04A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
04B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
05A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
05AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/23/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 1907217A

Two 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on July 10, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

A Method Detection Limit (MDL) and Limit of Detection (LOD) study are not maintained for non-standard compounds.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes.

Samples were analyzed in one analytical batch on MSDJ on 7/17/19. The initial continuing calibration verification (CCV) for the batch is reported as lab fraction 04A and the ending CCV is reported as lab fraction 04B.

Dilution was performed on samples KAFB-106V2 252.2, KAFB-106V2 252.2 Lab Duplicate and KAFB-106V2 269.5 due to the presence of high level target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in samples KAFB-106V2 252.2, KAFB-106V2 252.2

Lab Duplicate and KAFB-106V2 269.5 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Acetone and Heptane exceeded the instrument's calibration range for samples KAFB-106V2 252.2, KAFB-106V2 252.2 Lab Duplicate and KAFB-106V2 269.5 and were flagged accordingly.

Cyclohexane exceeded the instrument's calibration range for samples KAFB-106V2 252.2 and KAFB-106V2 252.2 Lab Duplicate and were flagged accordingly.

Hexane exceeded the instrument's calibration range for sample KAFB-106V2 252.2 and was flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	7/17/19 10:49 PM
Lab ID:	1907217A-01A	Dilution Factor:	160
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	msdj.i / j071719
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	580	2900	3200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	8100	18000	24000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	3500	3900	150000
1,2-Dibromoethane (EDB)	106-93-4	650	5500	6100	13000
1,2-Dichlorobenzene	95-50-1	530	4300	4800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3300	3500	3900	54000
1,3-Butadiene	106-99-0	750	1600	1800	Not Detected U
1,4-Dioxane	123-91-1	3200	8600	12000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2300	7100	9400	320000
2-Hexanone	591-78-6	4500	9800	13000	Not Detected U
2-Propanol	67-63-0	2200	5900	7900	120000
4-Methyl-2-pentanone	108-10-1	740	2900	3300	Not Detected U
Acetone	67-64-1	2200	5700	7600	3100000 J
Benzene	71-43-2	320	2300	2600	950000
Bromodichloromethane	75-27-4	540	4800	5400	Not Detected U
Bromoform	75-25-2	630	7400	8300	Not Detected U
Carbon Disulfide	75-15-0	1400	7500	10000	Not Detected U
Carbon Tetrachloride	56-23-5	520	4500	5000	Not Detected U
Chloroethane	75-00-3	2000	6300	8400	Not Detected U
Chloroform	67-66-3	370	3500	3900	Not Detected U
Chloromethane	74-87-3	1200	5000	6600	Not Detected U
Cyclohexane	110-82-7	320	2500	2800	2900000 J
Dibromochloromethane	124-48-1	540	6100	6800	Not Detected U
Ethanol	64-17-5	3800	4500	6000	5700 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	7/17/19 10:49 PM
Lab ID:	1907217A-01A	Dilution Factor:	160
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	msdj.i / j071719
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	12000	Not Detected
Ethyl Benzene	100-41-4	400	3100	3500	300000
Freon 11	75-69-4	690	4000	4500	Not Detected U
Freon 113	76-13-1	1100	5500	6100	Not Detected U
Freon 12	75-71-8	460	3600	4000	Not Detected U
Heptane	142-82-5	950	3000	3300	4100000 J
Hexane	110-54-3	660	2500	2800	2800000 J
m,p-Xylene	108-38-3	420	3100	3500	710000
Methylene Chloride	75-09-2	2000	8300	11000	Not Detected U
Naphthalene	91-20-3	1200	8400	17000	Not Detected U
o-Xylene	95-47-6	740	3100	3500	210000
Propylene	115-07-1	1400	4100	5500	29000
Styrene	100-42-5	420	3100	3400	Not Detected U
Tetrachloroethene	127-18-4	580	4900	5400	Not Detected U
Tetrahydrofuran	109-99-9	490	2100	2400	Not Detected U
Toluene	108-88-3	430	2700	3000	2800000
Total Xylene	1330-20-7	NA	D	3500	930000
Trichloroethene	79-01-6	480	3900	4300	Not Detected U
Vinyl Chloride	75-01-4	850	1800	2000	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	7/17/19 10:49 PM
Lab ID:	1907217A-01A	Dilution Factor:	160
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	msdj.i / j071719
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	91
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	158 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	7/17/19 11:14 PM
Lab ID:	1907217A-01AA	Dilution Factor:	160
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	msdj.i / j071720
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	580	2900	3200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	8100	18000	24000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	3500	3900	160000
1,2-Dibromoethane (EDB)	106-93-4	650	5500	6100	13000
1,2-Dichlorobenzene	95-50-1	530	4300	4800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3300	3500	3900	49000
1,3-Butadiene	106-99-0	750	1600	1800	Not Detected U
1,4-Dioxane	123-91-1	3200	8600	12000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2300	7100	9400	310000
2-Hexanone	591-78-6	4500	9800	13000	Not Detected U
2-Propanol	67-63-0	2200	5900	7900	120000
4-Methyl-2-pentanone	108-10-1	740	2900	3300	Not Detected U
Acetone	67-64-1	2200	5700	7600	3000000 J
Benzene	71-43-2	320	2300	2600	950000
Bromodichloromethane	75-27-4	540	4800	5400	Not Detected U
Bromoform	75-25-2	630	7400	8300	Not Detected U
Carbon Disulfide	75-15-0	1400	7500	10000	Not Detected U
Carbon Tetrachloride	56-23-5	520	4500	5000	Not Detected U
Chloroethane	75-00-3	2000	6300	8400	Not Detected U
Chloroform	67-66-3	370	3500	3900	Not Detected U
Chloromethane	74-87-3	1200	5000	6600	Not Detected U
Cyclohexane	110-82-7	320	2500	2800	2900000 J
Dibromochloromethane	124-48-1	540	6100	6800	Not Detected U
Ethanol	64-17-5	3800	4500	6000	4700 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	7/17/19 11:14 PM
Lab ID:	1907217A-01AA	Dilution Factor:	160
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	msdj.i / j071720
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	12000	Not Detected
Ethyl Benzene	100-41-4	400	3100	3500	310000
Freon 11	75-69-4	690	4000	4500	Not Detected U
Freon 113	76-13-1	1100	5500	6100	Not Detected U
Freon 12	75-71-8	460	3600	4000	Not Detected U
Heptane	142-82-5	950	3000	3300	4100000 J
Hexane	110-54-3	660	2500	2800	2800000
m,p-Xylene	108-38-3	420	3100	3500	700000
Methylene Chloride	75-09-2	2000	8300	11000	Not Detected U
Naphthalene	91-20-3	1200	8400	17000	Not Detected U
o-Xylene	95-47-6	740	3100	3500	210000
Propylene	115-07-1	1400	4100	5500	28000
Styrene	100-42-5	420	3100	3400	Not Detected U
Tetrachloroethene	127-18-4	580	4900	5400	Not Detected U
Tetrahydrofuran	109-99-9	490	2100	2400	Not Detected U
Toluene	108-88-3	430	2700	3000	2900000
Total Xylene	1330-20-7	NA	D	3500	920000
Trichloroethene	79-01-6	480	3900	4300	Not Detected U
Vinyl Chloride	75-01-4	850	1800	2000	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2 Lab Duplicate	Date/Time Analyzed:	7/17/19 11:14 PM
Lab ID:	1907217A-01AA	Dilution Factor:	160
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	msdj.i / j071720
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	160 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	7/17/19 11:40 PM
Lab ID:	1907217A-02A	Dilution Factor:	258
Date/Time Collected:	7/5/19 11:41 AM	Instrument/File Name:	msdj.i / j071721
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	930	4700	5200	4200 J
1,2,4-Trichlorobenzene	120-82-1	13000	29000	38000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	3100	5700	6300	240000
1,2-Dibromoethane (EDB)	106-93-4	1000	8900	9900	14000
1,2-Dichlorobenzene	95-50-1	850	7000	7800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	5400	5700	6300	86000
1,3-Butadiene	106-99-0	1200	2600	2800	Not Detected U
1,4-Dioxane	123-91-1	5200	14000	18000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3700	11000	15000	630000
2-Hexanone	591-78-6	7200	16000	21000	Not Detected U
2-Propanol	67-63-0	3600	9500	13000	120000
4-Methyl-2-pentanone	108-10-1	1200	4800	5300	Not Detected U
Acetone	67-64-1	3500	9200	12000	4300000 J
Benzene	71-43-2	520	3700	4100	1200000
Bromodichloromethane	75-27-4	860	7800	8600	Not Detected U
Bromoform	75-25-2	1000	12000	13000	Not Detected U
Carbon Disulfide	75-15-0	2400	12000	16000	Not Detected U
Carbon Tetrachloride	56-23-5	840	7300	8100	1100 J
Chloroethane	75-00-3	3200	10000	14000	Not Detected U
Chloroform	67-66-3	590	5700	6300	Not Detected U
Chloromethane	74-87-3	1900	8000	11000	Not Detected U
Cyclohexane	110-82-7	520	4000	4400	4000000
Dibromochloromethane	124-48-1	860	9900	11000	Not Detected U
Ethanol	64-17-5	6100	7300	9700	11000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	7/17/19 11:40 PM
Lab ID:	1907217A-02A	Dilution Factor:	258
Date/Time Collected:	7/5/19 11:41 AM	Instrument/Filename:	msdj.i / j071721
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	18000	Not Detected
Ethyl Benzene	100-41-4	640	5000	5600	320000
Freon 11	75-69-4	1100	6500	7200	Not Detected U
Freon 113	76-13-1	1800	8900	9900	Not Detected U
Freon 12	75-71-8	740	5700	6400	Not Detected U
Heptane	142-82-5	1500	4800	5300	7500000 J
Hexane	110-54-3	1100	4100	4500	2600000
m,p-Xylene	108-38-3	680	5000	5600	810000
Methylene Chloride	75-09-2	3200	13000	18000	Not Detected U
Naphthalene	91-20-3	1900	14000	27000	Not Detected U
o-Xylene	95-47-6	1200	5000	5600	250000
Propylene	115-07-1	2300	6700	8900	43000
Styrene	100-42-5	680	4900	5500	Not Detected U
Tetrachloroethene	127-18-4	930	7900	8800	20000
Tetrahydrofuran	109-99-9	790	3400	3800	Not Detected U
Toluene	108-88-3	700	4400	4900	4400000
Total Xylene	1330-20-7	NA	D	5600	1000000
Trichloroethene	79-01-6	780	6200	6900	800000
Vinyl Chloride	75-01-4	1400	3000	3300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	7/17/19 11:40 PM
Lab ID:	1907217A-02A	Dilution Factor:	258
Date/Time Collected:	7/5/19 11:41 AM	Instrument/Filename:	msdj.i / j071721
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	89
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	154 Q

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/17/19 02:53 PM
Lab ID:	1907217A-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071708e
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	3.6	18	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	51	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	12	22	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	4.1	34	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	3.3	27	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	21	22	24	Not Detected U
1,3-Butadiene	106-99-0	4.7	10	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	28	61	82	Not Detected U
2-Propanol	67-63-0	14	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	4.6	18	20	Not Detected U
Acetone	67-64-1	14	36	48	Not Detected U
Benzene	71-43-2	2.0	14	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	30	34	Not Detected U
Bromoform	75-25-2	3.9	46	52	Not Detected U
Carbon Disulfide	75-15-0	9.1	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	3.3	28	31	Not Detected U
Chloroethane	75-00-3	12	40	53	Not Detected U
Chloroform	67-66-3	2.3	22	24	Not Detected U
Chloromethane	74-87-3	7.6	31	41	Not Detected U
Cyclohexane	110-82-7	2.0	15	17	Not Detected U
Dibromochloromethane	124-48-1	3.3	38	42	Not Detected U
Ethanol	64-17-5	24	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/17/19 02:53 PM
Lab ID:	1907217A-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071708e
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	2.5	20	22	Not Detected U
Freon 11	75-69-4	4.3	25	28	Not Detected U
Freon 113	76-13-1	6.9	34	38	Not Detected U
Freon 12	75-71-8	2.9	22	25	Not Detected U
Heptane	142-82-5	5.9	18	20	Not Detected U
Hexane	110-54-3	4.1	16	18	Not Detected U
m,p-Xylene	108-38-3	2.6	20	22	Not Detected U
Methylene Chloride	75-09-2	12	52	69	Not Detected U
Naphthalene	91-20-3	7.2	52	100	Not Detected U
o-Xylene	95-47-6	4.6	20	22	Not Detected U
Propylene	115-07-1	9.0	26	34	Not Detected U
Styrene	100-42-5	2.6	19	21	Not Detected U
Tetrachloroethene	127-18-4	3.6	30	34	Not Detected U
Tetrahydrofuran	109-99-9	3.1	13	15	Not Detected U
Toluene	108-88-3	2.7	17	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	3.0	24	27	Not Detected U
Vinyl Chloride	75-01-4	5.3	12	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	91

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/17/19 02:53 PM
Lab ID:	1907217A-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071708e
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	95
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/17/19 10:19 AM
Lab ID:	1907217A-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071702a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	101
1,2,4-Trichlorobenzene	120-82-1	84
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	90
1,3,5-Trimethylbenzene	108-67-8	100
1,3-Butadiene	106-99-0	89
1,4-Dioxane	123-91-1	94
2-Butanone (Methyl Ethyl Ketone)	78-93-3	93
2-Hexanone	591-78-6	95
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	86
Acetone	67-64-1	116
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	90
Bromoform	75-25-2	91
Carbon Disulfide	75-15-0	91
Carbon Tetrachloride	56-23-5	99
Chloroethane	75-00-3	92
Chloroform	67-66-3	102
Chloromethane	74-87-3	82
Cyclohexane	110-82-7	97
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	87

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/17/19 10:19 AM
Lab ID:	1907217A-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071702a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	89
Ethyl Benzene	100-41-4	101
Freon 11	75-69-4	95
Freon 113	76-13-1	97
Freon 12	75-71-8	87
Heptane	142-82-5	94
Hexane	110-54-3	97
m,p-Xylene	108-38-3	101
Methylene Chloride	75-09-2	111
Naphthalene	91-20-3	90
o-Xylene	95-47-6	101
Propylene	115-07-1	94
Styrene	100-42-5	88
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	95
Toluene	108-88-3	104
Total Xylene	1330-20-7	101
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	87

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	92

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/17/19 10:19 AM
Lab ID:	1907217A-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071702a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/18/19 07:08 AM
Lab ID:	1907217A-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071727
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	101
1,2,4-Trichlorobenzene	120-82-1	75
1,2,4-Trimethylbenzene	95-63-6	100
1,2-Dibromoethane (EDB)	106-93-4	94
1,2-Dichlorobenzene	95-50-1	90
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	85
1,4-Dioxane	123-91-1	89
2-Butanone (Methyl Ethyl Ketone)	78-93-3	95
2-Hexanone	591-78-6	97
2-Propanol	67-63-0	85
4-Methyl-2-pentanone	108-10-1	85
Acetone	67-64-1	112
Benzene	71-43-2	105
Bromodichloromethane	75-27-4	90
Bromoform	75-25-2	91
Carbon Disulfide	75-15-0	91
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	92
Chloroform	67-66-3	101
Chloromethane	74-87-3	80
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	85

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/18/19 07:08 AM
Lab ID:	1907217A-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071727
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	101
Freon 11	75-69-4	92
Freon 113	76-13-1	94
Freon 12	75-71-8	84
Heptane	142-82-5	94
Hexane	110-54-3	97
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	106
Naphthalene	91-20-3	81
o-Xylene	95-47-6	101
Propylene	115-07-1	91
Styrene	100-42-5	88
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	93
Toluene	108-88-3	105
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	85

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	89

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/18/19 07:08 AM
Lab ID:	1907217A-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071727
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/17/19 10:47 AM
Lab ID:	1907217A-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071703a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	93
1,2,4-Trimethylbenzene	95-63-6	102
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	94
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	89
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	99
2-Propanol	67-63-0	93
4-Methyl-2-pentanone	108-10-1	86
Acetone	67-64-1	118
Benzene	71-43-2	105
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	82
Carbon Tetrachloride	56-23-5	100
Chloroethane	75-00-3	96
Chloroform	67-66-3	103
Chloromethane	74-87-3	87
Cyclohexane	110-82-7	99
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/17/19 10:47 AM
Lab ID:	1907217A-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071703a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	103
Freon 11	75-69-4	98
Freon 113	76-13-1	97
Freon 12	75-71-8	88
Heptane	142-82-5	98
Hexane	110-54-3	99
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	112
Naphthalene	91-20-3	65
o-Xylene	95-47-6	105
Propylene	115-07-1	91
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	105
Total Xylene	1330-20-7	103
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	92

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	90

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/17/19 10:47 AM
Lab ID:	1907217A-05A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071703a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/17/19 11:15 AM
Lab ID:	1907217A-05AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071704a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	95
1,2,4-Trimethylbenzene	95-63-6	103
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	95
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	90
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	95
4-Methyl-2-pentanone	108-10-1	86
Acetone	67-64-1	118
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	82
Carbon Tetrachloride	56-23-5	101
Chloroethane	75-00-3	96
Chloroform	67-66-3	104
Chloromethane	74-87-3	89
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/17/19 11:15 AM
Lab ID:	1907217A-05AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071704a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	103
Freon 11	75-69-4	101
Freon 113	76-13-1	98
Freon 12	75-71-8	90
Heptane	142-82-5	97
Hexane	110-54-3	100
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	113
Naphthalene	91-20-3	67
o-Xylene	95-47-6	104
Propylene	115-07-1	91
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	98
Toluene	108-88-3	105
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	92

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	92

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/17/19 11:15 AM
Lab ID:	1907217A-05AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msdj.i / j071704a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

7/23/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1907217B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/10/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1907217B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/23/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 252.2	Modified TO-3	12.0 "Hg	5 psi
02A	KAFB-106V2 269.5	Modified TO-3	10.5 "Hg	5 psi
02AA	KAFB-106V2 269.5 Lab Duplicate	Modified TO-3	10.5 "Hg	5 psi
03A	Lab Blank	Modified TO-3	NA	NA
04A	LCS	Modified TO-3	NA	NA
04AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/23/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 1907217B

Two 6 Liter Summa Canister samples were received on July 10, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Fluorobenzene (FID) was manually integrated in sample KAFB-106V2 269.5 Lab Duplicate.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	7/17/19 12:53 PM
Lab ID:	1907217B-01A	Dilution Factor:	2230
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	gcd.i / d071707
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	230000	87000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	112

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	7/17/19 02:10 PM
Lab ID:	1907217B-02A	Dilution Factor:	2060
Date/Time Collected:	7/5/19 11:41 AM	Instrument/Filename:	gcd.i / d071708
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	129

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 269.5 Lab Duplicate	Date/Time Analyzed:	7/17/19 02:51 PM
Lab ID:	1907217B-02AA	Dilution Factor:	2060
Date/Time Collected:	7/5/19 11:41 AM	Instrument/Filename:	gcd.i / d071709
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	128

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/17/19 12:04 PM
Lab ID:	1907217B-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071706
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	89

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/17/19 08:36 AM
Lab ID:	1907217B-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071702
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		108
Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	124

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/17/19 03:30 PM
Lab ID:	1907217B-04AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071710
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		105

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	53-159	118

* % Recovery is calculated using unrounded analytical results.

7/24/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1907217C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/10/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
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www.airtoxics.com

WORK ORDER #: 1907217C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/10/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/24/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V2 252.2	Modified ASTM D-1945	12.0 "Hg	5 psi
02A	KAFB-106V2 269.5	Modified ASTM D-1945	10.5 "Hg	5 psi
03A	Lab Blank	Modified ASTM D-1945	NA	NA
03B	Lab Blank	Modified ASTM D-1945	NA	NA
04A	LCS	Modified ASTM D-1945	NA	NA
04AA	LCSD	Modified ASTM D-1945	NA	NA
04B	LCS	Modified ASTM D-1945	NA	NA
04BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/24/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 1907217C

Two 6 Liter Summa Canister samples were received on July 10, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Manual integrations were performed on Methane and Ethane in samples KAFB-106V2 252.2 and

KAFB-106V2 269.5.

Manual integration was performed on Pentane in sample KAFB-106V2 269.5.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

The per analytical batch duplicate analysis required for this project is associated with work order 1907216C.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	7/16/19 08:10 PM
Lab ID:	1907217C-01A	Dilution Factor:	2.23
Date/Time Collected:	7/5/19 11:26 AM	Instrument/Filename:	gc10.i / 10071625
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	0.0018 J
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	2.9
Carbon Monoxide	630-08-0	0.0030	0.011	0.022	Not Detected U
Ethane	74-84-0	0.000056	0.00024	0.0022	0.00072 J
Hydrogen	1333-74-0	0.0034	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.0012
Nitrogen	7727-37-9	0.15	0.15	0.22	81
Oxygen	7782-44-7	0.041	0.040	0.22	15
Pentane	109-66-0	0.000056	0.00024	0.0022	0.040
Propane	74-98-6	0.000067	0.00024	0.0022	0.0013 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 1.7

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	7/16/19 08:33 PM
Lab ID:	1907217C-02A	Dilution Factor:	2.06
Date/Time Collected:	7/5/19 11:41 AM	Instrument/Filename:	gc10.i / 10071626
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0028
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	4.7
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0011 J
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.0014
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.038	0.037	0.21	14
Pentane	109-66-0	0.000052	0.00023	0.0021	0.046
Propane	74-98-6	0.000062	0.00023	0.0021	0.0021

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 70

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/16/19 10:52 AM
Lab ID:	1907217C-03A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071608
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/16/19 10:28 AM
Lab ID:	1907217C-03B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071607c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/16/19 08:13 AM
Lab ID:	1907217C-04A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071602
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	101
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	85
Ethane	74-84-0	102
Methane	74-82-8	102
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	103
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/16/19 08:37 AM
Lab ID:	1907217C-04AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071603
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	86
Ethane	74-84-0	101
Methane	74-82-8	101
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	103
Pentane	109-66-0	101
Propane	74-98-6	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/16/19 09:34 AM
Lab ID:	1907217C-04B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071605c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	100

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/16/19 10:00 AM
Lab ID:	1907217C-04BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071606c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

10/31/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1910500A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/18/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1910500A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/18/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/31/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
03AA	KAFB-106V1 159.6 Lab Duplicate	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-15 (5&20 ppbv	12.5 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-15 (5&20 ppbv	14.0 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-15 (5&20 ppbv	9.0 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
13A	KAFB-106V2 252.2	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 10/31/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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**LABORATORY NARRATIVE
DoD QSM 5.0 - TO-15
EA Engineering
Workorder# 1910500A**

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 18, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Modifications to DoD QSM 5.0 requirements are listed in the table below.

<i>Requirement</i>	<i>TO-15 DoD QSM 5.0</i>	<i>ATL Modifications</i>
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes.

The Initial Calibration Verification (ICV) analyzed on 10/22/19 did not meet project requirement control limits of 70-130% recovery (R) for Naphthalene.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

A Method Detection Limit (MDL) and Limit of Detection (LOD) study are not maintained for non-standard compounds.

Samples were analyzed in one analytical batch on MSD-14 on 10/29/19. The initial continuing calibration verification (CCV) for the batch is reported as lab fraction 16A and the ending CCV is reported as lab fraction 16B.

Dilution was performed on samples KAFB-106V1 102.1, KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 159.6 Lab Duplicate, KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V1 252.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9 and KAFB-106V2 217.1 due to the presence of high level target species.

Dilution was performed on samples KAFB-106V2 252.2 and KAFB-106V2 269.5 due to the presence of high level non-target species.

Surrogate 1,2-Dichloroethane-d4 did not meet in-house generated control limits of 64-133% Recovery (%R) in sample KAFB-106V1 112.6, KAFB-106V1 217.1, KAFB-106V2 102.2, KAFB-106V2 117.1 and KAFB-106V2 117.1 DUP.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/29/19 06:20 PM
Lab ID:	1910500A-01A	Dilution Factor:	838
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	msd14.i / 14102920
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4700	10000	17000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	50000	93000	120000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	3900	12000	20000	66000
1,2-Dibromoethane (EDB)	106-93-4	5700	19000	32000	Not Detected U
1,2-Dichlorobenzene	95-50-1	6100	15000	25000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3400	12000	20000	25000
1,3-Butadiene	106-99-0	2900	5600	9300	Not Detected U
1,4-Dioxane	123-91-1	17000	45000	60000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	12000	37000	49000	250000
2-Hexanone	591-78-6	26000	51000	69000	Not Detected U
2-Propanol	67-63-0	5200	31000	41000	27000 J
4-Methyl-2-pentanone	108-10-1	8300	10000	17000	Not Detected U
Acetone	67-64-1	5800	30000	40000	2800000
Benzene	71-43-2	1900	8000	13000	2300000
Bromodichloromethane	75-27-4	2800	17000	28000	Not Detected U
Bromoform	75-25-2	6000	26000	43000	Not Detected U
Carbon Disulfide	75-15-0	7900	39000	52000	Not Detected U
Carbon Tetrachloride	56-23-5	6300	16000	26000	Not Detected U
Chloroethane	75-00-3	13000	33000	44000	Not Detected U
Chloroform	67-66-3	3500	12000	20000	Not Detected U
Chloromethane	74-87-3	7300	26000	35000	Not Detected U
Cyclohexane	110-82-7	3200	8600	14000	5500000
Dibromochloromethane	124-48-1	7400	21000	36000	Not Detected U
Ethanol	64-17-5	6900	24000	32000	17000 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/29/19 06:20 PM
Lab ID:	1910500A-01A	Dilution Factor:	838
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	msd14.i / 14102920
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	60000	Not Detected
Ethyl Benzene	100-41-4	3600	11000	18000	180000
Freon 11	75-69-4	3500	14000	24000	Not Detected U
Freon 113	76-13-1	5700	19000	32000	Not Detected U
Freon 12	75-71-8	4600	12000	21000	Not Detected U
Heptane	142-82-5	5800	10000	17000	3000000
Hexane	110-54-3	3600	8900	15000	8700000
m,p-Xylene	108-38-3	3400	11000	18000	280000
Methylene Chloride	75-09-2	9000	44000	58000	9400 J
Naphthalene	91-20-3	6800	8800	88000	Not Detected U
o-Xylene	95-47-6	4900	11000	18000	92000
Propylene	115-07-1	4900	22000	29000	Not Detected U
Styrene	100-42-5	3400	11000	18000	Not Detected U
Tetrachloroethene	127-18-4	10000	17000	28000	180000
Tetrahydrofuran	109-99-9	4400	7400	12000	Not Detected U
Toluene	108-88-3	2800	9500	16000	1900000
Total Xylene	1330-20-7	NA	D	18000	370000
Trichloroethene	79-01-6	6700	14000	22000	Not Detected U
Vinyl Chloride	75-01-4	3700	6400	11000	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/29/19 06:20 PM
Lab ID:	1910500A-01A	Dilution Factor:	838
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	msd14.i / 14102920
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	110
4-Bromofluorobenzene	460-00-4	83-110	103
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/29/19 12:34 PM
Lab ID:	1910500A-02A	Dilution Factor:	402
Date/Time Collected:	10/15/19 07:48 PM	Instrument/Filename:	msd14.i / 14102909
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	4900	8100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	24000	45000	60000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	5900	9900	86000
1,2-Dibromoethane (EDB)	106-93-4	2700	9300	15000	5800 J
1,2-Dichlorobenzene	95-50-1	2900	7200	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5900	9900	32000
1,3-Butadiene	106-99-0	1400	2700	4400	Not Detected U
1,4-Dioxane	123-91-1	8000	22000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5700	18000	24000	670000
2-Hexanone	591-78-6	12000	25000	33000	Not Detected U
2-Propanol	67-63-0	2500	15000	20000	140000
4-Methyl-2-pentanone	108-10-1	4000	4900	8200	Not Detected U
Acetone	67-64-1	2800	14000	19000	4300000
Benzene	71-43-2	900	3800	6400	2900000
Bromodichloromethane	75-27-4	1300	8100	13000	Not Detected U
Bromoform	75-25-2	2900	12000	21000	Not Detected U
Carbon Disulfide	75-15-0	3800	19000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3000	7600	13000	Not Detected U
Chloroethane	75-00-3	6100	16000	21000	Not Detected U
Chloroform	67-66-3	1700	5900	9800	Not Detected U
Chloromethane	74-87-3	3500	12000	17000	Not Detected U
Cyclohexane	110-82-7	1500	4200	6900	7200000
Dibromochloromethane	124-48-1	3500	10000	17000	Not Detected U
Ethanol	64-17-5	3300	11000	15000	77000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/29/19 12:34 PM
Lab ID:	1910500A-02A	Dilution Factor:	402
Date/Time Collected:	10/15/19 07:48 PM	Instrument/Filename:	msd14.i / 14102909
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	5200	8700	270000
Freon 11	75-69-4	1700	6800	11000	Not Detected U
Freon 113	76-13-1	2700	9200	15000	Not Detected U
Freon 12	75-71-8	2200	6000	9900	Not Detected U
Heptane	142-82-5	2800	4900	8200	4300000
Hexane	110-54-3	1700	4200	7100	11000000
m,p-Xylene	108-38-3	1600	5200	8700	430000
Methylene Chloride	75-09-2	4300	21000	28000	Not Detected U
Naphthalene	91-20-3	3200	4200	42000	Not Detected U
o-Xylene	95-47-6	2400	5200	8700	130000
Propylene	115-07-1	2400	10000	14000	32000
Styrene	100-42-5	1600	5100	8600	Not Detected U
Tetrachloroethene	127-18-4	4800	8200	14000	330000
Tetrahydrofuran	109-99-9	2100	3600	5900	Not Detected U
Toluene	108-88-3	1400	4500	7600	3100000
Total Xylene	1330-20-7	NA	D	8700	560000
Trichloroethene	79-01-6	3200	6500	11000	13000
Vinyl Chloride	75-01-4	1800	3100	5100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/29/19 12:34 PM
Lab ID:	1910500A-02A	Dilution Factor:	402
Date/Time Collected:	10/15/19 07:48 PM	Instrument/Filename:	msd14.i / 14102909
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	136 Q
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/29/19 01:00 PM
Lab ID:	1910500A-03A	Dilution Factor:	446
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	msd14.i / 14102910
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2500	5400	9000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	27000	50000	66000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2100	6600	11000	170000
1,2-Dibromoethane (EDB)	106-93-4	3000	10000	17000	3400 J
1,2-Dichlorobenzene	95-50-1	3200	8000	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1800	6600	11000	64000
1,3-Butadiene	106-99-0	1500	3000	4900	Not Detected U
1,4-Dioxane	123-91-1	8800	24000	32000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6400	20000	26000	160000
2-Hexanone	591-78-6	14000	27000	36000	Not Detected U
2-Propanol	67-63-0	2800	16000	22000	280000
4-Methyl-2-pentanone	108-10-1	4400	5500	9100	Not Detected U
Acetone	67-64-1	3100	16000	21000	3100000
Benzene	71-43-2	1000	4300	7100	2100000
Bromodichloromethane	75-27-4	1500	9000	15000	Not Detected U
Bromoform	75-25-2	3200	14000	23000	Not Detected U
Carbon Disulfide	75-15-0	4200	21000	28000	Not Detected U
Carbon Tetrachloride	56-23-5	3300	8400	14000	Not Detected U
Chloroethane	75-00-3	6800	18000	24000	Not Detected U
Chloroform	67-66-3	1900	6500	11000	Not Detected U
Chloromethane	74-87-3	3900	14000	18000	Not Detected U
Cyclohexane	110-82-7	1700	4600	7700	5600000
Dibromochloromethane	124-48-1	3900	11000	19000	Not Detected U
Ethanol	64-17-5	3700	13000	17000	65000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/29/19 01:00 PM
Lab ID:	1910500A-03A	Dilution Factor:	446
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	msd14.i / 14102910
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	32000	Not Detected
Ethyl Benzene	100-41-4	1900	5800	9700	430000
Freon 11	75-69-4	1800	7500	12000	Not Detected U
Freon 113	76-13-1	3000	10000	17000	Not Detected U
Freon 12	75-71-8	2400	6600	11000	Not Detected U
Heptane	142-82-5	3100	5500	9100	5600000
Hexane	110-54-3	1900	4700	7800	7300000
m,p-Xylene	108-38-3	1800	5800	9700	1000000
Methylene Chloride	75-09-2	4800	23000	31000	Not Detected U
Naphthalene	91-20-3	3600	4700	47000	Not Detected U
o-Xylene	95-47-6	2600	5800	9700	320000
Propylene	115-07-1	2600	12000	15000	Not Detected U
Styrene	100-42-5	1800	5700	9500	Not Detected U
Tetrachloroethene	127-18-4	5300	9100	15000	99000
Tetrahydrofuran	109-99-9	2300	3900	6600	Not Detected U
Toluene	108-88-3	1500	5000	8400	3500000
Total Xylene	1330-20-7	NA	D	9700	1300000
Trichloroethene	79-01-6	3500	7200	12000	3700 J
Vinyl Chloride	75-01-4	2000	3400	5700	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/29/19 01:00 PM
Lab ID:	1910500A-03A	Dilution Factor:	446
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	msd14.i / 14102910
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	121
4-Bromofluorobenzene	460-00-4	83-110	109
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 Lab Duplicate	Date/Time Analyzed:	10/29/19 01:36 PM
Lab ID:	1910500A-03AA	Dilution Factor:	446
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	msd14.i / 14102911
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2500	5400	9000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	27000	50000	66000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2100	6600	11000	180000
1,2-Dibromoethane (EDB)	106-93-4	3000	10000	17000	3600 J
1,2-Dichlorobenzene	95-50-1	3200	8000	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1800	6600	11000	69000
1,3-Butadiene	106-99-0	1500	3000	4900	Not Detected U
1,4-Dioxane	123-91-1	8800	24000	32000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6400	20000	26000	160000
2-Hexanone	591-78-6	14000	27000	36000	Not Detected U
2-Propanol	67-63-0	2800	16000	22000	310000
4-Methyl-2-pentanone	108-10-1	4400	5500	9100	Not Detected U
Acetone	67-64-1	3100	16000	21000	3200000
Benzene	71-43-2	1000	4300	7100	2100000
Bromodichloromethane	75-27-4	1500	9000	15000	Not Detected U
Bromoform	75-25-2	3200	14000	23000	Not Detected U
Carbon Disulfide	75-15-0	4200	21000	28000	Not Detected U
Carbon Tetrachloride	56-23-5	3300	8400	14000	Not Detected U
Chloroethane	75-00-3	6800	18000	24000	Not Detected U
Chloroform	67-66-3	1900	6500	11000	Not Detected U
Chloromethane	74-87-3	3900	14000	18000	Not Detected U
Cyclohexane	110-82-7	1700	4600	7700	5700000
Dibromochloromethane	124-48-1	3900	11000	19000	Not Detected U
Ethanol	64-17-5	3700	13000	17000	73000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 Lab Duplicate	Date/Time Analyzed:	10/29/19 01:36 PM
Lab ID:	1910500A-03AA	Dilution Factor:	446
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	msd14.i / 14102911
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	32000	Not Detected
Ethyl Benzene	100-41-4	1900	5800	9700	450000
Freon 11	75-69-4	1800	7500	12000	Not Detected U
Freon 113	76-13-1	3000	10000	17000	Not Detected U
Freon 12	75-71-8	2400	6600	11000	Not Detected U
Heptane	142-82-5	3100	5500	9100	5600000
Hexane	110-54-3	1900	4700	7800	7400000
m,p-Xylene	108-38-3	1800	5800	9700	1000000
Methylene Chloride	75-09-2	4800	23000	31000	Not Detected U
Naphthalene	91-20-3	3600	4700	47000	Not Detected U
o-Xylene	95-47-6	2600	5800	9700	320000
Propylene	115-07-1	2600	12000	15000	Not Detected U
Styrene	100-42-5	1800	5700	9500	Not Detected U
Tetrachloroethene	127-18-4	5300	9100	15000	100000
Tetrahydrofuran	109-99-9	2300	3900	6600	Not Detected U
Toluene	108-88-3	1500	5000	8400	3700000
Total Xylene	1330-20-7	NA	D	9700	1400000
Trichloroethene	79-01-6	3500	7200	12000	5300 J
Vinyl Chloride	75-01-4	2000	3400	5700	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 Lab Duplicate	Date/Time Analyzed:	10/29/19 01:36 PM
Lab ID:	1910500A-03AA	Dilution Factor:	446
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	msd14.i / 14102911
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	125
4-Bromofluorobenzene	460-00-4	83-110	108
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/29/19 02:09 PM
Lab ID:	1910500A-04A	Dilution Factor:	460
Date/Time Collected:	10/15/19 10:16 AM	Instrument/Filename:	msd14.i / 14102912
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	5600	9300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	28000	51000	68000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2100	6800	11000	130000
1,2-Dibromoethane (EDB)	106-93-4	3100	11000	18000	Not Detected U
1,2-Dichlorobenzene	95-50-1	3300	8300	14000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1900	6800	11000	51000
1,3-Butadiene	106-99-0	1600	3000	5100	Not Detected U
1,4-Dioxane	123-91-1	9100	25000	33000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6600	20000	27000	130000
2-Hexanone	591-78-6	14000	28000	38000	Not Detected U
2-Propanol	67-63-0	2900	17000	23000	220000
4-Methyl-2-pentanone	108-10-1	4600	5600	9400	Not Detected U
Acetone	67-64-1	3200	16000	22000	2900000
Benzene	71-43-2	1000	4400	7300	2000000
Bromodichloromethane	75-27-4	1500	9200	15000	Not Detected U
Bromoform	75-25-2	3300	14000	24000	Not Detected U
Carbon Disulfide	75-15-0	4400	21000	29000	Not Detected U
Carbon Tetrachloride	56-23-5	3400	8700	14000	Not Detected U
Chloroethane	75-00-3	7000	18000	24000	Not Detected U
Chloroform	67-66-3	1900	6700	11000	Not Detected U
Chloromethane	74-87-3	4000	14000	19000	Not Detected U
Cyclohexane	110-82-7	1800	4800	7900	5500000
Dibromochloromethane	124-48-1	4000	12000	20000	Not Detected U
Ethanol	64-17-5	3800	13000	17000	50000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/29/19 02:09 PM
Lab ID:	1910500A-04A	Dilution Factor:	460
Date/Time Collected:	10/15/19 10:16 AM	Instrument/Filename:	msd14.i / 14102912
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	33000	Not Detected
Ethyl Benzene	100-41-4	2000	6000	10000	420000
Freon 11	75-69-4	1900	7800	13000	Not Detected U
Freon 113	76-13-1	3100	10000	18000	Not Detected U
Freon 12	75-71-8	2500	6800	11000	Not Detected U
Heptane	142-82-5	3200	5600	9400	5400000
Hexane	110-54-3	2000	4900	8100	7200000
m,p-Xylene	108-38-3	1900	6000	10000	950000
Methylene Chloride	75-09-2	5000	24000	32000	Not Detected U
Naphthalene	91-20-3	3700	4800	48000	Not Detected U
o-Xylene	95-47-6	2700	6000	10000	280000
Propylene	115-07-1	2700	12000	16000	Not Detected U
Styrene	100-42-5	1900	5900	9800	Not Detected U
Tetrachloroethene	127-18-4	5500	9400	16000	97000
Tetrahydrofuran	109-99-9	2400	4100	6800	Not Detected U
Toluene	108-88-3	1600	5200	8700	3400000
Total Xylene	1330-20-7	NA	D	10000	1200000
Trichloroethene	79-01-6	3600	7400	12000	4200 J
Vinyl Chloride	75-01-4	2000	3500	5900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/29/19 02:09 PM
Lab ID:	1910500A-04A	Dilution Factor:	460
Date/Time Collected:	10/15/19 10:16 AM	Instrument/Filename:	msd14.i / 14102912
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	123
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/29/19 08:02 PM
Lab ID:	1910500A-05A	Dilution Factor:	402
Date/Time Collected:	10/15/19 10:32 AM	Instrument/Filename:	msd14.i / 14102924
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	4900	8100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	24000	45000	60000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	5900	9900	140000
1,2-Dibromoethane (EDB)	106-93-4	2700	9300	15000	4400 J
1,2-Dichlorobenzene	95-50-1	2900	7200	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5900	9900	66000
1,3-Butadiene	106-99-0	1400	2700	4400	Not Detected U
1,4-Dioxane	123-91-1	8000	22000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5700	18000	24000	490000
2-Hexanone	591-78-6	12000	25000	33000	Not Detected U
2-Propanol	67-63-0	2500	15000	20000	45000
4-Methyl-2-pentanone	108-10-1	4000	4900	8200	9100
Acetone	67-64-1	2800	14000	19000	4600000
Benzene	71-43-2	900	3800	6400	2400000
Bromodichloromethane	75-27-4	1300	8100	13000	Not Detected U
Bromoform	75-25-2	2900	12000	21000	Not Detected U
Carbon Disulfide	75-15-0	3800	19000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3000	7600	13000	Not Detected U
Chloroethane	75-00-3	6100	16000	21000	Not Detected U
Chloroform	67-66-3	1700	5900	9800	Not Detected U
Chloromethane	74-87-3	3500	12000	17000	Not Detected U
Cyclohexane	110-82-7	1500	4200	6900	8000000
Dibromochloromethane	124-48-1	3500	10000	17000	Not Detected U
Ethanol	64-17-5	3300	11000	15000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/29/19 08:02 PM
Lab ID:	1910500A-05A	Dilution Factor:	402
Date/Time Collected:	10/15/19 10:32 AM	Instrument/Filename:	msd14.i / 14102924
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	5200	8700	590000
Freon 11	75-69-4	1700	6800	11000	Not Detected U
Freon 113	76-13-1	2700	9200	15000	Not Detected U
Freon 12	75-71-8	2200	6000	9900	Not Detected U
Heptane	142-82-5	2800	4900	8200	8600000
Hexane	110-54-3	1700	4200	7100	9700000
m,p-Xylene	108-38-3	1600	5200	8700	1800000
Methylene Chloride	75-09-2	4300	21000	28000	Not Detected U
Naphthalene	91-20-3	3200	4200	42000	Not Detected U
o-Xylene	95-47-6	2400	5200	8700	520000
Propylene	115-07-1	2400	10000	14000	38000
Styrene	100-42-5	1600	5100	8600	Not Detected U
Tetrachloroethene	127-18-4	4800	8200	14000	110000
Tetrahydrofuran	109-99-9	2100	3600	5900	Not Detected U
Toluene	108-88-3	1400	4500	7600	5600000
Total Xylene	1330-20-7	NA	D	8700	2300000
Trichloroethene	79-01-6	3200	6500	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3100	5100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/29/19 08:02 PM
Lab ID:	1910500A-05A	Dilution Factor:	402
Date/Time Collected:	10/15/19 10:32 AM	Instrument/Filename:	msd14.i / 14102924
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	140 Q
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	10/29/19 02:43 PM
Lab ID:	1910500A-06A	Dilution Factor:	412
Date/Time Collected:	10/15/19 10:48 AM	Instrument/Filename:	msd14.i / 14102913
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	5000	8300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	25000	46000	61000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	6100	10000	110000
1,2-Dibromoethane (EDB)	106-93-4	2800	9500	16000	22000
1,2-Dichlorobenzene	95-50-1	3000	7400	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	6100	10000	50000
1,3-Butadiene	106-99-0	1400	2700	4600	Not Detected U
1,4-Dioxane	123-91-1	8200	22000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5900	18000	24000	300000
2-Hexanone	591-78-6	13000	25000	34000	Not Detected U
2-Propanol	67-63-0	2600	15000	20000	25000
4-Methyl-2-pentanone	108-10-1	4100	5100	8400	Not Detected U
Acetone	67-64-1	2800	15000	20000	1400000
Benzene	71-43-2	920	3900	6600	1400000
Bromodichloromethane	75-27-4	1400	8300	14000	Not Detected U
Bromoform	75-25-2	2900	13000	21000	Not Detected U
Carbon Disulfide	75-15-0	3900	19000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	7800	13000	Not Detected U
Chloroethane	75-00-3	6200	16000	22000	Not Detected U
Chloroform	67-66-3	1700	6000	10000	Not Detected U
Chloromethane	74-87-3	3600	13000	17000	Not Detected U
Cyclohexane	110-82-7	1600	4200	7100	4900000
Dibromochloromethane	124-48-1	3600	10000	18000	Not Detected U
Ethanol	64-17-5	3400	12000	16000	5100 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	10/29/19 02:43 PM
Lab ID:	1910500A-06A	Dilution Factor:	412
Date/Time Collected:	10/15/19 10:48 AM	Instrument/Filename:	msd14.i / 14102913
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected
Ethyl Benzene	100-41-4	1800	5400	8900	600000
Freon 11	75-69-4	1700	6900	12000	Not Detected U
Freon 113	76-13-1	2800	9500	16000	Not Detected U
Freon 12	75-71-8	2300	6100	10000	Not Detected U
Heptane	142-82-5	2800	5100	8400	10000000
Hexane	110-54-3	1800	4400	7300	5000000
m,p-Xylene	108-38-3	1700	5400	8900	1900000
Methylene Chloride	75-09-2	4400	21000	29000	Not Detected U
Naphthalene	91-20-3	3300	4300	43000	Not Detected U
o-Xylene	95-47-6	2400	5400	8900	500000
Propylene	115-07-1	2400	11000	14000	Not Detected U
Styrene	100-42-5	1700	5300	8800	Not Detected U
Tetrachloroethene	127-18-4	4900	8400	14000	120000
Tetrahydrofuran	109-99-9	2200	3600	6100	Not Detected U
Toluene	108-88-3	1400	4600	7800	7500000
Total Xylene	1330-20-7	NA	D	8900	2400000
Trichloroethene	79-01-6	3300	6600	11000	3700 J
Vinyl Chloride	75-01-4	1800	3200	5300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	10/29/19 02:43 PM
Lab ID:	1910500A-06A	Dilution Factor:	412
Date/Time Collected:	10/15/19 10:48 AM	Instrument/Filename:	msd14.i / 14102913
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	132
4-Bromofluorobenzene	460-00-4	83-110	105
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	10/29/19 03:07 PM
Lab ID:	1910500A-07A	Dilution Factor:	402
Date/Time Collected:	10/15/19 11:01 AM	Instrument/Filename:	msd14.i / 14102914
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	4900	8100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	24000	45000	60000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	5900	9900	110000
1,2-Dibromoethane (EDB)	106-93-4	2700	9300	15000	25000
1,2-Dichlorobenzene	95-50-1	2900	7200	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5900	9900	45000
1,3-Butadiene	106-99-0	1400	2700	4400	Not Detected U
1,4-Dioxane	123-91-1	8000	22000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5700	18000	24000	580000
2-Hexanone	591-78-6	12000	25000	33000	39000
2-Propanol	67-63-0	2500	15000	20000	56000
4-Methyl-2-pentanone	108-10-1	4000	4900	8200	Not Detected U
Acetone	67-64-1	2800	14000	19000	2100000
Benzene	71-43-2	900	3800	6400	1100000
Bromodichloromethane	75-27-4	1300	8100	13000	Not Detected U
Bromoform	75-25-2	2900	12000	21000	Not Detected U
Carbon Disulfide	75-15-0	3800	19000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3000	7600	13000	Not Detected U
Chloroethane	75-00-3	6100	16000	21000	Not Detected U
Chloroform	67-66-3	1700	5900	9800	Not Detected U
Chloromethane	74-87-3	3500	12000	17000	Not Detected U
Cyclohexane	110-82-7	1500	4200	6900	4100000
Dibromochloromethane	124-48-1	3500	10000	17000	Not Detected U
Ethanol	64-17-5	3300	11000	15000	20000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	10/29/19 03:07 PM
Lab ID:	1910500A-07A	Dilution Factor:	402
Date/Time Collected:	10/15/19 11:01 AM	Instrument/Filename:	msd14.i / 14102914
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	5200	8700	470000
Freon 11	75-69-4	1700	6800	11000	Not Detected U
Freon 113	76-13-1	2700	9200	15000	Not Detected U
Freon 12	75-71-8	2200	6000	9900	Not Detected U
Heptane	142-82-5	2800	4900	8200	9000000
Hexane	110-54-3	1700	4200	7100	3700000
m,p-Xylene	108-38-3	1600	5200	8700	1300000
Methylene Chloride	75-09-2	4300	21000	28000	8300 J
Naphthalene	91-20-3	3200	4200	42000	Not Detected U
o-Xylene	95-47-6	2400	5200	8700	330000
Propylene	115-07-1	2400	10000	14000	22000
Styrene	100-42-5	1600	5100	8600	Not Detected U
Tetrachloroethene	127-18-4	4800	8200	14000	34000
Tetrahydrofuran	109-99-9	2100	3600	5900	Not Detected U
Toluene	108-88-3	1400	4500	7600	6700000
Total Xylene	1330-20-7	NA	D	8700	1600000
Trichloroethene	79-01-6	3200	6500	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3100	5100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	10/29/19 03:07 PM
Lab ID:	1910500A-07A	Dilution Factor:	402
Date/Time Collected:	10/15/19 11:01 AM	Instrument/Filename:	msd14.i / 14102914
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	131
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	10/29/19 07:10 PM
Lab ID:	1910500A-08A	Dilution Factor:	502
Date/Time Collected:	10/15/19 11:40 AM	Instrument/Filename:	msd14.i / 14102922
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2800	6100	10000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30000	56000	74000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2300	7400	12000	170000
1,2-Dibromoethane (EDB)	106-93-4	3400	12000	19000	37000
1,2-Dichlorobenzene	95-50-1	3600	9000	15000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2000	7400	12000	68000
1,3-Butadiene	106-99-0	1700	3300	5600	Not Detected U
1,4-Dioxane	123-91-1	9900	27000	36000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7200	22000	30000	1200000
2-Hexanone	591-78-6	15000	31000	41000	Not Detected U
2-Propanol	67-63-0	3100	18000	25000	400000
4-Methyl-2-pentanone	108-10-1	5000	6200	10000	32000
Acetone	67-64-1	3500	18000	24000	6400000
Benzene	71-43-2	1100	4800	8000	3200000
Bromodichloromethane	75-27-4	1700	10000	17000	Not Detected U
Bromoform	75-25-2	3600	16000	26000	Not Detected U
Carbon Disulfide	75-15-0	4800	23000	31000	Not Detected U
Carbon Tetrachloride	56-23-5	3800	9500	16000	Not Detected U
Chloroethane	75-00-3	7600	20000	26000	Not Detected U
Chloroform	67-66-3	2100	7400	12000	Not Detected U
Chloromethane	74-87-3	4400	16000	21000	Not Detected U
Cyclohexane	110-82-7	1900	5200	8600	10000000
Dibromochloromethane	124-48-1	4400	13000	21000	Not Detected U
Ethanol	64-17-5	4100	14000	19000	62000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	10/29/19 07:10 PM
Lab ID:	1910500A-08A	Dilution Factor:	502
Date/Time Collected:	10/15/19 11:40 AM	Instrument/Filename:	msd14.i / 14102922
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	36000	Not Detected
Ethyl Benzene	100-41-4	2200	6500	11000	630000
Freon 11	75-69-4	2100	8500	14000	Not Detected U
Freon 113	76-13-1	3400	12000	19000	Not Detected U
Freon 12	75-71-8	2800	7400	12000	Not Detected U
Heptane	142-82-5	3500	6200	10000	12000000
Hexane	110-54-3	2200	5300	8800	10000000
m,p-Xylene	108-38-3	2000	6500	11000	1600000
Methylene Chloride	75-09-2	5400	26000	35000	Not Detected U
Naphthalene	91-20-3	4000	5300	53000	Not Detected U
o-Xylene	95-47-6	2900	6500	11000	450000
Propylene	115-07-1	3000	13000	17000	30000
Styrene	100-42-5	2000	6400	11000	Not Detected U
Tetrachloroethene	127-18-4	6000	10000	17000	83000
Tetrahydrofuran	109-99-9	2600	4400	7400	Not Detected U
Toluene	108-88-3	1700	5700	9400	8700000
Total Xylene	1330-20-7	NA	D	11000	2000000
Trichloroethene	79-01-6	4000	8100	13000	4300 J
Vinyl Chloride	75-01-4	2200	3800	6400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	10/29/19 07:10 PM
Lab ID:	1910500A-08A	Dilution Factor:	502
Date/Time Collected:	10/15/19 11:40 AM	Instrument/Filename:	msd14.i / 14102922
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	140 Q
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	10/29/19 08:24 PM
Lab ID:	1910500A-09A	Dilution Factor:	382
Date/Time Collected:	10/15/19 11:56 AM	Instrument/Filename:	msd14.i / 14102925
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2100	4600	7700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	23000	42000	57000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	5600	9400	150000
1,2-Dibromoethane (EDB)	106-93-4	2600	8800	15000	19000
1,2-Dichlorobenzene	95-50-1	2800	6900	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5600	9400	60000
1,3-Butadiene	106-99-0	1300	2500	4200	Not Detected U
1,4-Dioxane	123-91-1	7600	21000	28000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5500	17000	22000	800000
2-Hexanone	591-78-6	12000	23000	31000	Not Detected U
2-Propanol	67-63-0	2400	14000	19000	61000
4-Methyl-2-pentanone	108-10-1	3800	4700	7800	10000
Acetone	67-64-1	2600	14000	18000	3800000
Benzene	71-43-2	850	3700	6100	3600000
Bromodichloromethane	75-27-4	1300	7700	13000	Not Detected U
Bromoform	75-25-2	2700	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	3600	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	2900	7200	12000	Not Detected U
Chloroethane	75-00-3	5800	15000	20000	Not Detected U
Chloroform	67-66-3	1600	5600	9300	Not Detected U
Chloromethane	74-87-3	3300	12000	16000	Not Detected U
Cyclohexane	110-82-7	1400	3900	6600	9900000
Dibromochloromethane	124-48-1	3400	9800	16000	Not Detected U
Ethanol	64-17-5	3200	11000	14000	3400 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	10/29/19 08:24 PM
Lab ID:	1910500A-09A	Dilution Factor:	382
Date/Time Collected:	10/15/19 11:56 AM	Instrument/Filename:	msd14.i / 14102925
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	28000	Not Detected
Ethyl Benzene	100-41-4	1600	5000	8300	540000
Freon 11	75-69-4	1600	6400	11000	Not Detected U
Freon 113	76-13-1	2600	8800	15000	Not Detected U
Freon 12	75-71-8	2100	5700	9400	Not Detected U
Heptane	142-82-5	2600	4700	7800	9800000
Hexane	110-54-3	1600	4000	6700	12000000
m,p-Xylene	108-38-3	1600	5000	8300	1500000
Methylene Chloride	75-09-2	4100	20000	26000	Not Detected U
Naphthalene	91-20-3	3100	4000	40000	Not Detected U
o-Xylene	95-47-6	2200	5000	8300	410000
Propylene	115-07-1	2200	9900	13000	29000
Styrene	100-42-5	1500	4900	8100	Not Detected U
Tetrachloroethene	127-18-4	4600	7800	13000	64000
Tetrahydrofuran	109-99-9	2000	3400	5600	Not Detected U
Toluene	108-88-3	1300	4300	7200	7000000
Total Xylene	1330-20-7	NA	D	8300	1900000
Trichloroethene	79-01-6	3000	6200	10000	Not Detected U
Vinyl Chloride	75-01-4	1700	2900	4900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	10/29/19 08:24 PM
Lab ID:	1910500A-09A	Dilution Factor:	382
Date/Time Collected:	10/15/19 11:56 AM	Instrument/Filename:	msd14.i / 14102925
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	142 Q
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	10/29/19 08:46 PM
Lab ID:	1910500A-10A	Dilution Factor:	392
Date/Time Collected:	10/15/19 12:05 PM	Instrument/Filename:	msd14.i / 14102926
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2200	4800	7900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	24000	44000	58000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	5800	9600	160000
1,2-Dibromoethane (EDB)	106-93-4	2600	9000	15000	19000
1,2-Dichlorobenzene	95-50-1	2800	7100	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5800	9600	66000
1,3-Butadiene	106-99-0	1400	2600	4300	Not Detected U
1,4-Dioxane	123-91-1	7800	21000	28000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5600	17000	23000	780000
2-Hexanone	591-78-6	12000	24000	32000	Not Detected U
2-Propanol	67-63-0	2400	14000	19000	51000
4-Methyl-2-pentanone	108-10-1	3900	4800	8000	18000
Acetone	67-64-1	2700	14000	19000	3700000
Benzene	71-43-2	880	3800	6300	3700000
Bromodichloromethane	75-27-4	1300	7900	13000	Not Detected U
Bromoform	75-25-2	2800	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	3700	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	2900	7400	12000	Not Detected U
Chloroethane	75-00-3	5900	16000	21000	Not Detected U
Chloroform	67-66-3	1600	5700	9600	Not Detected U
Chloromethane	74-87-3	3400	12000	16000	Not Detected U
Cyclohexane	110-82-7	1500	4000	6700	10000000
Dibromochloromethane	124-48-1	3400	10000	17000	Not Detected U
Ethanol	64-17-5	3200	11000	15000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	10/29/19 08:46 PM
Lab ID:	1910500A-10A	Dilution Factor:	392
Date/Time Collected:	10/15/19 12:05 PM	Instrument/Filename:	msd14.i / 14102926
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	28000	Not Detected
Ethyl Benzene	100-41-4	1700	5100	8500	530000
Freon 11	75-69-4	1600	6600	11000	Not Detected U
Freon 113	76-13-1	2700	9000	15000	Not Detected U
Freon 12	75-71-8	2200	5800	9700	Not Detected U
Heptane	142-82-5	2700	4800	8000	9900000
Hexane	110-54-3	1700	4100	6900	12000000
m,p-Xylene	108-38-3	1600	5100	8500	1400000
Methylene Chloride	75-09-2	4200	20000	27000	Not Detected U
Naphthalene	91-20-3	3200	4100	41000	Not Detected U
o-Xylene	95-47-6	2300	5100	8500	400000
Propylene	115-07-1	2300	10000	13000	26000
Styrene	100-42-5	1600	5000	8300	Not Detected U
Tetrachloroethene	127-18-4	4700	8000	13000	38000
Tetrahydrofuran	109-99-9	2000	3500	5800	Not Detected U
Toluene	108-88-3	1300	4400	7400	7100000
Total Xylene	1330-20-7	NA	D	8500	1800000
Trichloroethene	79-01-6	3100	6300	10000	Not Detected U
Vinyl Chloride	75-01-4	1700	3000	5000	Not Detected U

U = The analyte was not detected above the MDL.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	10/29/19 08:46 PM
Lab ID:	1910500A-10A	Dilution Factor:	392
Date/Time Collected:	10/15/19 12:05 PM	Instrument/Filename:	msd14.i / 14102926
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	141 Q
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/29/19 09:54 PM
Lab ID:	1910500A-11A	Dilution Factor:	40.2
Date/Time Collected:	10/15/19 12:19 PM	Instrument/Filename:	msd14.i / 14102928
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	230	490	810	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2400	4500	6000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	190	590	990	150000
1,2-Dibromoethane (EDB)	106-93-4	270	930	1500	1000 J
1,2-Dichlorobenzene	95-50-1	290	720	1200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	160	590	990	49000
1,3-Butadiene	106-99-0	140	270	440	Not Detected U
1,4-Dioxane	123-91-1	800	2200	2900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	570	1800	2400	3900
2-Hexanone	591-78-6	1200	2500	3300	Not Detected U
2-Propanol	67-63-0	250	1500	2000	3800
4-Methyl-2-pentanone	108-10-1	400	490	820	2200
Acetone	67-64-1	280	1400	1900	220000
Benzene	71-43-2	90	380	640	290000
Bromodichloromethane	75-27-4	130	810	1300	Not Detected U
Bromoform	75-25-2	290	1200	2100	Not Detected U
Carbon Disulfide	75-15-0	380	1900	2500	Not Detected U
Carbon Tetrachloride	56-23-5	300	760	1300	Not Detected U
Chloroethane	75-00-3	610	1600	2100	Not Detected U
Chloroform	67-66-3	170	590	980	Not Detected U
Chloromethane	74-87-3	350	1200	1700	Not Detected U
Cyclohexane	110-82-7	150	420	690	890000
Dibromochloromethane	124-48-1	350	1000	1700	Not Detected U
Ethanol	64-17-5	330	1100	1500	520 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/29/19 09:54 PM
Lab ID:	1910500A-11A	Dilution Factor:	40.2
Date/Time Collected:	10/15/19 12:19 PM	Instrument/Filename:	msd14.i / 14102928
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	2900	Not Detected
Ethyl Benzene	100-41-4	170	520	870	95000
Freon 11	75-69-4	170	680	1100	Not Detected U
Freon 113	76-13-1	270	920	1500	Not Detected U
Freon 12	75-71-8	220	600	990	Not Detected U
Heptane	142-82-5	280	490	820	1100000
Hexane	110-54-3	170	420	710	540000
m,p-Xylene	108-38-3	160	520	870	290000
Methylene Chloride	75-09-2	430	2100	2800	510 J
Naphthalene	91-20-3	320	420	4200	3200 J
o-Xylene	95-47-6	240	520	870	110000
Propylene	115-07-1	240	1000	1400	Not Detected U
Styrene	100-42-5	160	510	860	Not Detected U
Tetrachloroethene	127-18-4	480	820	1400	Not Detected U
Tetrahydrofuran	109-99-9	210	360	590	1100
Toluene	108-88-3	140	450	760	730000
Total Xylene	1330-20-7	NA	D	870	400000
Trichloroethene	79-01-6	320	650	1100	Not Detected U
Vinyl Chloride	75-01-4	180	310	510	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/29/19 09:54 PM
Lab ID:	1910500A-11A	Dilution Factor:	40.2
Date/Time Collected:	10/15/19 12:19 PM	Instrument/Filename:	msd14.i / 14102928
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	123
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	10/29/19 03:44 PM
Lab ID:	1910500A-12A	Dilution Factor:	412
Date/Time Collected:	10/15/19 12:32 PM	Instrument/Filename:	msd14.i / 14102915
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	5000	8300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	25000	46000	61000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	6100	10000	160000
1,2-Dibromoethane (EDB)	106-93-4	2800	9500	16000	8700 J
1,2-Dichlorobenzene	95-50-1	3000	7400	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	6100	10000	63000
1,3-Butadiene	106-99-0	1400	2700	4600	Not Detected U
1,4-Dioxane	123-91-1	8200	22000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5900	18000	24000	280000
2-Hexanone	591-78-6	13000	25000	34000	Not Detected U
2-Propanol	67-63-0	2600	15000	20000	110000
4-Methyl-2-pentanone	108-10-1	4100	5100	8400	Not Detected U
Acetone	67-64-1	2800	15000	20000	4800000
Benzene	71-43-2	920	3900	6600	2200000
Bromodichloromethane	75-27-4	1400	8300	14000	Not Detected U
Bromoform	75-25-2	2900	13000	21000	Not Detected U
Carbon Disulfide	75-15-0	3900	19000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	7800	13000	Not Detected U
Chloroethane	75-00-3	6200	16000	22000	Not Detected U
Chloroform	67-66-3	1700	6000	10000	Not Detected U
Chloromethane	74-87-3	3600	13000	17000	Not Detected U
Cyclohexane	110-82-7	1600	4200	7100	6200000
Dibromochloromethane	124-48-1	3600	10000	18000	Not Detected U
Ethanol	64-17-5	3400	12000	16000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	10/29/19 03:44 PM
Lab ID:	1910500A-12A	Dilution Factor:	412
Date/Time Collected:	10/15/19 12:32 PM	Instrument/Filename:	msd14.i / 14102915
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected
Ethyl Benzene	100-41-4	1800	5400	8900	430000
Freon 11	75-69-4	1700	6900	12000	Not Detected U
Freon 113	76-13-1	2800	9500	16000	Not Detected U
Freon 12	75-71-8	2300	6100	10000	Not Detected U
Heptane	142-82-5	2800	5100	8400	6400000
Hexane	110-54-3	1800	4400	7300	7600000
m,p-Xylene	108-38-3	1700	5400	8900	1000000
Methylene Chloride	75-09-2	4400	21000	29000	Not Detected U
Naphthalene	91-20-3	3300	4300	43000	Not Detected U
o-Xylene	95-47-6	2400	5400	8900	300000
Propylene	115-07-1	2400	11000	14000	44000
Styrene	100-42-5	1700	5300	8800	Not Detected U
Tetrachloroethene	127-18-4	4900	8400	14000	63000
Tetrahydrofuran	109-99-9	2200	3600	6100	Not Detected U
Toluene	108-88-3	1400	4600	7800	4200000
Total Xylene	1330-20-7	NA	D	8900	1300000
Trichloroethene	79-01-6	3300	6600	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3200	5300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	10/29/19 03:44 PM
Lab ID:	1910500A-12A	Dilution Factor:	412
Date/Time Collected:	10/15/19 12:32 PM	Instrument/Filename:	msd14.i / 14102915
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	126
4-Bromofluorobenzene	460-00-4	83-110	96
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	10/29/19 04:08 PM
Lab ID:	1910500A-13A	Dilution Factor:	424
Date/Time Collected:	10/15/19 12:44 PM	Instrument/Filename:	msd14.i / 14102916
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2400	5100	8600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	25000	47000	63000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2000	6200	10000	130000
1,2-Dibromoethane (EDB)	106-93-4	2900	9800	16000	13000 J
1,2-Dichlorobenzene	95-50-1	3100	7600	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	6200	10000	48000
1,3-Butadiene	106-99-0	1500	2800	4700	Not Detected U
1,4-Dioxane	123-91-1	8400	23000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6100	19000	25000	290000
2-Hexanone	591-78-6	13000	26000	35000	Not Detected U
2-Propanol	67-63-0	2600	16000	21000	59000
4-Methyl-2-pentanone	108-10-1	4200	5200	8700	Not Detected U
Acetone	67-64-1	2900	15000	20000	2500000
Benzene	71-43-2	950	4100	6800	980000
Bromodichloromethane	75-27-4	1400	8500	14000	Not Detected U
Bromoform	75-25-2	3000	13000	22000	Not Detected U
Carbon Disulfide	75-15-0	4000	20000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	8000	13000	Not Detected U
Chloroethane	75-00-3	6400	17000	22000	Not Detected U
Chloroform	67-66-3	1800	6200	10000	Not Detected U
Chloromethane	74-87-3	3700	13000	18000	Not Detected U
Cyclohexane	110-82-7	1600	4400	7300	3100000
Dibromochloromethane	124-48-1	3700	11000	18000	Not Detected U
Ethanol	64-17-5	3500	12000	16000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	10/29/19 04:08 PM
Lab ID:	1910500A-13A	Dilution Factor:	424
Date/Time Collected:	10/15/19 12:44 PM	Instrument/Filename:	msd14.i / 14102916
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected
Ethyl Benzene	100-41-4	1800	5500	9200	320000
Freon 11	75-69-4	1800	7100	12000	Not Detected U
Freon 113	76-13-1	2900	9700	16000	Not Detected U
Freon 12	75-71-8	2300	6300	10000	Not Detected U
Heptane	142-82-5	2900	5200	8700	4600000
Hexane	110-54-3	1800	4500	7500	2800000
m,p-Xylene	108-38-3	1700	5500	9200	770000
Methylene Chloride	75-09-2	4600	22000	29000	7000 J
Naphthalene	91-20-3	3400	4400	44000	Not Detected U
o-Xylene	95-47-6	2500	5500	9200	210000
Propylene	115-07-1	2500	11000	14000	Not Detected U
Styrene	100-42-5	1700	5400	9000	Not Detected U
Tetrachloroethene	127-18-4	5100	8600	14000	77000
Tetrahydrofuran	109-99-9	2200	3800	6200	Not Detected U
Toluene	108-88-3	1400	4800	8000	4000000
Total Xylene	1330-20-7	NA	D	9200	1000000
Trichloroethene	79-01-6	3400	6800	11000	Not Detected U
Vinyl Chloride	75-01-4	1900	3200	5400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	10/29/19 04:08 PM
Lab ID:	1910500A-13A	Dilution Factor:	424
Date/Time Collected:	10/15/19 12:44 PM	Instrument/Filename:	msd14.i / 14102916
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	122
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	10/29/19 04:32 PM
Lab ID:	1910500A-14A	Dilution Factor:	434
Date/Time Collected:	10/15/19 12:56 PM	Instrument/Filename:	msd14.i / 14102917
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2400	5300	8800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	26000	48000	64000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2000	6400	11000	140000
1,2-Dibromoethane (EDB)	106-93-4	2900	10000	17000	14000 J
1,2-Dichlorobenzene	95-50-1	3200	7800	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1800	6400	11000	54000
1,3-Butadiene	106-99-0	1500	2900	4800	Not Detected U
1,4-Dioxane	123-91-1	8600	23000	31000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6200	19000	26000	510000
2-Hexanone	591-78-6	13000	27000	36000	Not Detected U
2-Propanol	67-63-0	2700	16000	21000	130000
4-Methyl-2-pentanone	108-10-1	4300	5300	8900	Not Detected U
Acetone	67-64-1	3000	15000	21000	3300000
Benzene	71-43-2	970	4200	6900	980000
Bromodichloromethane	75-27-4	1400	8700	14000	Not Detected U
Bromoform	75-25-2	3100	13000	22000	Not Detected U
Carbon Disulfide	75-15-0	4100	20000	27000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	8200	14000	Not Detected U
Chloroethane	75-00-3	6600	17000	23000	Not Detected U
Chloroform	67-66-3	1800	6400	10000	Not Detected U
Chloromethane	74-87-3	3800	13000	18000	Not Detected U
Cyclohexane	110-82-7	1600	4500	7500	3300000
Dibromochloromethane	124-48-1	3800	11000	18000	Not Detected U
Ethanol	64-17-5	3600	12000	16000	11000 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	10/29/19 04:32 PM
Lab ID:	1910500A-14A	Dilution Factor:	434
Date/Time Collected:	10/15/19 12:56 PM	Instrument/Filename:	msd14.i / 14102917
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	31000	Not Detected
Ethyl Benzene	100-41-4	1900	5600	9400	290000
Freon 11	75-69-4	1800	7300	12000	Not Detected U
Freon 113	76-13-1	3000	10000	17000	Not Detected U
Freon 12	75-71-8	2400	6400	11000	Not Detected U
Heptane	142-82-5	3000	5300	8900	6100000
Hexane	110-54-3	1900	4600	7600	2400000
m,p-Xylene	108-38-3	1800	5600	9400	720000
Methylene Chloride	75-09-2	4700	23000	30000	Not Detected U
Naphthalene	91-20-3	3500	4500	45000	Not Detected U
o-Xylene	95-47-6	2500	5600	9400	200000
Propylene	115-07-1	2600	11000	15000	Not Detected U
Styrene	100-42-5	1800	5500	9200	Not Detected U
Tetrachloroethene	127-18-4	5200	8800	15000	120000
Tetrahydrofuran	109-99-9	2300	3800	6400	Not Detected U
Toluene	108-88-3	1500	4900	8200	4700000
Total Xylene	1330-20-7	NA	D	9400	960000
Trichloroethene	79-01-6	3400	7000	12000	5600 J
Vinyl Chloride	75-01-4	1900	3300	5500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	10/29/19 04:32 PM
Lab ID:	1910500A-14A	Dilution Factor:	434
Date/Time Collected:	10/15/19 12:56 PM	Instrument/Filename:	msd14.i / 14102917
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	124
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/29/19 11:58 AM
Lab ID:	1910500A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102908a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/29/19 11:58 AM
Lab ID:	1910500A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102908a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	18 J
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/29/19 11:58 AM
Lab ID:	1910500A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102908a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	102
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/29/19 09:11 AM
Lab ID:	1910500A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102902a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	94
1,2,4-Trichlorobenzene	120-82-1	98
1,2,4-Trimethylbenzene	95-63-6	105
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	110
1,3,5-Trimethylbenzene	108-67-8	114
1,3-Butadiene	106-99-0	82
1,4-Dioxane	123-91-1	104
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	90
2-Propanol	67-63-0	92
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	103
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	97
Carbon Disulfide	75-15-0	100
Carbon Tetrachloride	56-23-5	116
Chloroethane	75-00-3	72
Chloroform	67-66-3	105
Chloromethane	74-87-3	95
Cyclohexane	110-82-7	107
Dibromochloromethane	124-48-1	102
Ethanol	64-17-5	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/29/19 09:11 AM
Lab ID:	1910500A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102902a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	90
Ethyl Benzene	100-41-4	101
Freon 11	75-69-4	113
Freon 113	76-13-1	107
Freon 12	75-71-8	104
Heptane	142-82-5	101
Hexane	110-54-3	96
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	84
o-Xylene	95-47-6	95
Propylene	115-07-1	88
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	89
Toluene	108-88-3	104
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/29/19 09:11 AM
Lab ID:	1910500A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102902a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/30/19 05:58 AM
Lab ID:	1910500A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14102930a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	101
1,2,4-Trichlorobenzene	120-82-1	82
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	105
1,2-Dichlorobenzene	95-50-1	100
1,3,5-Trimethylbenzene	108-67-8	107
1,3-Butadiene	106-99-0	92
1,4-Dioxane	123-91-1	106
2-Butanone (Methyl Ethyl Ketone)	78-93-3	99
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	95
Acetone	67-64-1	96
Benzene	71-43-2	106
Bromodichloromethane	75-27-4	107
Bromoform	75-25-2	102
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	73
Chloroform	67-66-3	100
Chloromethane	74-87-3	91
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	107
Ethanol	64-17-5	94

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/30/19 05:58 AM
Lab ID:	1910500A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102930a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	90
Ethyl Benzene	100-41-4	105
Freon 11	75-69-4	102
Freon 113	76-13-1	101
Freon 12	75-71-8	98
Heptane	142-82-5	104
Hexane	110-54-3	92
m,p-Xylene	108-38-3	103
Methylene Chloride	75-09-2	87
Naphthalene	91-20-3	84
o-Xylene	95-47-6	103
Propylene	115-07-1	90
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	84
Toluene	108-88-3	108
Total Xylene	1330-20-7	103
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/30/19 05:58 AM
Lab ID:	1910500A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102930a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/29/19 10:07 AM
Lab ID:	1910500A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102904a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	91
1,2,4-Trichlorobenzene	120-82-1	104
1,2,4-Trimethylbenzene	95-63-6	107
1,2-Dibromoethane (EDB)	106-93-4	101
1,2-Dichlorobenzene	95-50-1	105
1,3,5-Trimethylbenzene	108-67-8	114
1,3-Butadiene	106-99-0	83
1,4-Dioxane	123-91-1	102
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	91
2-Propanol	67-63-0	92
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	98
Benzene	71-43-2	104
Bromodichloromethane	75-27-4	108
Bromoform	75-25-2	108
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	110
Chloroethane	75-00-3	72
Chloroform	67-66-3	108
Chloromethane	74-87-3	92
Cyclohexane	110-82-7	108
Dibromochloromethane	124-48-1	106
Ethanol	64-17-5	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/29/19 10:07 AM
Lab ID:	1910500A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102904a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	107
Freon 11	75-69-4	108
Freon 113	76-13-1	110
Freon 12	75-71-8	105
Heptane	142-82-5	103
Hexane	110-54-3	97
m,p-Xylene	108-38-3	105
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	108
o-Xylene	95-47-6	106
Propylene	115-07-1	89
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	110
Tetrahydrofuran	109-99-9	89
Toluene	108-88-3	104
Total Xylene	1330-20-7	106
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/29/19 10:07 AM
Lab ID:	1910500A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102904a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	104
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/29/19 10:31 AM
Lab ID:	1910500A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102905a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	95
1,2,4-Trichlorobenzene	120-82-1	119
1,2,4-Trimethylbenzene	95-63-6	117
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	121
1,3,5-Trimethylbenzene	108-67-8	124
1,3-Butadiene	106-99-0	85
1,4-Dioxane	123-91-1	94
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	89
2-Propanol	67-63-0	85
4-Methyl-2-pentanone	108-10-1	94
Acetone	67-64-1	91
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	109
Bromoform	75-25-2	116
Carbon Disulfide	75-15-0	98
Carbon Tetrachloride	56-23-5	108
Chloroethane	75-00-3	69
Chloroform	67-66-3	104
Chloromethane	74-87-3	94
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	112
Ethanol	64-17-5	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/29/19 10:31 AM
Lab ID:	1910500A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102905a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	111
Freon 11	75-69-4	104
Freon 113	76-13-1	98
Freon 12	75-71-8	96
Heptane	142-82-5	104
Hexane	110-54-3	93
m,p-Xylene	108-38-3	112
Methylene Chloride	75-09-2	96
Naphthalene	91-20-3	115
o-Xylene	95-47-6	112
Propylene	115-07-1	91
Styrene	100-42-5	104
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	87
Toluene	108-88-3	104
Total Xylene	1330-20-7	112
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/29/19 10:31 AM
Lab ID:	1910500A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14102905a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	111
Toluene-d8	2037-26-5	86-115	98

* % Recovery is calculated using unrounded analytical results.



Air Toxics

11/19/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1910500BR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/18/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

A handwritten signature in black ink that reads "Brian Whittaker". The signature is written in a cursive, flowing style.

Brian Whittaker

Project Manager

WORK ORDER #: 1910500BR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/18/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/30/2019		
DATE REISSUED:	11/19/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified ASTM D-1945	10.0 "Hg	5 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified ASTM D-1945	10.0 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified ASTM D-1945	10.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified ASTM D-1945	12.0 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified ASTM D-1945	12.5 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified ASTM D-1945	10.0 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified ASTM D-1945	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified ASTM D-1945	10.0 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified ASTM D-1945	14.0 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified ASTM D-1945	9.0 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified ASTM D-1945	9.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified ASTM D-1945	10.0 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified ASTM D-1945	10.5 "Hg	5 psi
13A	KAFB-106V2 252.2	Modified ASTM D-1945	11.0 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified ASTM D-1945	11.5 "Hg	5 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/19/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 1910500BR1

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 18, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Methane and Ethane were manually integrated in samples KAFB-106V1 102.1, KAFB-106V1 102.1 Lab Duplicate, KAFB-106V1 112.6, KAFB-106V1 217.1, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP and KAFB-106V2 217.1.

Methane was manually integrated in samples KAFB-106V1 159.6, KAFB-106V1 159.6 DUP and KAFB-106V2 159.9.

Methane and Pentane were manually integrated in sample KAFB-106V1 252.1.

The work order was reissued on 11/19/2019 to correct the Limit of Detection for Carbon Dioxide and Carbon Monoxide.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/29/19 09:35 AM
Lab ID:	1910500BR1-01A	Dilution Factor:	2.01
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	gc10.i / 10102909
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0037
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	7.2
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0018 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0081
Nitrogen	7727-37-9	0.14	0.14	0.20	79
Oxygen	7782-44-7	0.037	0.037	0.20	12
Pentane	109-66-0	0.000050	0.00022	0.0020	0.10
Propane	74-98-6	0.000060	0.00022	0.0020	0.00097 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	10/29/19 09:59 AM
Lab ID:	1910500BR1-01AA	Dilution Factor:	2.01
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	gc10.i / 10102910
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0040
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	7.2
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0019 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0088
Nitrogen	7727-37-9	0.14	0.14	0.20	79
Oxygen	7782-44-7	0.037	0.037	0.20	12
Pentane	109-66-0	0.000050	0.00022	0.0020	0.12
Propane	74-98-6	0.000060	0.00022	0.0020	0.0010 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/29/19 11:10 AM
Lab ID:	1910500BR1-02A	Dilution Factor:	2.01
Date/Time Collected:	10/15/19 07:48 PM	Instrument/Filename:	gc10.i / 10102912
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0050
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	7.8
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.0019 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0081
Nitrogen	7727-37-9	0.14	0.14	0.20	78
Oxygen	7782-44-7	0.037	0.037	0.20	12
Pentane	109-66-0	0.000050	0.00022	0.0020	0.14
Propane	74-98-6	0.000060	0.00022	0.0020	0.0010 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/29/19 11:34 AM
Lab ID:	1910500BR1-03A	Dilution Factor:	2.23
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	gc10.i / 10102913
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	0.0035
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	1.9
Carbon Monoxide	630-08-0	0.0030	0.011	0.022	Not Detected U
Ethane	74-84-0	0.000056	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0034	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.00017 J
Nitrogen	7727-37-9	0.15	0.15	0.22	77
Oxygen	7782-44-7	0.041	0.041	0.22	19
Pentane	109-66-0	0.000056	0.00024	0.0022	0.16
Propane	74-98-6	0.000067	0.00024	0.0022	0.00016 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/29/19 12:26 PM
Lab ID:	1910500BR1-04A	Dilution Factor:	2.30
Date/Time Collected:	10/15/19 10:16 AM	Instrument/Filename:	gc10.i / 10102915
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000032	0.00025	0.0023	0.0036
Carbon Dioxide	124-38-9	0.0025	0.011	0.023	1.9
Carbon Monoxide	630-08-0	0.0030	0.011	0.023	Not Detected U
Ethane	74-84-0	0.000058	0.00025	0.0023	Not Detected U
Hydrogen	1333-74-0	0.0034	0.014	0.023	Not Detected U
Methane	74-82-8	0.000062	0.00012	0.00023	0.00013 J
Nitrogen	7727-37-9	0.16	0.16	0.23	77
Oxygen	7782-44-7	0.043	0.043	0.23	19
Pentane	109-66-0	0.000058	0.00025	0.0023	0.17
Propane	74-98-6	0.000069	0.00025	0.0023	0.00016 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/29/19 01:43 PM
Lab ID:	1910500BR1-05A	Dilution Factor:	2.01
Date/Time Collected:	10/15/19 10:32 AM	Instrument/Filename:	gc10.i / 10102917
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0023
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	5.3
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.00068 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0015
Nitrogen	7727-37-9	0.14	0.14	0.20	80
Oxygen	7782-44-7	0.037	0.037	0.20	13
Pentane	109-66-0	0.000050	0.00022	0.0020	0.072
Propane	74-98-6	0.000060	0.00022	0.0020	0.0010 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	10/29/19 02:12 PM
Lab ID:	1910500BR1-06A	Dilution Factor:	2.06
Date/Time Collected:	10/15/19 10:48 AM	Instrument/File Name:	gc10.i / 10102918
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0028
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.43
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.00020 J
Nitrogen	7727-37-9	0.14	0.14	0.21	79
Oxygen	7782-44-7	0.038	0.038	0.21	19
Pentane	109-66-0	0.000052	0.00023	0.0021	0.052
Propane	74-98-6	0.000062	0.00023	0.0021	0.00035 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	10/29/19 02:59 PM
Lab ID:	1910500BR1-07A	Dilution Factor:	2.01
Date/Time Collected:	10/15/19 11:01 AM	Instrument/Filename:	gc10.i / 10102920
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0036
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	1.4
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.00020 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.00030
Nitrogen	7727-37-9	0.14	0.14	0.20	79
Oxygen	7782-44-7	0.037	0.037	0.20	18
Pentane	109-66-0	0.000050	0.00022	0.0020	0.056
Propane	74-98-6	0.000060	0.00022	0.0020	0.0011 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	10/29/19 03:32 PM
Lab ID:	1910500BR1-08A	Dilution Factor:	2.51
Date/Time Collected:	10/15/19 11:40 AM	Instrument/Filename:	gc10.i / 10102921
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000035	0.00028	0.0025	0.0035
Carbon Dioxide	124-38-9	0.0027	0.012	0.025	10
Carbon Monoxide	630-08-0	0.0033	0.012	0.025	Not Detected U
Ethane	74-84-0	0.000063	0.00028	0.0025	0.0021 J
Hydrogen	1333-74-0	0.0038	0.016	0.025	Not Detected U
Methane	74-82-8	0.000068	0.00012	0.00025	0.015
Nitrogen	7727-37-9	0.17	0.17	0.25	81
Oxygen	7782-44-7	0.046	0.046	0.25	5.9
Pentane	109-66-0	0.000063	0.00028	0.0025	0.099
Propane	74-98-6	0.000075	0.00028	0.0025	0.0011 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	10/29/19 04:22 PM
Lab ID:	1910500BR1-09A	Dilution Factor:	1.91
Date/Time Collected:	10/15/19 11:56 AM	Instrument/Filename:	gc10.i / 10102923
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0060
Carbon Dioxide	124-38-9	0.0021	0.0092	0.019	11
Carbon Monoxide	630-08-0	0.0025	0.0092	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.0024
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000096	0.00019	0.017
Nitrogen	7727-37-9	0.13	0.13	0.19	81
Oxygen	7782-44-7	0.035	0.035	0.19	4.8
Pentane	109-66-0	0.000048	0.00021	0.0019	0.20
Propane	74-98-6	0.000057	0.00021	0.0019	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	10/29/19 04:44 PM
Lab ID:	1910500BR1-10A	Dilution Factor:	1.96
Date/Time Collected:	10/15/19 12:05 PM	Instrument/File Name:	gc10.i / 10102924
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00022	0.0020	0.0062
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	11
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000049	0.00022	0.0020	0.0025
Hydrogen	1333-74-0	0.0029	0.012	0.020	Not Detected U
Methane	74-82-8	0.000053	0.000098	0.00020	0.018
Nitrogen	7727-37-9	0.13	0.13	0.20	81
Oxygen	7782-44-7	0.036	0.036	0.20	4.9
Pentane	109-66-0	0.000049	0.00022	0.0020	0.23
Propane	74-98-6	0.000059	0.00022	0.0020	0.0015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/29/19 06:28 PM
Lab ID:	1910500BR1-11A	Dilution Factor:	2.01
Date/Time Collected:	10/15/19 12:19 PM	Instrument/Filename:	gc10.i / 10102926
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	0.16
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.000069 J
Nitrogen	7727-37-9	0.14	0.14	0.20	79
Oxygen	7782-44-7	0.037	0.037	0.20	20
Pentane	109-66-0	0.000050	0.00022	0.0020	0.0025
Propane	74-98-6	0.000060	0.00022	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	10/29/19 06:51 PM
Lab ID:	1910500BR1-12A	Dilution Factor:	2.06
Date/Time Collected:	10/15/19 12:32 PM	Instrument/Filename:	gc10.i / 10102927
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0020 J
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	10
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.0014 J
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.0026
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.038	0.038	0.21	7.6
Pentane	109-66-0	0.000052	0.00023	0.0021	0.065
Propane	74-98-6	0.000062	0.00023	0.0021	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	10/29/19 07:39 PM
Lab ID:	1910500BR1-13A	Dilution Factor:	2.12
Date/Time Collected:	10/15/19 12:44 PM	Instrument/Filename:	gc10.i / 10102929
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.00057 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	0.11
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	Not Detected U
Nitrogen	7727-37-9	0.14	0.14	0.21	79
Oxygen	7782-44-7	0.039	0.039	0.21	20
Pentane	109-66-0	0.000053	0.00023	0.0021	0.037
Propane	74-98-6	0.000064	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	10/29/19 08:03 PM
Lab ID:	1910500BR1-14A	Dilution Factor:	2.17
Date/Time Collected:	10/15/19 12:56 PM	Instrument/Filename:	gc10.i / 10102930
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.00035 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	0.26
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0033	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	Not Detected U
Nitrogen	7727-37-9	0.15	0.15	0.22	78
Oxygen	7782-44-7	0.040	0.040	0.22	20
Pentane	109-66-0	0.000054	0.00024	0.0022	0.045
Propane	74-98-6	0.000065	0.00024	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/29/19 08:44 AM
Lab ID:	1910500BR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10102907
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/29/19 09:07 AM
Lab ID:	1910500BR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10102908c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/29/19 06:12 AM
Lab ID:	1910500BR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10102902
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	101
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	102
Methane	74-82-8	103
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	102
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/29/19 06:35 AM
Lab ID:	1910500BR1-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10102903
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	102
Methane	74-82-8	102
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	102
Pentane	109-66-0	101
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/29/19 07:51 AM
Lab ID:	1910500BR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10102905c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	100

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/29/19 08:17 AM
Lab ID:	1910500BR1-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10102906c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	100

* % Recovery is calculated using unrounded analytical results.

10/31/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1910500C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/18/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1910500C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/18/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/30/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-3	10.0 "Hg	5 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified TO-3	10.0 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-3	10.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-3	12.0 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-3	12.5 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-3	10.0 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-3	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified TO-3	10.0 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-3	14.0 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-3	9.0 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-3	9.5 "Hg	5 psi
10AA	KAFB-106V2 117.1 DUP Lab Duplicate	Modified TO-3	9.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-3	10.0 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified TO-3	10.5 "Hg	5 psi
13A	KAFB-106V2 252.2	Modified TO-3	11.0 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified TO-3	11.5 "Hg	5 psi
15A	Lab Blank	Modified TO-3	NA	NA
15B	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA
16B	LCS	Modified TO-3	NA	NA
16BB	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 10/30/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 1910500C

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 18, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

TPH (Gasoline Range) was manually integrated in samples KAFB-106V1 159.6, KAFB-106V1 159.6 DUP and KAFB-106V1 217.1.

Fluorobenzene (FID) was manually integrated in sample KAFB-106V1 217.1.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/28/19 10:17 AM
Lab ID:	1910500C-01A	Dilution Factor:	2010
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	gcd.i / d102805
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	10/28/19 10:56 AM
Lab ID:	1910500C-01AA	Dilution Factor:	2010
Date/Time Collected:	10/15/19 09:34 AM	Instrument/Filename:	gcd.i / d102806
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/28/19 12:54 PM
Lab ID:	1910500C-02A	Dilution Factor:	2010
Date/Time Collected:	10/15/19 07:48 PM	Instrument/Filename:	gcd.i / d102809
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/24/19 10:17 AM
Lab ID:	1910500C-03A	Dilution Factor:	2970
Date/Time Collected:	10/15/19 10:04 AM	Instrument/Filename:	gcd.i / d102406
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	170000	240000	300000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	126

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/24/19 11:09 AM
Lab ID:	1910500C-04A	Dilution Factor:	2300
Date/Time Collected:	10/15/19 10:16 AM	Instrument/Filename:	gcd.i / d102407
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	190000	240000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	126

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/24/19 11:42 AM
Lab ID:	1910500C-05A	Dilution Factor:	2680
Date/Time Collected:	10/15/19 10:32 AM	Instrument/Filename:	gcd.i / d102408
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	270000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	133

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	10/24/19 12:14 PM
Lab ID:	1910500C-06A	Dilution Factor:	2750
Date/Time Collected:	10/15/19 10:48 AM	Instrument/Filename:	gcd.i / d102409
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	10/24/19 12:47 PM
Lab ID:	1910500C-07A	Dilution Factor:	2010
Date/Time Collected:	10/15/19 11:01 AM	Instrument/Filename:	gcd.i / d102410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	200000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	144

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	10/24/19 01:20 PM
Lab ID:	1910500C-08A	Dilution Factor:	2510
Date/Time Collected:	10/15/19 11:40 AM	Instrument/Filename:	gcd.i / d102411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	150000	200000	260000	170000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	142

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	10/24/19 01:53 PM
Lab ID:	1910500C-09A	Dilution Factor:	3820
Date/Time Collected:	10/15/19 11:56 AM	Instrument/Filename:	gcd.i / d102412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	220000	310000	390000	240000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	136

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	10/24/19 02:25 PM
Lab ID:	1910500C-10A	Dilution Factor:	3920
Date/Time Collected:	10/15/19 12:05 PM	Instrument/Filename:	gcd.i / d102413
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	320000	400000	260000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	136

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP Lab Duplicate	Date/Time Analyzed:	10/24/19 03:26 PM
Lab ID:	1910500C-10AA	Dilution Factor:	3920
Date/Time Collected:	10/15/19 12:05 PM	Instrument/Filename:	gcd.i / d102414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	320000	400000	270000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	134

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/28/19 12:17 PM
Lab ID:	1910500C-11A	Dilution Factor:	804
Date/Time Collected:	10/15/19 12:19 PM	Instrument/Filename:	gcd.i / d102808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	47000	66000	82000	54000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	128

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	10/24/19 03:59 PM
Lab ID:	1910500C-12A	Dilution Factor:	2750
Date/Time Collected:	10/15/19 12:32 PM	Instrument/Filename:	gcd.i / d102415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	131

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	10/24/19 04:32 PM
Lab ID:	1910500C-13A	Dilution Factor:	1700
Date/Time Collected:	10/15/19 12:44 PM	Instrument/Filename:	gcd.i / d102416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	99000	140000	170000	98000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	10/28/19 01:31 PM
Lab ID:	1910500C-14A	Dilution Factor:	2170
Date/Time Collected:	10/15/19 12:56 PM	Instrument/Filename:	gcd.i / d102810
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	220000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	141

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/24/19 09:43 AM
Lab ID:	1910500C-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d102405
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/28/19 09:33 AM
Lab ID:	1910500C-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d102804
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	104

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/24/19 07:36 AM
Lab ID:	1910500C-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d102402
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery	
TPH (Gasoline Range)	9999-9999-208	116	

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	129

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/24/19 08:12 AM
Lab ID:	1910500C-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d102403
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		113

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	128

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/28/19 08:05 AM
Lab ID:	1910500C-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d102802
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		117

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	130

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/28/19 08:45 AM
Lab ID:	1910500C-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d102803
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		119

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	130

* % Recovery is calculated using unrounded analytical results.

11/7/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1910626A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/25/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1910626A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/25/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/07/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
06AA	KAFB-106V1 252.1 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified TO-15 (5&20 ppbv	12.5 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-15 (5&20 ppbv	13.5 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-15 (5&20 ppbv	15.5 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-15 (5&20 ppbv	15.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified TO-15 (5&20 ppbv	9.0 "Hg	5 psi
13A	KAFB-106V2 252.2	Modified TO-15 (5&20 ppbv	9.0 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16C	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA

Continued on next page

WORK ORDER #: 1910626A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/25/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/07/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
17B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/07/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 1910626A

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 25, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

Samples KAFB-106V2 117.1 and KAFB-106V2 117.1 DUP were received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes and non-standard compounds.

The Initial Calibration Verification (ICV) analyzed on 10/22/19 did not meet project requirement control limits of 70-130% recovery (R) for Naphthalene.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Samples were analyzed in two analytical batches on MSD-14 on 10/31/19 and 11/6/19. The initial continuing calibration verification (CCV) for the batches are reported as lab fractions 16A and 16B and the ending CCV are reported as lab fractions 16C and 16D.

The Continuing Calibration Verification (CCV) analyzed on 11/6/19 did not meet project requirement control limits of 70-130% recovery (R) for Chloroethane and Tetrahydrofuran.

The ending Continuing Calibration Verification (CCV) analyzed on 11/6/19 did not meet project requirement control limits of 70-130% recovery (R) for Chloroethane.

Dilution was performed on samples KAFB-106V1 252.1, KAFB-106V1 252.1 Lab Duplicate, KAFB-106V1 262.6, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2 and KAFB-106V2 269.5 due to the presence of high level target species.

Chloroethane was manually integrated in the initial calibration.

Surrogate 1,2-Dichloroethane-d4 did not meet in-house generated control limits in samples KAFB-106V2 102.2, KAFB-106V2 217.1 and KAFB-106V2 269.5.

2-Butanone (Methyl Ethyl Ketone) exceeded the instrument's calibration range for samples KAFB-106V2 102.2 and KAFB-106V2 269.5 and were flagged accordingly.

Heptane exceeded the instrument's calibration range for samples KAFB-106V2 217.1 and KAFB-106V2 269.5 and were flagged accordingly.

Acetone, Hexane and Cyclohexane exceeded the instrument's calibration range for sample KAFB-106V2 217.1 and was flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/31/19 10:55 AM
Lab ID:	1910626A-01A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	msd14.i / 14103107
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	12	25	42	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	120	230	300	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	9.6	30	51	9800
1,2-Dibromoethane (EDB)	106-93-4	14	47	79	43 J
1,2-Dichlorobenzene	95-50-1	15	37	62	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	8.4	30	51	2400
1,3-Butadiene	106-99-0	7.2	14	23	Not Detected U
1,4-Dioxane	123-91-1	41	110	150	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	29	91	120	5000
2-Hexanone	591-78-6	63	130	170	Not Detected U
2-Propanol	67-63-0	13	76	100	4100
4-Methyl-2-pentanone	108-10-1	20	25	42	Not Detected U
Acetone	67-64-1	14	73	98	27000
Benzene	71-43-2	4.6	20	33	12000
Bromodichloromethane	75-27-4	6.9	41	69	Not Detected U
Bromoform	75-25-2	15	64	110	Not Detected U
Carbon Disulfide	75-15-0	20	96	130	Not Detected U
Carbon Tetrachloride	56-23-5	15	39	65	Not Detected U
Chloroethane	75-00-3	31	82	110	Not Detected U
Chloroform	67-66-3	8.6	30	50	Not Detected U
Chloromethane	74-87-3	18	64	85	Not Detected U
Cyclohexane	110-82-7	7.9	21	35	28000
Dibromochloromethane	124-48-1	18	53	88	Not Detected U
Ethanol	64-17-5	17	58	78	2600

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/31/19 10:55 AM
Lab ID:	1910626A-01A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/File Name:	msd14.i / 14103107
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	150	Not Detected
Ethyl Benzene	100-41-4	8.9	27	45	3500
Freon 11	75-69-4	8.6	35	58	Not Detected U
Freon 113	76-13-1	14	47	79	Not Detected U
Freon 12	75-71-8	11	30	51	Not Detected U
Heptane	142-82-5	14	25	42	23000
Hexane	110-54-3	8.9	22	36	30000
m,p-Xylene	108-38-3	8.4	27	45	6500
Methylene Chloride	75-09-2	22	110	140	Not Detected U
Naphthalene	91-20-3	17	22	220	720
o-Xylene	95-47-6	12	27	45	2600
Propylene	115-07-1	12	53	71	Not Detected U
Styrene	100-42-5	8.3	26	44	Not Detected U
Tetrachloroethene	127-18-4	24	42	70	Not Detected U
Tetrahydrofuran	109-99-9	11	18	30	Not Detected U
Toluene	108-88-3	7.0	23	39	21000
Total Xylene	1330-20-7	NA	D	45	9100
Trichloroethene	79-01-6	16	33	55	Not Detected U
Vinyl Chloride	75-01-4	9.1	16	26	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/31/19 10:55 AM
Lab ID:	1910626A-01A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	msd14.i / 14103107
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	118
4-Bromofluorobenzene	460-00-4	83-110	103
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	10/31/19 11:21 AM
Lab ID:	1910626A-01AA	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	msd14.i / 14103108
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	12	25	42	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	120	230	300	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	9.6	30	51	10000
1,2-Dibromoethane (EDB)	106-93-4	14	47	79	51 J
1,2-Dichlorobenzene	95-50-1	15	37	62	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	8.4	30	51	2500
1,3-Butadiene	106-99-0	7.2	14	23	Not Detected U
1,4-Dioxane	123-91-1	41	110	150	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	29	91	120	5200
2-Hexanone	591-78-6	63	130	170	Not Detected U
2-Propanol	67-63-0	13	76	100	4300
4-Methyl-2-pentanone	108-10-1	20	25	42	Not Detected U
Acetone	67-64-1	14	73	98	28000
Benzene	71-43-2	4.6	20	33	13000
Bromodichloromethane	75-27-4	6.9	41	69	Not Detected U
Bromoform	75-25-2	15	64	110	Not Detected U
Carbon Disulfide	75-15-0	20	96	130	Not Detected U
Carbon Tetrachloride	56-23-5	15	39	65	Not Detected U
Chloroethane	75-00-3	31	82	110	Not Detected U
Chloroform	67-66-3	8.6	30	50	Not Detected U
Chloromethane	74-87-3	18	64	85	Not Detected U
Cyclohexane	110-82-7	7.9	21	35	28000
Dibromochloromethane	124-48-1	18	53	88	Not Detected U
Ethanol	64-17-5	17	58	78	2700

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	10/31/19 11:21 AM
Lab ID:	1910626A-01AA	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	msd14.i / 14103108
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	150	Not Detected
Ethyl Benzene	100-41-4	8.9	27	45	3500
Freon 11	75-69-4	8.6	35	58	Not Detected U
Freon 113	76-13-1	14	47	79	Not Detected U
Freon 12	75-71-8	11	30	51	Not Detected U
Heptane	142-82-5	14	25	42	24000
Hexane	110-54-3	8.9	22	36	30000
m,p-Xylene	108-38-3	8.4	27	45	6900
Methylene Chloride	75-09-2	22	110	140	Not Detected U
Naphthalene	91-20-3	17	22	220	760
o-Xylene	95-47-6	12	27	45	2700
Propylene	115-07-1	12	53	71	Not Detected U
Styrene	100-42-5	8.3	26	44	Not Detected U
Tetrachloroethene	127-18-4	24	42	70	Not Detected U
Tetrahydrofuran	109-99-9	11	18	30	Not Detected U
Toluene	108-88-3	7.0	23	39	21000
Total Xylene	1330-20-7	NA	D	45	9600
Trichloroethene	79-01-6	16	33	55	Not Detected U
Vinyl Chloride	75-01-4	9.1	16	26	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	10/31/19 11:21 AM
Lab ID:	1910626A-01AA	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	msd14.i / 14103108
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	110
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/31/19 11:51 AM
Lab ID:	1910626A-02A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 08:58 AM	Instrument/Filename:	msd14.i / 14103109
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	12	27	45	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	130	250	330	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	10	33	55	1900
1,2-Dibromoethane (EDB)	106-93-4	15	51	86	16 J
1,2-Dichlorobenzene	95-50-1	16	40	67	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	9.1	33	55	520
1,3-Butadiene	106-99-0	7.7	15	25	Not Detected U
1,4-Dioxane	123-91-1	44	120	160	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	32	99	130	430
2-Hexanone	591-78-6	68	140	180	Not Detected U
2-Propanol	67-63-0	14	82	110	150
4-Methyl-2-pentanone	108-10-1	22	27	46	Not Detected U
Acetone	67-64-1	15	79	100	1600
Benzene	71-43-2	5.0	21	36	1900
Bromodichloromethane	75-27-4	7.5	45	75	Not Detected U
Bromoform	75-25-2	16	69	120	Not Detected U
Carbon Disulfide	75-15-0	21	100	140	Not Detected U
Carbon Tetrachloride	56-23-5	17	42	70	Not Detected U
Chloroethane	75-00-3	34	88	120	Not Detected U
Chloroform	67-66-3	9.4	33	54	Not Detected U
Chloromethane	74-87-3	19	69	92	Not Detected U
Cyclohexane	110-82-7	8.5	23	38	5100
Dibromochloromethane	124-48-1	20	57	95	Not Detected U
Ethanol	64-17-5	18	63	84	140

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/31/19 11:51 AM
Lab ID:	1910626A-02A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 08:58 AM	Instrument/Filename:	msd14.i / 14103109
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	160	Not Detected
Ethyl Benzene	100-41-4	9.7	29	48	1300
Freon 11	75-69-4	9.3	38	63	Not Detected U
Freon 113	76-13-1	15	51	85	Not Detected U
Freon 12	75-71-8	12	33	55	Not Detected U
Heptane	142-82-5	15	27	46	5300
Hexane	110-54-3	9.7	24	39	4900
m,p-Xylene	108-38-3	9.1	29	48	2300
Methylene Chloride	75-09-2	24	120	150	48 J
Naphthalene	91-20-3	18	23	230	180 J
o-Xylene	95-47-6	13	29	48	870
Propylene	115-07-1	13	58	77	Not Detected U
Styrene	100-42-5	9.0	28	47	Not Detected U
Tetrachloroethene	127-18-4	27	45	76	Not Detected U
Tetrahydrofuran	109-99-9	12	20	33	Not Detected U
Toluene	108-88-3	7.6	25	42	5400
Total Xylene	1330-20-7	NA	D	48	3200
Trichloroethene	79-01-6	18	36	60	Not Detected U
Vinyl Chloride	75-01-4	9.9	17	28	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/31/19 11:51 AM
Lab ID:	1910626A-02A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 08:58 AM	Instrument/Filename:	msd14.i / 14103109
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	106
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/31/19 12:14 PM
Lab ID:	1910626A-03A	Dilution Factor:	2.12
Date/Time Collected:	10/22/19 09:10 AM	Instrument/Filename:	msd14.i / 14103110
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	12	26	43	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	130	240	310	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	9.9	31	52	3900
1,2-Dibromoethane (EDB)	106-93-4	14	49	81	Not Detected U
1,2-Dichlorobenzene	95-50-1	15	38	64	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	8.6	31	52	1200
1,3-Butadiene	106-99-0	7.4	14	23	Not Detected U
1,4-Dioxane	123-91-1	42	110	150	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	30	94	120	150
2-Hexanone	591-78-6	65	130	170	Not Detected U
2-Propanol	67-63-0	13	78	100	290
4-Methyl-2-pentanone	108-10-1	21	26	43	Not Detected U
Acetone	67-64-1	15	76	100	1600
Benzene	71-43-2	4.7	20	34	1900
Bromodichloromethane	75-27-4	7.1	43	71	Not Detected U
Bromoform	75-25-2	15	66	110	Not Detected U
Carbon Disulfide	75-15-0	20	99	130	Not Detected U
Carbon Tetrachloride	56-23-5	16	40	67	Not Detected U
Chloroethane	75-00-3	32	84	110	Not Detected U
Chloroform	67-66-3	8.9	31	52	Not Detected U
Chloromethane	74-87-3	18	66	88	Not Detected U
Cyclohexane	110-82-7	8.1	22	36	5900
Dibromochloromethane	124-48-1	19	54	90	Not Detected U
Ethanol	64-17-5	17	60	80	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/31/19 12:14 PM
Lab ID:	1910626A-03A	Dilution Factor:	2.12
Date/Time Collected:	10/22/19 09:10 AM	Instrument/Filename:	msd14.i / 14103110
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	150	Not Detected
Ethyl Benzene	100-41-4	9.2	28	46	3000
Freon 11	75-69-4	8.8	36	60	Not Detected U
Freon 113	76-13-1	14	49	81	Not Detected U
Freon 12	75-71-8	12	31	52	Not Detected U
Heptane	142-82-5	15	26	43	9600
Hexane	110-54-3	9.2	22	37	4600
m,p-Xylene	108-38-3	8.6	28	46	7800
Methylene Chloride	75-09-2	23	110	150	54 J
Naphthalene	91-20-3	17	22	220	180 J
o-Xylene	95-47-6	12	28	46	2800
Propylene	115-07-1	12	55	73	Not Detected U
Styrene	100-42-5	8.6	27	45	Not Detected U
Tetrachloroethene	127-18-4	25	43	72	Not Detected U
Tetrahydrofuran	109-99-9	11	19	31	Not Detected U
Toluene	108-88-3	7.2	24	40	9600
Total Xylene	1330-20-7	NA	D	46	11000
Trichloroethene	79-01-6	17	34	57	Not Detected U
Vinyl Chloride	75-01-4	9.4	16	27	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/31/19 12:14 PM
Lab ID:	1910626A-03A	Dilution Factor:	2.12
Date/Time Collected:	10/22/19 09:10 AM	Instrument/Filename:	msd14.i / 14103110
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	105
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/31/19 12:35 PM
Lab ID:	1910626A-04A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:18 AM	Instrument/Filename:	msd14.i / 14103111
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	12	25	42	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	120	230	300	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	9.6	30	51	190
1,2-Dibromoethane (EDB)	106-93-4	14	47	79	Not Detected U
1,2-Dichlorobenzene	95-50-1	15	37	62	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	8.4	30	51	56
1,3-Butadiene	106-99-0	7.2	14	23	Not Detected U
1,4-Dioxane	123-91-1	41	110	150	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	29	91	120	Not Detected U
2-Hexanone	591-78-6	63	130	170	Not Detected U
2-Propanol	67-63-0	13	76	100	25 J
4-Methyl-2-pentanone	108-10-1	20	25	42	Not Detected U
Acetone	67-64-1	14	73	98	120
Benzene	71-43-2	4.6	20	33	140
Bromodichloromethane	75-27-4	6.9	41	69	Not Detected U
Bromoform	75-25-2	15	64	110	Not Detected U
Carbon Disulfide	75-15-0	20	96	130	Not Detected U
Carbon Tetrachloride	56-23-5	15	39	65	Not Detected U
Chloroethane	75-00-3	31	82	110	Not Detected U
Chloroform	67-66-3	8.6	30	50	Not Detected U
Chloromethane	74-87-3	18	64	85	Not Detected U
Cyclohexane	110-82-7	7.9	21	35	430
Dibromochloromethane	124-48-1	18	53	88	Not Detected U
Ethanol	64-17-5	17	58	78	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/31/19 12:35 PM
Lab ID:	1910626A-04A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:18 AM	Instrument/File Name:	msd14.i / 14103111
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	150	Not Detected
Ethyl Benzene	100-41-4	8.9	27	45	160
Freon 11	75-69-4	8.6	35	58	Not Detected U
Freon 113	76-13-1	14	47	79	Not Detected U
Freon 12	75-71-8	11	30	51	Not Detected U
Heptane	142-82-5	14	25	42	800
Hexane	110-54-3	8.9	22	36	240
m,p-Xylene	108-38-3	8.4	27	45	330
Methylene Chloride	75-09-2	22	110	140	29 J
Naphthalene	91-20-3	17	22	220	38 J
o-Xylene	95-47-6	12	27	45	120
Propylene	115-07-1	12	53	71	Not Detected U
Styrene	100-42-5	8.3	26	44	Not Detected U
Tetrachloroethene	127-18-4	24	42	70	Not Detected U
Tetrahydrofuran	109-99-9	11	18	30	Not Detected U
Toluene	108-88-3	7.0	23	39	820
Total Xylene	1330-20-7	NA	D	45	450
Trichloroethene	79-01-6	16	33	55	Not Detected U
Vinyl Chloride	75-01-4	9.1	16	26	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/31/19 12:35 PM
Lab ID:	1910626A-04A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:18 AM	Instrument/Filename:	msd14.i / 14103111
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	96
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/31/19 02:20 PM
Lab ID:	1910626A-05A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 09:30 AM	Instrument/Filename:	msd14.i / 14103113
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	12	27	45	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	130	250	330	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	10	33	55	420
1,2-Dibromoethane (EDB)	106-93-4	15	51	86	Not Detected U
1,2-Dichlorobenzene	95-50-1	16	40	67	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	9.1	33	55	140
1,3-Butadiene	106-99-0	7.7	15	25	Not Detected U
1,4-Dioxane	123-91-1	44	120	160	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	32	99	130	Not Detected U
2-Hexanone	591-78-6	68	140	180	Not Detected U
2-Propanol	67-63-0	14	82	110	Not Detected U
4-Methyl-2-pentanone	108-10-1	22	27	46	Not Detected U
Acetone	67-64-1	15	79	100	150
Benzene	71-43-2	5.0	21	36	92
Bromodichloromethane	75-27-4	7.5	45	75	Not Detected U
Bromoform	75-25-2	16	69	120	Not Detected U
Carbon Disulfide	75-15-0	21	100	140	Not Detected U
Carbon Tetrachloride	56-23-5	17	42	70	Not Detected U
Chloroethane	75-00-3	34	88	120	Not Detected U
Chloroform	67-66-3	9.4	33	54	Not Detected U
Chloromethane	74-87-3	19	69	92	Not Detected U
Cyclohexane	110-82-7	8.5	23	38	320
Dibromochloromethane	124-48-1	20	57	95	Not Detected U
Ethanol	64-17-5	18	63	84	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/31/19 02:20 PM
Lab ID:	1910626A-05A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 09:30 AM	Instrument/Filename:	msd14.i / 14103113
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	160	Not Detected
Ethyl Benzene	100-41-4	9.7	29	48	170
Freon 11	75-69-4	9.3	38	63	Not Detected U
Freon 113	76-13-1	15	51	85	Not Detected U
Freon 12	75-71-8	12	33	55	Not Detected U
Heptane	142-82-5	15	27	46	460
Hexane	110-54-3	9.7	24	39	210
m,p-Xylene	108-38-3	9.1	29	48	610
Methylene Chloride	75-09-2	24	120	150	48 J
Naphthalene	91-20-3	18	23	230	Not Detected U
o-Xylene	95-47-6	13	29	48	230
Propylene	115-07-1	13	58	77	Not Detected U
Styrene	100-42-5	9.0	28	47	Not Detected U
Tetrachloroethene	127-18-4	27	45	76	Not Detected U
Tetrahydrofuran	109-99-9	12	20	33	Not Detected U
Toluene	108-88-3	7.6	25	42	510
Total Xylene	1330-20-7	NA	D	48	840
Trichloroethene	79-01-6	18	36	60	Not Detected U
Vinyl Chloride	75-01-4	9.9	17	28	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/31/19 02:20 PM
Lab ID:	1910626A-05A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 09:30 AM	Instrument/Filename:	msd14.i / 14103113
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	97
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	11/6/19 06:07 PM
Lab ID:	1910626A-06A	Dilution Factor:	412
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	msd14.i / 14110616
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	5000	8300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	25000	46000	61000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	6100	10000	43000
1,2-Dibromoethane (EDB)	106-93-4	2800	9500	16000	21000
1,2-Dichlorobenzene	95-50-1	3000	7400	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	6100	10000	22000
1,3-Butadiene	106-99-0	1400	2700	4600	Not Detected U
1,4-Dioxane	123-91-1	8200	22000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5900	18000	24000	280000
2-Hexanone	591-78-6	13000	25000	34000	Not Detected U
2-Propanol	67-63-0	2600	15000	20000	13000 J
4-Methyl-2-pentanone	108-10-1	4100	5100	8400	Not Detected U
Acetone	67-64-1	2800	15000	20000	1200000
Benzene	71-43-2	920	3900	6600	1300000
Bromodichloromethane	75-27-4	1400	8300	14000	Not Detected U
Bromoform	75-25-2	2900	13000	21000	Not Detected U
Carbon Disulfide	75-15-0	3900	19000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	7800	13000	Not Detected U
Chloroethane	75-00-3	6200	16000	22000	Not Detected UJ
Chloroform	67-66-3	1700	6000	10000	Not Detected U
Chloromethane	74-87-3	3600	13000	17000	Not Detected U
Cyclohexane	110-82-7	1600	4200	7100	4600000
Dibromochloromethane	124-48-1	3600	10000	18000	Not Detected U
Ethanol	64-17-5	3400	12000	16000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	11/6/19 06:07 PM
Lab ID:	1910626A-06A	Dilution Factor:	412
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	msd14.i / 14110616
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected
Ethyl Benzene	100-41-4	1800	5400	8900	450000
Freon 11	75-69-4	1700	6900	12000	Not Detected U
Freon 113	76-13-1	2800	9500	16000	Not Detected U
Freon 12	75-71-8	2300	6100	10000	Not Detected U
Heptane	142-82-5	2800	5100	8400	9600000
Hexane	110-54-3	1800	4400	7300	4600000
m,p-Xylene	108-38-3	1700	5400	8900	1300000
Methylene Chloride	75-09-2	4400	21000	29000	Not Detected U
Naphthalene	91-20-3	3300	4300	43000	Not Detected U
o-Xylene	95-47-6	2400	5400	8900	340000
Propylene	115-07-1	2400	11000	14000	Not Detected U
Styrene	100-42-5	1700	5300	8800	Not Detected U
Tetrachloroethene	127-18-4	4900	8400	14000	Not Detected U
Tetrahydrofuran	109-99-9	2200	3600	6100	Not Detected UJ
Toluene	108-88-3	1400	4600	7800	6900000
Total Xylene	1330-20-7	NA	D	8900	1700000
Trichloroethene	79-01-6	3300	6600	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3200	5300	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	11/6/19 06:07 PM
Lab ID:	1910626A-06A	Dilution Factor:	412
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	msd14.i / 14110616
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	125
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1 Lab Duplicate	Date/Time Analyzed:	11/6/19 06:29 PM
Lab ID:	1910626A-06AA	Dilution Factor:	412
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	msd14.i / 14110617
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2300	5000	8300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	25000	46000	61000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1900	6100	10000	39000
1,2-Dibromoethane (EDB)	106-93-4	2800	9500	16000	22000
1,2-Dichlorobenzene	95-50-1	3000	7400	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	6100	10000	21000
1,3-Butadiene	106-99-0	1400	2700	4600	Not Detected U
1,4-Dioxane	123-91-1	8200	22000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5900	18000	24000	260000
2-Hexanone	591-78-6	13000	25000	34000	Not Detected U
2-Propanol	67-63-0	2600	15000	20000	12000 J
4-Methyl-2-pentanone	108-10-1	4100	5100	8400	Not Detected U
Acetone	67-64-1	2800	15000	20000	1100000
Benzene	71-43-2	920	3900	6600	1300000
Bromodichloromethane	75-27-4	1400	8300	14000	Not Detected U
Bromoform	75-25-2	2900	13000	21000	Not Detected U
Carbon Disulfide	75-15-0	3900	19000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	7800	13000	Not Detected U
Chloroethane	75-00-3	6200	16000	22000	Not Detected UJ
Chloroform	67-66-3	1700	6000	10000	Not Detected U
Chloromethane	74-87-3	3600	13000	17000	Not Detected U
Cyclohexane	110-82-7	1600	4200	7100	4400000
Dibromochloromethane	124-48-1	3600	10000	18000	Not Detected U
Ethanol	64-17-5	3400	12000	16000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1 Lab Duplicate	Date/Time Analyzed:	11/6/19 06:29 PM
Lab ID:	1910626A-06AA	Dilution Factor:	412
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	msd14.i / 14110617
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected
Ethyl Benzene	100-41-4	1800	5400	8900	460000
Freon 11	75-69-4	1700	6900	12000	Not Detected U
Freon 113	76-13-1	2800	9500	16000	Not Detected U
Freon 12	75-71-8	2300	6100	10000	Not Detected U
Heptane	142-82-5	2800	5100	8400	9400000
Hexane	110-54-3	1800	4400	7300	4400000
m,p-Xylene	108-38-3	1700	5400	8900	1300000
Methylene Chloride	75-09-2	4400	21000	29000	Not Detected U
Naphthalene	91-20-3	3300	4300	43000	Not Detected U
o-Xylene	95-47-6	2400	5400	8900	320000
Propylene	115-07-1	2400	11000	14000	Not Detected U
Styrene	100-42-5	1700	5300	8800	Not Detected U
Tetrachloroethene	127-18-4	4900	8400	14000	Not Detected U
Tetrahydrofuran	109-99-9	2200	3600	6100	Not Detected UJ
Toluene	108-88-3	1400	4600	7800	6800000
Total Xylene	1330-20-7	NA	D	8900	1600000
Trichloroethene	79-01-6	3300	6600	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3200	5300	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252.1 Lab Duplicate	Date/Time Analyzed:	11/6/19 06:29 PM
Lab ID:	1910626A-06AA	Dilution Factor:	412
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	msd14.i / 14110617
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	119
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	11/6/19 07:29 PM
Lab ID:	1910626A-07A	Dilution Factor:	460
Date/Time Collected:	10/22/19 09:56 AM	Instrument/Filename:	msd14.i / 14110620
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	5600	9300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	28000	51000	68000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2100	6800	11000	80000
1,2-Dibromoethane (EDB)	106-93-4	3100	11000	18000	39000
1,2-Dichlorobenzene	95-50-1	3300	8300	14000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1900	6800	11000	36000
1,3-Butadiene	106-99-0	1600	3000	5100	Not Detected U
1,4-Dioxane	123-91-1	9100	25000	33000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6600	20000	27000	890000
2-Hexanone	591-78-6	14000	28000	38000	37000 J
2-Propanol	67-63-0	2900	17000	23000	55000
4-Methyl-2-pentanone	108-10-1	4600	5600	9400	Not Detected U
Acetone	67-64-1	3200	16000	22000	3200000
Benzene	71-43-2	1000	4400	7300	2000000
Bromodichloromethane	75-27-4	1500	9200	15000	Not Detected U
Bromoform	75-25-2	3300	14000	24000	Not Detected U
Carbon Disulfide	75-15-0	4400	21000	29000	Not Detected U
Carbon Tetrachloride	56-23-5	3400	8700	14000	Not Detected U
Chloroethane	75-00-3	7000	18000	24000	Not Detected UJ
Chloroform	67-66-3	1900	6700	11000	Not Detected U
Chloromethane	74-87-3	4000	14000	19000	Not Detected U
Cyclohexane	110-82-7	1800	4800	7900	6600000
Dibromochloromethane	124-48-1	4000	12000	20000	Not Detected U
Ethanol	64-17-5	3800	13000	17000	14000 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	11/6/19 07:29 PM
Lab ID:	1910626A-07A	Dilution Factor:	460
Date/Time Collected:	10/22/19 09:56 AM	Instrument/Filename:	msd14.i / 14110620
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	33000	Not Detected
Ethyl Benzene	100-41-4	2000	6000	10000	690000
Freon 11	75-69-4	1900	7800	13000	Not Detected U
Freon 113	76-13-1	3100	10000	18000	Not Detected U
Freon 12	75-71-8	2500	6800	11000	Not Detected U
Heptane	142-82-5	3200	5600	9400	15000000
Hexane	110-54-3	2000	4900	8100	6000000
m,p-Xylene	108-38-3	1900	6000	10000	1800000
Methylene Chloride	75-09-2	5000	24000	32000	Not Detected U
Naphthalene	91-20-3	3700	4800	48000	Not Detected U
o-Xylene	95-47-6	2700	6000	10000	430000
Propylene	115-07-1	2700	12000	16000	Not Detected U
Styrene	100-42-5	1900	5900	9800	Not Detected U
Tetrachloroethene	127-18-4	5500	9400	16000	Not Detected U
Tetrahydrofuran	109-99-9	2400	4100	6800	Not Detected UJ
Toluene	108-88-3	1600	5200	8700	12000000
Total Xylene	1330-20-7	NA	D	10000	2200000
Trichloroethene	79-01-6	3600	7400	12000	Not Detected U
Vinyl Chloride	75-01-4	2000	3500	5900	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	11/6/19 07:29 PM
Lab ID:	1910626A-07A	Dilution Factor:	460
Date/Time Collected:	10/22/19 09:56 AM	Instrument/Filename:	msd14.i / 14110620
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	120
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/6/19 05:41 PM
Lab ID:	1910626A-08A	Dilution Factor:	305
Date/Time Collected:	10/22/19 10:32 AM	Instrument/Filename:	msd14.i / 14110615
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1700	3700	6200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	18000	34000	45000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1400	4500	7500	54000
1,2-Dibromoethane (EDB)	106-93-4	2100	7000	12000	25000
1,2-Dichlorobenzene	95-50-1	2200	5500	9200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1200	4500	7500	27000
1,3-Butadiene	106-99-0	1000	2000	3400	Not Detected U
1,4-Dioxane	123-91-1	6000	16000	22000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4400	13000	18000	930000 J
2-Hexanone	591-78-6	9300	19000	25000	Not Detected U
2-Propanol	67-63-0	1900	11000	15000	240000
4-Methyl-2-pentanone	108-10-1	3000	3700	6200	Not Detected U
Acetone	67-64-1	2100	11000	14000	5400000
Benzene	71-43-2	680	2900	4900	2900000
Bromodichloromethane	75-27-4	1000	6100	10000	Not Detected U
Bromoform	75-25-2	2200	9400	16000	Not Detected U
Carbon Disulfide	75-15-0	2900	14000	19000	Not Detected U
Carbon Tetrachloride	56-23-5	2300	5800	9600	Not Detected U
Chloroethane	75-00-3	4600	12000	16000	Not Detected UJ
Chloroform	67-66-3	1300	4500	7400	Not Detected U
Chloromethane	74-87-3	2600	9400	12000	Not Detected U
Cyclohexane	110-82-7	1200	3100	5200	8800000
Dibromochloromethane	124-48-1	2700	7800	13000	Not Detected U
Ethanol	64-17-5	2500	8600	11000	27000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/6/19 05:41 PM
Lab ID:	1910626A-08A	Dilution Factor:	305
Date/Time Collected:	10/22/19 10:32 AM	Instrument/Filename:	msd14.i / 14110615
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	22000	Not Detected
Ethyl Benzene	100-41-4	1300	4000	6600	420000
Freon 11	75-69-4	1300	5100	8600	Not Detected U
Freon 113	76-13-1	2100	7000	12000	Not Detected U
Freon 12	75-71-8	1700	4500	7500	Not Detected U
Heptane	142-82-5	2100	3700	6200	9900000
Hexane	110-54-3	1300	3200	5400	9300000
m,p-Xylene	108-38-3	1200	4000	6600	1000000
Methylene Chloride	75-09-2	3300	16000	21000	Not Detected U
Naphthalene	91-20-3	2500	3200	32000	Not Detected U
o-Xylene	95-47-6	1800	4000	6600	270000
Propylene	115-07-1	1800	7900	10000	26000
Styrene	100-42-5	1200	3900	6500	Not Detected U
Tetrachloroethene	127-18-4	3600	6200	10000	Not Detected U
Tetrahydrofuran	109-99-9	1600	2700	4500	Not Detected UJ
Toluene	108-88-3	1000	3400	5700	7500000
Total Xylene	1330-20-7	NA	D	6600	1300000
Trichloroethene	79-01-6	2400	4900	8200	Not Detected U
Vinyl Chloride	75-01-4	1300	2300	3900	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/6/19 05:41 PM
Lab ID:	1910626A-08A	Dilution Factor:	305
Date/Time Collected:	10/22/19 10:32 AM	Instrument/Filename:	msd14.i / 14110615
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	136 Q
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	109

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/6/19 06:49 PM
Lab ID:	1910626A-09A	Dilution Factor:	462
Date/Time Collected:	10/22/19 10:44 AM	Instrument/Filename:	msd14.i / 14110618
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	5600	9400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	28000	51000	68000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2200	6800	11000	69000
1,2-Dibromoethane (EDB)	106-93-4	3100	11000	18000	21000
1,2-Dichlorobenzene	95-50-1	3400	8300	14000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1900	6800	11000	33000
1,3-Butadiene	106-99-0	1600	3100	5100	Not Detected U
1,4-Dioxane	123-91-1	9200	25000	33000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6600	20000	27000	880000
2-Hexanone	591-78-6	14000	28000	38000	Not Detected U
2-Propanol	67-63-0	2900	17000	23000	72000
4-Methyl-2-pentanone	108-10-1	4600	5700	9500	Not Detected U
Acetone	67-64-1	3200	16000	22000	4200000
Benzene	71-43-2	1000	4400	7400	3900000
Bromodichloromethane	75-27-4	1500	9300	15000	Not Detected U
Bromoform	75-25-2	3300	14000	24000	Not Detected U
Carbon Disulfide	75-15-0	4400	22000	29000	Not Detected U
Carbon Tetrachloride	56-23-5	3400	8700	14000	Not Detected U
Chloroethane	75-00-3	7000	18000	24000	Not Detected UJ
Chloroform	67-66-3	1900	6800	11000	Not Detected U
Chloromethane	74-87-3	4000	14000	19000	Not Detected U
Cyclohexane	110-82-7	1800	4800	8000	11000000
Dibromochloromethane	124-48-1	4000	12000	20000	Not Detected U
Ethanol	64-17-5	3800	13000	17000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/6/19 06:49 PM
Lab ID:	1910626A-09A	Dilution Factor:	462
Date/Time Collected:	10/22/19 10:44 AM	Instrument/Filename:	msd14.i / 14110618
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	33000	Not Detected
Ethyl Benzene	100-41-4	2000	6000	10000	450000
Freon 11	75-69-4	1900	7800	13000	Not Detected U
Freon 113	76-13-1	3200	11000	18000	Not Detected U
Freon 12	75-71-8	2500	6800	11000	Not Detected U
Heptane	142-82-5	3200	5700	9500	11000000
Hexane	110-54-3	2000	4900	8100	12000000
m,p-Xylene	108-38-3	1900	6000	10000	1200000
Methylene Chloride	75-09-2	5000	24000	32000	Not Detected U
Naphthalene	91-20-3	3700	4800	48000	Not Detected U
o-Xylene	95-47-6	2700	6000	10000	320000
Propylene	115-07-1	2700	12000	16000	30000
Styrene	100-42-5	1900	5900	9800	Not Detected U
Tetrachloroethene	127-18-4	5500	9400	16000	Not Detected U
Tetrahydrofuran	109-99-9	2400	4100	6800	Not Detected UJ
Toluene	108-88-3	1600	5200	8700	7500000
Total Xylene	1330-20-7	NA	D	10000	1500000
Trichloroethene	79-01-6	3700	7400	12000	Not Detected U
Vinyl Chloride	75-01-4	2000	3500	5900	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/6/19 06:49 PM
Lab ID:	1910626A-09A	Dilution Factor:	462
Date/Time Collected:	10/22/19 10:44 AM	Instrument/Filename:	msd14.i / 14110618
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	123
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/6/19 07:09 PM
Lab ID:	1910626A-10A	Dilution Factor:	462
Date/Time Collected:	10/22/19 10:50 AM	Instrument/Filename:	msd14.i / 14110619
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	5600	9400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	28000	51000	68000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2200	6800	11000	59000
1,2-Dibromoethane (EDB)	106-93-4	3100	11000	18000	19000
1,2-Dichlorobenzene	95-50-1	3400	8300	14000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1900	6800	11000	29000
1,3-Butadiene	106-99-0	1600	3100	5100	Not Detected U
1,4-Dioxane	123-91-1	9200	25000	33000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6600	20000	27000	820000
2-Hexanone	591-78-6	14000	28000	38000	Not Detected U
2-Propanol	67-63-0	2900	17000	23000	49000
4-Methyl-2-pentanone	108-10-1	4600	5700	9500	Not Detected U
Acetone	67-64-1	3200	16000	22000	4200000
Benzene	71-43-2	1000	4400	7400	3900000
Bromodichloromethane	75-27-4	1500	9300	15000	Not Detected U
Bromoform	75-25-2	3300	14000	24000	Not Detected U
Carbon Disulfide	75-15-0	4400	22000	29000	Not Detected U
Carbon Tetrachloride	56-23-5	3400	8700	14000	Not Detected U
Chloroethane	75-00-3	7000	18000	24000	Not Detected UJ
Chloroform	67-66-3	1900	6800	11000	Not Detected U
Chloromethane	74-87-3	4000	14000	19000	Not Detected U
Cyclohexane	110-82-7	1800	4800	8000	11000000
Dibromochloromethane	124-48-1	4000	12000	20000	Not Detected U
Ethanol	64-17-5	3800	13000	17000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/6/19 07:09 PM
Lab ID:	1910626A-10A	Dilution Factor:	462
Date/Time Collected:	10/22/19 10:50 AM	Instrument/Filename:	msd14.i / 14110619
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	33000	Not Detected
Ethyl Benzene	100-41-4	2000	6000	10000	450000
Freon 11	75-69-4	1900	7800	13000	Not Detected U
Freon 113	76-13-1	3200	11000	18000	Not Detected U
Freon 12	75-71-8	2500	6800	11000	Not Detected U
Heptane	142-82-5	3200	5700	9500	11000000
Hexane	110-54-3	2000	4900	8100	13000000
m,p-Xylene	108-38-3	1900	6000	10000	1200000
Methylene Chloride	75-09-2	5000	24000	32000	Not Detected U
Naphthalene	91-20-3	3700	4800	48000	Not Detected U
o-Xylene	95-47-6	2700	6000	10000	310000
Propylene	115-07-1	2700	12000	16000	30000
Styrene	100-42-5	1900	5900	9800	Not Detected U
Tetrachloroethene	127-18-4	5500	9400	16000	Not Detected U
Tetrahydrofuran	109-99-9	2400	4100	6800	Not Detected UJ
Toluene	108-88-3	1600	5200	8700	7600000
Total Xylene	1330-20-7	NA	D	10000	1500000
Trichloroethene	79-01-6	3700	7400	12000	Not Detected U
Vinyl Chloride	75-01-4	2000	3500	5900	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/6/19 07:09 PM
Lab ID:	1910626A-10A	Dilution Factor:	462
Date/Time Collected:	10/22/19 10:50 AM	Instrument/Filename:	msd14.i / 14110619
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	128
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/31/19 04:32 PM
Lab ID:	1910626A-11A	Dilution Factor:	19.6
Date/Time Collected:	10/22/19 11:05 AM	Instrument/Filename:	msd14.i / 14103118
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	110	240	400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1200	2200	2900	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	92	290	480	140000
1,2-Dibromoethane (EDB)	106-93-4	130	450	750	890
1,2-Dichlorobenzene	95-50-1	140	350	590	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	80	290	480	44000
1,3-Butadiene	106-99-0	68	130	220	Not Detected U
1,4-Dioxane	123-91-1	390	1000	1400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	280	870	1200	810 J
2-Hexanone	591-78-6	600	1200	1600	Not Detected U
2-Propanol	67-63-0	120	720	960	780 J
4-Methyl-2-pentanone	108-10-1	200	240	400	Not Detected U
Acetone	67-64-1	140	700	930	170000
Benzene	71-43-2	44	190	310	110000
Bromodichloromethane	75-27-4	66	390	660	Not Detected U
Bromoform	75-25-2	140	610	1000	Not Detected U
Carbon Disulfide	75-15-0	180	920	1200	Not Detected U
Carbon Tetrachloride	56-23-5	150	370	620	Not Detected U
Chloroethane	75-00-3	300	780	1000	Not Detected U
Chloroform	67-66-3	82	290	480	Not Detected U
Chloromethane	74-87-3	170	610	810	Not Detected U
Cyclohexane	110-82-7	75	200	340	390000
Dibromochloromethane	124-48-1	170	500	830	Not Detected U
Ethanol	64-17-5	160	550	740	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/31/19 04:32 PM
Lab ID:	1910626A-11A	Dilution Factor:	19.6
Date/Time Collected:	10/22/19 11:05 AM	Instrument/File Name:	msd14.i / 14103118
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	1400	Not Detected
Ethyl Benzene	100-41-4	85	260	420	82000
Freon 11	75-69-4	81	330	550	Not Detected U
Freon 113	76-13-1	130	450	750	Not Detected U
Freon 12	75-71-8	110	290	480	Not Detected U
Heptane	142-82-5	140	240	400	590000
Hexane	110-54-3	85	210	340	170000
m,p-Xylene	108-38-3	80	260	420	260000
Methylene Chloride	75-09-2	210	1000	1400	Not Detected U
Naphthalene	91-20-3	160	200	2000	2900
o-Xylene	95-47-6	110	260	420	98000
Propylene	115-07-1	120	500	670	Not Detected U
Styrene	100-42-5	79	250	420	Not Detected U
Tetrachloroethene	127-18-4	230	400	660	Not Detected U
Tetrahydrofuran	109-99-9	100	170	290	Not Detected U
Toluene	108-88-3	66	220	370	610000
Total Xylene	1330-20-7	NA	D	420	360000
Trichloroethene	79-01-6	160	320	530	Not Detected U
Vinyl Chloride	75-01-4	87	150	250	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/31/19 04:32 PM
Lab ID:	1910626A-11A	Dilution Factor:	19.6
Date/Time Collected:	10/22/19 11:05 AM	Instrument/Filename:	msd14.i / 14103118
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	120
4-Bromofluorobenzene	460-00-4	83-110	103
Toluene-d8	2037-26-5	86-115	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/6/19 07:50 PM
Lab ID:	1910626A-12A	Dilution Factor:	159
Date/Time Collected:	10/22/19 11:19 AM	Instrument/Filename:	msd14.i / 14110621
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	890	1900	3200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	9500	18000	24000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	740	2300	3900	68000
1,2-Dibromoethane (EDB)	106-93-4	1100	3700	6100	7200
1,2-Dichlorobenzene	95-50-1	1200	2900	4800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	650	2300	3900	31000
1,3-Butadiene	106-99-0	550	1000	1800	Not Detected U
1,4-Dioxane	123-91-1	3200	8600	11000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2300	7000	9400	190000
2-Hexanone	591-78-6	4900	9800	13000	Not Detected U
2-Propanol	67-63-0	1000	5900	7800	32000
4-Methyl-2-pentanone	108-10-1	1600	2000	3200	Not Detected U
Acetone	67-64-1	1100	5700	7600	4500000 J
Benzene	71-43-2	360	1500	2500	2400000
Bromodichloromethane	75-27-4	530	3200	5300	Not Detected U
Bromoform	75-25-2	1100	4900	8200	Not Detected U
Carbon Disulfide	75-15-0	1500	7400	9900	Not Detected U
Carbon Tetrachloride	56-23-5	1200	3000	5000	Not Detected U
Chloroethane	75-00-3	2400	6300	8400	Not Detected UJ
Chloroform	67-66-3	670	2300	3900	Not Detected U
Chloromethane	74-87-3	1400	4900	6600	Not Detected U
Cyclohexane	110-82-7	610	1600	2700	6800000 J
Dibromochloromethane	124-48-1	1400	4100	6800	Not Detected U
Ethanol	64-17-5	1300	4500	6000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/6/19 07:50 PM
Lab ID:	1910626A-12A	Dilution Factor:	159
Date/Time Collected:	10/22/19 11:19 AM	Instrument/Filename:	msd14.i / 14110621
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	11000	Not Detected
Ethyl Benzene	100-41-4	690	2100	3400	360000
Freon 11	75-69-4	660	2700	4500	Not Detected U
Freon 113	76-13-1	1100	3600	6100	Not Detected U
Freon 12	75-71-8	870	2400	3900	Not Detected U
Heptane	142-82-5	1100	2000	3200	6800000 J
Hexane	110-54-3	690	1700	2800	8200000 J
m,p-Xylene	108-38-3	650	2100	3400	840000
Methylene Chloride	75-09-2	1700	8300	11000	Not Detected U
Naphthalene	91-20-3	1300	1700	17000	Not Detected U
o-Xylene	95-47-6	930	2100	3400	230000
Propylene	115-07-1	940	4100	5500	37000
Styrene	100-42-5	640	2000	3400	Not Detected U
Tetrachloroethene	127-18-4	1900	3200	5400	Not Detected U
Tetrahydrofuran	109-99-9	830	1400	2300	Not Detected UJ
Toluene	108-88-3	540	1800	3000	4400000
Total Xylene	1330-20-7	NA	D	3400	1000000
Trichloroethene	79-01-6	1300	2600	4300	Not Detected U
Vinyl Chloride	75-01-4	700	1200	2000	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/6/19 07:50 PM
Lab ID:	1910626A-12A	Dilution Factor:	159
Date/Time Collected:	10/22/19 11:19 AM	Instrument/Filename:	msd14.i / 14110621
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	145 Q
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	109

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/6/19 08:12 PM
Lab ID:	1910626A-13A	Dilution Factor:	191
Date/Time Collected:	10/22/19 11:33 AM	Instrument/Filename:	msd14.i / 14110622
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1100	2300	3900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	11000	21000	28000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	890	2800	4700	110000
1,2-Dibromoethane (EDB)	106-93-4	1300	4400	7300	15000
1,2-Dichlorobenzene	95-50-1	1400	3400	5700	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	780	2800	4700	39000
1,3-Butadiene	106-99-0	660	1300	2100	Not Detected U
1,4-Dioxane	123-91-1	3800	10000	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2700	8400	11000	350000
2-Hexanone	591-78-6	5800	12000	16000	Not Detected U
2-Propanol	67-63-0	1200	7000	9400	67000
4-Methyl-2-pentanone	108-10-1	1900	2300	3900	Not Detected U
Acetone	67-64-1	1300	6800	9100	2800000
Benzene	71-43-2	430	1800	3000	1100000
Bromodichloromethane	75-27-4	640	3800	6400	Not Detected U
Bromoform	75-25-2	1400	5900	9900	Not Detected U
Carbon Disulfide	75-15-0	1800	8900	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1400	3600	6000	Not Detected U
Chloroethane	75-00-3	2900	7600	10000	Not Detected UJ
Chloroform	67-66-3	800	2800	4700	Not Detected U
Chloromethane	74-87-3	1600	5900	7900	Not Detected U
Cyclohexane	110-82-7	730	2000	3300	3500000
Dibromochloromethane	124-48-1	1700	4900	8100	Not Detected U
Ethanol	64-17-5	1600	5400	7200	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/6/19 08:12 PM
Lab ID:	1910626A-13A	Dilution Factor:	191
Date/Time Collected:	10/22/19 11:33 AM	Instrument/Filename:	msd14.i / 14110622
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	830	2500	4100	320000
Freon 11	75-69-4	790	3200	5400	Not Detected U
Freon 113	76-13-1	1300	4400	7300	Not Detected U
Freon 12	75-71-8	1000	2800	4700	Not Detected U
Heptane	142-82-5	1300	2300	3900	5100000
Hexane	110-54-3	830	2000	3400	3100000
m,p-Xylene	108-38-3	780	2500	4100	780000
Methylene Chloride	75-09-2	2000	10000	13000	Not Detected U
Naphthalene	91-20-3	1500	2000	20000	Not Detected U
o-Xylene	95-47-6	1100	2500	4100	210000
Propylene	115-07-1	1100	4900	6600	Not Detected U
Styrene	100-42-5	770	2400	4100	Not Detected U
Tetrachloroethene	127-18-4	2300	3900	6500	Not Detected U
Tetrahydrofuran	109-99-9	1000	1700	2800	Not Detected UJ
Toluene	108-88-3	650	2200	3600	4400000
Total Xylene	1330-20-7	NA	D	4100	990000
Trichloroethene	79-01-6	1500	3100	5100	Not Detected U
Vinyl Chloride	75-01-4	840	1500	2400	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/6/19 08:12 PM
Lab ID:	1910626A-13A	Dilution Factor:	191
Date/Time Collected:	10/22/19 11:33 AM	Instrument/Filename:	msd14.i / 14110622
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	127
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/6/19 08:33 PM
Lab ID:	1910626A-14A	Dilution Factor:	217
Date/Time Collected:	10/22/19 11:44 AM	Instrument/File Name:	msd14.i / 14110623
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2600	4400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	24000	32000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	3200	5300	130000
1,2-Dibromoethane (EDB)	106-93-4	1500	5000	8300	20000
1,2-Dichlorobenzene	95-50-1	1600	3900	6500	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	880	3200	5300	54000
1,3-Butadiene	106-99-0	750	1400	2400	Not Detected U
1,4-Dioxane	123-91-1	4300	12000	16000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3100	9600	13000	740000 J
2-Hexanone	591-78-6	6600	13000	18000	16000 J
2-Propanol	67-63-0	1400	8000	11000	200000
4-Methyl-2-pentanone	108-10-1	2200	2700	4400	Not Detected U
Acetone	67-64-1	1500	7700	10000	4900000
Benzene	71-43-2	480	2100	3500	1500000
Bromodichloromethane	75-27-4	730	4400	7300	Not Detected U
Bromoform	75-25-2	1500	6700	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	10000	14000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	4100	6800	Not Detected U
Chloroethane	75-00-3	3300	8600	11000	Not Detected UJ
Chloroform	67-66-3	910	3200	5300	Not Detected U
Chloromethane	74-87-3	1900	6700	9000	Not Detected U
Cyclohexane	110-82-7	830	2200	3700	5100000
Dibromochloromethane	124-48-1	1900	5500	9200	Not Detected U
Ethanol	64-17-5	1800	6100	8200	16000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/6/19 08:33 PM
Lab ID:	1910626A-14A	Dilution Factor:	217
Date/Time Collected:	10/22/19 11:44 AM	Instrument/Filename:	msd14.i / 14110623
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	16000	Not Detected
Ethyl Benzene	100-41-4	940	2800	4700	390000
Freon 11	75-69-4	900	3600	6100	Not Detected U
Freon 113	76-13-1	1500	5000	8300	Not Detected U
Freon 12	75-71-8	1200	3200	5400	Not Detected U
Heptane	142-82-5	1500	2700	4400	9200000 J
Hexane	110-54-3	940	2300	3800	3500000
m,p-Xylene	108-38-3	880	2800	4700	950000
Methylene Chloride	75-09-2	2300	11000	15000	Not Detected U
Naphthalene	91-20-3	1800	2300	23000	Not Detected U
o-Xylene	95-47-6	1300	2800	4700	260000
Propylene	115-07-1	1300	5600	7500	Not Detected U
Styrene	100-42-5	880	2800	4600	Not Detected U
Tetrachloroethene	127-18-4	2600	4400	7400	Not Detected U
Tetrahydrofuran	109-99-9	1100	1900	3200	Not Detected UJ
Toluene	108-88-3	740	2400	4100	7200000
Total Xylene	1330-20-7	NA	D	4700	1200000
Trichloroethene	79-01-6	1700	3500	5800	Not Detected U
Vinyl Chloride	75-01-4	960	1700	2800	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/6/19 08:33 PM
Lab ID:	1910626A-14A	Dilution Factor:	217
Date/Time Collected:	10/22/19 11:44 AM	Instrument/Filename:	msd14.i / 14110623
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	141 Q
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/31/19 09:53 AM
Lab ID:	1910626A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103106a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/31/19 09:53 AM
Lab ID:	1910626A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103106a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	14 J
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/31/19 09:53 AM
Lab ID:	1910626A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103106a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	96
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/6/19 04:27 PM
Lab ID:	1910626A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110612a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected UJ
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/6/19 04:27 PM
Lab ID:	1910626A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110612a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected UJ
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/6/19 04:27 PM
Lab ID:	1910626A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110612a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	95
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/31/19 07:57 AM
Lab ID:	1910626A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103102a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	92
1,2,4-Trichlorobenzene	120-82-1	84
1,2,4-Trimethylbenzene	95-63-6	100
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	104
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	84
1,4-Dioxane	123-91-1	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	92
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	93
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	102
Carbon Tetrachloride	56-23-5	100
Chloroethane	75-00-3	70
Chloroform	67-66-3	102
Chloromethane	74-87-3	82
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	105
Ethanol	64-17-5	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/31/19 07:57 AM
Lab ID:	1910626A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103102a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	85
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	100
Freon 113	76-13-1	103
Freon 12	75-71-8	98
Heptane	142-82-5	103
Hexane	110-54-3	92
m,p-Xylene	108-38-3	103
Methylene Chloride	75-09-2	86
Naphthalene	91-20-3	83
o-Xylene	95-47-6	101
Propylene	115-07-1	84
Styrene	100-42-5	98
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	81
Toluene	108-88-3	104
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/31/19 07:57 AM
Lab ID:	1910626A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103102a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/6/19 01:33 PM
Lab ID:	1910626A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110608a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	88
1,2,4-Trichlorobenzene	120-82-1	92
1,2,4-Trimethylbenzene	95-63-6	88
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	76
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	87
2-Hexanone	591-78-6	80
2-Propanol	67-63-0	75
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	82
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	96
Bromoform	75-25-2	90
Carbon Disulfide	75-15-0	88
Carbon Tetrachloride	56-23-5	91
Chloroethane	75-00-3	65 Q
Chloroform	67-66-3	89
Chloromethane	74-87-3	89
Cyclohexane	110-82-7	91
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	73

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/6/19 01:33 PM
Lab ID:	1910626A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110608a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	85
Ethyl Benzene	100-41-4	94
Freon 11	75-69-4	93
Freon 113	76-13-1	93
Freon 12	75-71-8	95
Heptane	142-82-5	92
Hexane	110-54-3	80
m,p-Xylene	108-38-3	94
Methylene Chloride	75-09-2	78
Naphthalene	91-20-3	83
o-Xylene	95-47-6	92
Propylene	115-07-1	75
Styrene	100-42-5	88
Tetrachloroethene	127-18-4	95
Tetrahydrofuran	109-99-9	68 Q
Toluene	108-88-3	97
Total Xylene	1330-20-7	93
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	87

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	92

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/6/19 01:33 PM
Lab ID:	1910626A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110608a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/1/19 07:10 AM
Lab ID:	1910626A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103133
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	96
1,2,4-Trichlorobenzene	120-82-1	80
1,2,4-Trimethylbenzene	95-63-6	98
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	100
1,3,5-Trimethylbenzene	108-67-8	106
1,3-Butadiene	106-99-0	85
1,4-Dioxane	123-91-1	101
2-Butanone (Methyl Ethyl Ketone)	78-93-3	93
2-Hexanone	591-78-6	91
2-Propanol	67-63-0	84
4-Methyl-2-pentanone	108-10-1	92
Acetone	67-64-1	96
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	100
Bromoform	75-25-2	97
Carbon Disulfide	75-15-0	99
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	75
Chloroform	67-66-3	100
Chloromethane	74-87-3	89
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	103
Ethanol	64-17-5	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/1/19 07:10 AM
Lab ID:	1910626A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103133
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	101
Freon 113	76-13-1	100
Freon 12	75-71-8	95
Heptane	142-82-5	103
Hexane	110-54-3	90
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	85
Naphthalene	91-20-3	78
o-Xylene	95-47-6	102
Propylene	115-07-1	85
Styrene	100-42-5	99
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	78
Toluene	108-88-3	103
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	93

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/1/19 07:10 AM
Lab ID:	1910626A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103133
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/6/19 08:56 PM
Lab ID:	1910626A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110624
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	89
1,2,4-Trichlorobenzene	120-82-1	80
1,2,4-Trimethylbenzene	95-63-6	90
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	98
1,3,5-Trimethylbenzene	108-67-8	102
1,3-Butadiene	106-99-0	77
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	91
2-Hexanone	591-78-6	81
2-Propanol	67-63-0	81
4-Methyl-2-pentanone	108-10-1	89
Acetone	67-64-1	119
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	96
Bromoform	75-25-2	89
Carbon Disulfide	75-15-0	89
Carbon Tetrachloride	56-23-5	88
Chloroethane	75-00-3	69 Q
Chloroform	67-66-3	91
Chloromethane	74-87-3	93
Cyclohexane	110-82-7	92
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	75

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/6/19 08:56 PM
Lab ID:	1910626A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110624
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	95
Freon 113	76-13-1	95
Freon 12	75-71-8	98
Heptane	142-82-5	98
Hexane	110-54-3	83
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	81
Naphthalene	91-20-3	76
o-Xylene	95-47-6	96
Propylene	115-07-1	80
Styrene	100-42-5	88
Tetrachloroethene	127-18-4	96
Tetrahydrofuran	109-99-9	73
Toluene	108-88-3	104
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	88

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	93

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/6/19 08:56 PM
Lab ID:	1910626A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110624
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/31/19 08:28 AM
Lab ID:	1910626A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103103a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	100
1,2,4-Trichlorobenzene	120-82-1	103
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	105
1,2-Dichlorobenzene	95-50-1	110
1,3,5-Trimethylbenzene	108-67-8	112
1,3-Butadiene	106-99-0	94
1,4-Dioxane	123-91-1	101
2-Butanone (Methyl Ethyl Ketone)	78-93-3	95
2-Hexanone	591-78-6	89
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	97
Acetone	67-64-1	95
Benzene	71-43-2	105
Bromodichloromethane	75-27-4	107
Bromoform	75-25-2	104
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	104
Chloroethane	75-00-3	72
Chloroform	67-66-3	101
Chloromethane	74-87-3	96
Cyclohexane	110-82-7	105
Dibromochloromethane	124-48-1	109
Ethanol	64-17-5	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/31/19 08:28 AM
Lab ID:	1910626A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103103a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	105
Freon 11	75-69-4	102
Freon 113	76-13-1	103
Freon 12	75-71-8	104
Heptane	142-82-5	105
Hexane	110-54-3	92
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	90
Naphthalene	91-20-3	131
o-Xylene	95-47-6	104
Propylene	115-07-1	87
Styrene	100-42-5	98
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	83
Toluene	108-88-3	109
Total Xylene	1330-20-7	103
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	93

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/31/19 08:28 AM
Lab ID:	1910626A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103103a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	105

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/31/19 08:53 AM
Lab ID:	1910626A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103104a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	97
1,2,4-Trichlorobenzene	120-82-1	100
1,2,4-Trimethylbenzene	95-63-6	105
1,2-Dibromoethane (EDB)	106-93-4	103
1,2-Dichlorobenzene	95-50-1	110
1,3,5-Trimethylbenzene	108-67-8	110
1,3-Butadiene	106-99-0	87
1,4-Dioxane	123-91-1	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	87
2-Propanol	67-63-0	86
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	94
Benzene	71-43-2	105
Bromodichloromethane	75-27-4	107
Bromoform	75-25-2	102
Carbon Disulfide	75-15-0	105
Carbon Tetrachloride	56-23-5	101
Chloroethane	75-00-3	76
Chloroform	67-66-3	103
Chloromethane	74-87-3	98
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	107
Ethanol	64-17-5	97

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/31/19 08:53 AM
Lab ID:	1910626A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103104a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	104
Freon 11	75-69-4	105
Freon 113	76-13-1	101
Freon 12	75-71-8	104
Heptane	142-82-5	107
Hexane	110-54-3	95
m,p-Xylene	108-38-3	103
Methylene Chloride	75-09-2	90
Naphthalene	91-20-3	107
o-Xylene	95-47-6	102
Propylene	115-07-1	91
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	82
Toluene	108-88-3	108
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	107
Vinyl Chloride	75-01-4	106

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	94

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/31/19 08:53 AM
Lab ID:	1910626A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14103104a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	104

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/6/19 02:06 PM
Lab ID:	1910626A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110609a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	99
1,2,4-Trichlorobenzene	120-82-1	66
1,2,4-Trimethylbenzene	95-63-6	94
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	87
1,4-Dioxane	123-91-1	109
2-Butanone (Methyl Ethyl Ketone)	78-93-3	101
2-Hexanone	591-78-6	97
2-Propanol	67-63-0	90
4-Methyl-2-pentanone	108-10-1	109
Acetone	67-64-1	93
Benzene	71-43-2	107
Bromodichloromethane	75-27-4	108
Bromoform	75-25-2	103
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	105
Chloroethane	75-00-3	84
Chloroform	67-66-3	102
Chloromethane	74-87-3	98
Cyclohexane	110-82-7	106
Dibromochloromethane	124-48-1	107
Ethanol	64-17-5	91

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/6/19 02:06 PM
Lab ID:	1910626A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110609a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	104
Freon 113	76-13-1	105
Freon 12	75-71-8	104
Heptane	142-82-5	108
Hexane	110-54-3	93
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	87
Naphthalene	91-20-3	80
o-Xylene	95-47-6	102
Propylene	115-07-1	87
Styrene	100-42-5	100
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	84
Toluene	108-88-3	108
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/6/19 02:06 PM
Lab ID:	1910626A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110609a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	106

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/6/19 02:30 PM
Lab ID:	1910626A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110610a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	75
1,2,4-Trimethylbenzene	95-63-6	98
1,2-Dibromoethane (EDB)	106-93-4	107
1,2-Dichlorobenzene	95-50-1	104
1,3,5-Trimethylbenzene	108-67-8	113
1,3-Butadiene	106-99-0	86
1,4-Dioxane	123-91-1	109
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	101
2-Propanol	67-63-0	90
4-Methyl-2-pentanone	108-10-1	105
Acetone	67-64-1	93
Benzene	71-43-2	104
Bromodichloromethane	75-27-4	110
Bromoform	75-25-2	106
Carbon Disulfide	75-15-0	102
Carbon Tetrachloride	56-23-5	103
Chloroethane	75-00-3	76
Chloroform	67-66-3	99
Chloromethane	74-87-3	100
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	106
Ethanol	64-17-5	91

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/6/19 02:30 PM
Lab ID:	1910626A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110610a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	105
Freon 11	75-69-4	103
Freon 113	76-13-1	101
Freon 12	75-71-8	102
Heptane	142-82-5	106
Hexane	110-54-3	92
m,p-Xylene	108-38-3	105
Methylene Chloride	75-09-2	86
Naphthalene	91-20-3	89
o-Xylene	95-47-6	103
Propylene	115-07-1	82
Styrene	100-42-5	102
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	80
Toluene	108-88-3	109
Total Xylene	1330-20-7	104
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	92

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/6/19 02:30 PM
Lab ID:	1910626A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14110610a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	106

* % Recovery is calculated using unrounded analytical results.



11/6/2019
Ms. Pamela Moss
EA Engineering
7995 E. Prentice Ave
Suite 206E
Greenwood Village CO 80111

Project Name: KAFB Bioventing
Project #: 6275DM02
Workorder #: 1910626B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/25/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

A handwritten signature in black ink that reads "Brian Whittaker". The signature is fluid and cursive, with the first name "Brian" and last name "Whittaker" clearly distinguishable.

Brian Whittaker
Project Manager

WORK ORDER #: 1910626B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	6275DM02 KAFB Bioventing
DATE RECEIVED:	10/25/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/06/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified TO-3	10.5 "Hg	5 psi
01AA	KAFB-106V1 102.1 Lab Duplicate	Modified TO-3	10.5 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified TO-3	12.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified TO-3	11.0 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified TO-3	10.5 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified TO-3	12.0 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified TO-3	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified TO-3	12.5 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-3	13.5 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-3	15.5 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-3	15.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified TO-3	9.5 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified TO-3	9.0 "Hg	5 psi
13A	KAFB-106V2 252.2	Modified TO-3	9.0 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified TO-3	11.5 "Hg	5 psi
15A	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/06/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 1910626B**

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 25, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m3. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

Samples KAFB-106V2 117.1 and KAFB-106V2 117.1 DUP were received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client.

A copy of the waiver is available upon request.

TPH (Gasoline Range) was manually integrated in Lab Blank.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	10/31/19 07:46 AM
Lab ID:	1910626B-01A	Dilution Factor:	25.8
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	gcd.i / d103105
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	1500	2100	2600	1100000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 102.1 Lab Duplicate	Date/Time Analyzed:	10/31/19 08:25 AM
Lab ID:	1910626B-01AA	Dilution Factor:	25.8
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	gcd.i / d103106
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	1500	2100	2600	1100000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	10/31/19 11:15 AM
Lab ID:	1910626B-02A	Dilution Factor:	4.46
Date/Time Collected:	10/22/19 08:58 AM	Instrument/Filename:	gcd.i / d103111
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	260	360	460	270000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	130

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	10/31/19 09:35 AM
Lab ID:	1910626B-03A	Dilution Factor:	8.48
Date/Time Collected:	10/22/19 09:10 AM	Instrument/Filename:	gcd.i / d103108
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	500	690	870	520000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	120

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	10/31/19 10:42 AM
Lab ID:	1910626B-04A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:18 AM	Instrument/Filename:	gcd.i / d103110
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120	170	210	29000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	120

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	10/31/19 11:48 AM
Lab ID:	1910626B-05A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 09:30 AM	Instrument/Filename:	gcd.i / d103112
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130	180	230	30000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	115

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	10/31/19 12:26 PM
Lab ID:	1910626B-06A	Dilution Factor:	3300
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	gcd.i / d103113
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	190000	270000	340000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	10/31/19 01:38 PM
Lab ID:	1910626B-07A	Dilution Factor:	2880
Date/Time Collected:	10/22/19 09:56 AM	Instrument/Filename:	gcd.i / d103114
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	170000	240000	290000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	141

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	10/31/19 02:11 PM
Lab ID:	1910626B-08A	Dilution Factor:	4880
Date/Time Collected:	10/22/19 10:32 AM	Instrument/Filename:	gcd.i / d103115
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	280000	400000	500000	210000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	143

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	10/31/19 02:44 PM
Lab ID:	1910626B-09A	Dilution Factor:	5540
Date/Time Collected:	10/22/19 10:44 AM	Instrument/Filename:	gcd.i / d103116
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	320000	450000	570000	230000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	10/31/19 03:16 PM
Lab ID:	1910626B-10A	Dilution Factor:	3690
Date/Time Collected:	10/22/19 10:50 AM	Instrument/Filename:	gcd.i / d103117
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	220000	300000	380000	220000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	139

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	10/31/19 04:57 PM
Lab ID:	1910626B-11A	Dilution Factor:	392
Date/Time Collected:	10/22/19 11:05 AM	Instrument/Filename:	gcd.i / d103120
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	23000	32000	40000	19000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	10/31/19 04:25 PM
Lab ID:	1910626B-12A	Dilution Factor:	3820
Date/Time Collected:	10/22/19 11:19 AM	Instrument/Filename:	gcd.i / d103119
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	220000	310000	390000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	10/31/19 05:30 PM
Lab ID:	1910626B-13A	Dilution Factor:	2550
Date/Time Collected:	10/22/19 11:33 AM	Instrument/Filename:	gcd.i / d103121
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	150000	210000	260000	88000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	10/31/19 06:02 PM
Lab ID:	1910626B-14A	Dilution Factor:	2890
Date/Time Collected:	10/22/19 11:44 AM	Instrument/Filename:	gcd.i / d103122
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	170000	240000	300000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	143

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/31/19 07:06 AM
Lab ID:	1910626B-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d103104a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	99

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/30/19 10:06 PM
Lab ID:	1910626B-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d103102a
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		108

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	131

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/30/19 10:45 PM
Lab ID:	1910626B-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d103103a
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		113

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	131

* % Recovery is calculated using unrounded analytical results.

11/19/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1910626CR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/25/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1910626CR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/25/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/07/2019		
DATE REISSUED:	11/19/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102.1	Modified ASTM D-1945	10.5 "Hg	5 psi
02A	KAFB-106V1 112.6	Modified ASTM D-1945	12.0 "Hg	5 psi
03A	KAFB-106V1 159.6	Modified ASTM D-1945	11.0 "Hg	5 psi
04A	KAFB-106V1 159.6 DUP	Modified ASTM D-1945	10.5 "Hg	5 psi
04AA	KAFB-106V1 159.6 DUP Lab Duplicate	Modified ASTM D-1945	10.5 "Hg	5 psi
05A	KAFB-106V1 217.1	Modified ASTM D-1945	12.0 "Hg	5 psi
06A	KAFB-106V1 252.1	Modified ASTM D-1945	10.5 "Hg	5 psi
07A	KAFB-106V1 262.6	Modified ASTM D-1945	12.5 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified ASTM D-1945	13.5 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified ASTM D-1945	15.5 "Hg	5 psi
10A	KAFB-106V2 117.1 DUP	Modified ASTM D-1945	15.5 "Hg	5 psi
11A	KAFB-106V2 159.9	Modified ASTM D-1945	9.5 "Hg	5 psi
12A	KAFB-106V2 217.1	Modified ASTM D-1945	9.0 "Hg	5 psi
13A	KAFB-106V2 252.2	Modified ASTM D-1945	9.0 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified ASTM D-1945	11.5 "Hg	5 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/19/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

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LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 1910626CR1

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 25, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

Samples KAFB-106V2 117.1 and KAFB-106V2 117.1 DUP were received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Methane was manually integrated in samples KAFB-106V1 112.6, KAFB-106V1 252.1 and KAFB-106V1 262.6.

Methane and Ethane were manually integrated in samples KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP and KAFB-106V2 217.1.

Pentane was manually integrated in sample KAFB-106V2 159.9.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

The work order was reissued on 11/19/2019 to correct the Limit of Detection for Carbon Dioxide and Carbon Monoxide.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 102.1	Date/Time Analyzed:	11/5/19 01:37 PM
Lab ID:	1910626CR1-01A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 08:45 AM	Instrument/Filename:	gc10.i / 10110530
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.046
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.00019 J
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.038	0.038	0.21	20
Pentane	109-66-0	0.000052	0.00023	0.0021	0.00013 J
Propane	74-98-6	0.000062	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 112.6	Date/Time Analyzed:	11/5/19 01:59 PM
Lab ID:	1910626CR1-02A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 08:58 AM	Instrument/Filename:	gc10.i / 10110531
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	Not Detected U
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	0.044
Carbon Monoxide	630-08-0	0.0030	0.011	0.022	Not Detected U
Ethane	74-84-0	0.000056	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0034	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.00019 J
Nitrogen	7727-37-9	0.15	0.15	0.22	80
Oxygen	7782-44-7	0.041	0.041	0.22	20
Pentane	109-66-0	0.000056	0.00024	0.0022	Not Detected U
Propane	74-98-6	0.000067	0.00024	0.0022	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6	Date/Time Analyzed:	11/5/19 02:22 PM
Lab ID:	1910626CR1-03A	Dilution Factor:	2.12
Date/Time Collected:	10/22/19 09:10 AM	Instrument/Filename:	gc10.i / 10110532
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	0.043
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00011	0.00021	0.00016 J
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.039	0.039	0.21	20
Pentane	109-66-0	0.000053	0.00023	0.0021	0.000060 J
Propane	74-98-6	0.000064	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP	Date/Time Analyzed:	11/5/19 02:45 PM
Lab ID:	1910626CR1-04A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:18 AM	Instrument/Filename:	gc10.i / 10110533
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.042
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.00022
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.038	0.038	0.21	20
Pentane	109-66-0	0.000052	0.00023	0.0021	Not Detected U
Propane	74-98-6	0.000062	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1 159.6 DUP Lab Duplicate	Date/Time Analyzed:	11/5/19 04:43 PM
Lab ID:	1910626CR1-04AA	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:18 AM	Instrument/Filename:	gc10.i / 10110538
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.042
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.00021
Nitrogen	7727-37-9	0.14	0.14	0.21	80
Oxygen	7782-44-7	0.038	0.038	0.21	20
Pentane	109-66-0	0.000052	0.00023	0.0021	Not Detected U
Propane	74-98-6	0.000062	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 217.1	Date/Time Analyzed:	11/5/19 03:07 PM
Lab ID:	1910626CR1-05A	Dilution Factor:	2.23
Date/Time Collected:	10/22/19 09:30 AM	Instrument/Filename:	gc10.i / 10110534
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	Not Detected U
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	0.039
Carbon Monoxide	630-08-0	0.0030	0.011	0.022	Not Detected U
Ethane	74-84-0	0.000056	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0034	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.00020 J
Nitrogen	7727-37-9	0.15	0.15	0.22	80
Oxygen	7782-44-7	0.041	0.041	0.22	20
Pentane	109-66-0	0.000056	0.00024	0.0022	Not Detected U
Propane	74-98-6	0.000067	0.00024	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 252.1	Date/Time Analyzed:	11/5/19 03:29 PM
Lab ID:	1910626CR1-06A	Dilution Factor:	2.06
Date/Time Collected:	10/22/19 09:43 AM	Instrument/Filename:	gc10.i / 10110535
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0011 J
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.19
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.00018 J
Nitrogen	7727-37-9	0.14	0.14	0.21	78
Oxygen	7782-44-7	0.038	0.038	0.21	20
Pentane	109-66-0	0.000052	0.00023	0.0021	0.052
Propane	74-98-6	0.000062	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 262.6	Date/Time Analyzed:	11/5/19 03:54 PM
Lab ID:	1910626CR1-07A	Dilution Factor:	2.30
Date/Time Collected:	10/22/19 09:56 AM	Instrument/Filename:	gc10.i / 10110536
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000032	0.00025	0.0023	0.0022 J
Carbon Dioxide	124-38-9	0.0025	0.011	0.023	0.39
Carbon Monoxide	630-08-0	0.0030	0.011	0.023	Not Detected U
Ethane	74-84-0	0.000058	0.00025	0.0023	Not Detected U
Hydrogen	1333-74-0	0.0034	0.014	0.023	Not Detected U
Methane	74-82-8	0.000062	0.00012	0.00023	0.00013 J
Nitrogen	7727-37-9	0.16	0.16	0.23	78
Oxygen	7782-44-7	0.043	0.043	0.23	20
Pentane	109-66-0	0.000058	0.00025	0.0023	0.060
Propane	74-98-6	0.000069	0.00025	0.0023	0.00015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/5/19 05:12 PM
Lab ID:	1910626CR1-08A	Dilution Factor:	2.44
Date/Time Collected:	10/22/19 10:32 AM	Instrument/Filename:	gc10.i / 10110539
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000034	0.00027	0.0024	0.0034
Carbon Dioxide	124-38-9	0.0026	0.012	0.024	6.5
Carbon Monoxide	630-08-0	0.0032	0.012	0.024	Not Detected U
Ethane	74-84-0	0.000061	0.00027	0.0024	0.0013 J
Hydrogen	1333-74-0	0.0037	0.015	0.024	Not Detected U
Methane	74-82-8	0.000066	0.00012	0.00024	0.0070
Nitrogen	7727-37-9	0.16	0.16	0.24	78
Oxygen	7782-44-7	0.045	0.045	0.24	13
Pentane	109-66-0	0.000061	0.00027	0.0024	0.082
Propane	74-98-6	0.000073	0.00027	0.0024	0.0010 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/5/19 05:36 PM
Lab ID:	1910626CR1-09A	Dilution Factor:	2.77
Date/Time Collected:	10/22/19 10:44 AM	Instrument/Filename:	gc10.i / 10110540
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00030	0.0028	0.0046
Carbon Dioxide	124-38-9	0.0030	0.013	0.028	7.9
Carbon Monoxide	630-08-0	0.0037	0.013	0.028	Not Detected U
Ethane	74-84-0	0.000069	0.00030	0.0028	0.0016 J
Hydrogen	1333-74-0	0.0042	0.017	0.028	Not Detected U
Methane	74-82-8	0.000075	0.00014	0.00028	0.0087
Nitrogen	7727-37-9	0.19	0.19	0.28	78
Oxygen	7782-44-7	0.051	0.051	0.28	11
Pentane	109-66-0	0.000069	0.00030	0.0028	0.15
Propane	74-98-6	0.000083	0.00030	0.0028	0.0012 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/5/19 06:22 PM
Lab ID:	1910626CR1-10A	Dilution Factor:	2.77
Date/Time Collected:	10/22/19 10:50 AM	Instrument/Filename:	gc10.i / 10110542
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00030	0.0028	0.0047
Carbon Dioxide	124-38-9	0.0030	0.013	0.028	7.8
Carbon Monoxide	630-08-0	0.0037	0.013	0.028	Not Detected U
Ethane	74-84-0	0.000069	0.00030	0.0028	0.0017 J
Hydrogen	1333-74-0	0.0042	0.017	0.028	Not Detected U
Methane	74-82-8	0.000075	0.00014	0.00028	0.0090
Nitrogen	7727-37-9	0.19	0.19	0.28	78
Oxygen	7782-44-7	0.051	0.051	0.28	11
Pentane	109-66-0	0.000069	0.00030	0.0028	0.16
Propane	74-98-6	0.000083	0.00030	0.0028	0.0012 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	11/5/19 06:44 PM
Lab ID:	1910626CR1-11A	Dilution Factor:	1.96
Date/Time Collected:	10/22/19 11:05 AM	Instrument/File Name:	gc10.i / 10110543
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00022	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	0.13
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000049	0.00022	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0029	0.012	0.020	Not Detected U
Methane	74-82-8	0.000053	0.000098	0.00020	Not Detected U
Nitrogen	7727-37-9	0.13	0.13	0.20	79
Oxygen	7782-44-7	0.036	0.036	0.20	20
Pentane	109-66-0	0.000049	0.00022	0.0020	0.00046 J
Propane	74-98-6	0.000059	0.00022	0.0020	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/5/19 07:29 PM
Lab ID:	1910626CR1-12A	Dilution Factor:	1.91
Date/Time Collected:	10/22/19 11:19 AM	Instrument/Filename:	gc10.i / 10110545
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0018 J
Carbon Dioxide	124-38-9	0.0021	0.0092	0.019	6.5
Carbon Monoxide	630-08-0	0.0025	0.0092	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.00077 J
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000096	0.00019	0.0014
Nitrogen	7727-37-9	0.13	0.13	0.19	79
Oxygen	7782-44-7	0.035	0.035	0.19	13
Pentane	109-66-0	0.000048	0.00021	0.0019	0.064
Propane	74-98-6	0.000057	0.00021	0.0019	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/5/19 07:52 PM
Lab ID:	1910626CR1-13A	Dilution Factor:	1.91
Date/Time Collected:	10/22/19 11:33 AM	Instrument/Filename:	gc10.i / 10110546
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.000039 J
Carbon Dioxide	124-38-9	0.0021	0.0092	0.019	0.11
Carbon Monoxide	630-08-0	0.0025	0.0092	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000096	0.00019	Not Detected U
Nitrogen	7727-37-9	0.13	0.13	0.19	79
Oxygen	7782-44-7	0.035	0.035	0.19	20
Pentane	109-66-0	0.000048	0.00021	0.0019	0.025
Propane	74-98-6	0.000057	0.00021	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/5/19 09:01 PM
Lab ID:	1910626CR1-14A	Dilution Factor:	2.17
Date/Time Collected:	10/22/19 11:44 AM	Instrument/Filename:	gc10.i / 10110549
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.000062 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	0.20
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0033	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	Not Detected U
Nitrogen	7727-37-9	0.15	0.15	0.22	78
Oxygen	7782-44-7	0.040	0.040	0.22	20
Pentane	109-66-0	0.000054	0.00024	0.0022	0.020
Propane	74-98-6	0.000065	0.00024	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/5/19 01:12 PM
Lab ID:	1910626CR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10110529
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/5/19 12:49 PM
Lab ID:	1910626CR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10110528c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/5/19 10:34 AM
Lab ID:	1910626CR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10110523a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	101
Methane	74-82-8	101
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	102
Pentane	109-66-0	100
Propane	74-98-6	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/5/19 11:01 AM
Lab ID:	1910626CR1-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10110524a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	100
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	102
Methane	74-82-8	102
Nitrogen	7727-37-9	99
Oxygen	7782-44-7	102
Pentane	109-66-0	101
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/5/19 12:02 PM
Lab ID:	1910626CR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10110526c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/5/19 12:24 PM
Lab ID:	1910626CR1-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10110527c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

11/18/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1911080A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 11/5/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1911080A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	11/05/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/18/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106VI 102.1	Modified TO-15 (5&20 ppbv	11 "Hg	5.3 psi
01AA	KAFB-106VI 102.1 Lab Duplicate	Modified TO-15 (5&20 ppbv	11 "Hg	5.3 psi
02A	KAFB-106VI 112.6	Modified TO-15 (5&20 ppbv	8 "Hg	5.1 psi
03A	KAFB-106VI 159.6	Modified TO-15 (5&20 ppbv	8 "Hg	5.2 psi
04A	KAFB-106VI 159.6 DUP	Modified TO-15 (5&20 ppbv	7.8 "Hg	5.2 psi
05A	KAFB-106VI 217.1	Modified TO-15 (5&20 ppbv	11.4 "Hg	5.1 psi
05AA	KAFB-106VI 217.1 Lab Duplicate	Modified TO-15 (5&20 ppbv	11.4 "Hg	5.1 psi
06A	KAFB-106VI 252.1	Modified TO-15 (5&20 ppbv	9.2 "Hg	5.1 psi
07A	KAFB-106VI 262.6	Modified TO-15 (5&20 ppbv	18.2 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-15 (5&20 ppbv	9.2 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-15 (5&20 ppbv	8.6 "Hg	5.2 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-15 (5&20 ppbv	8.8 "Hg	5.2 psi
11A	KAFB-106V2 159.9	Modified TO-15 (5&20 ppbv	8.2 "Hg	4.9 psi
12A	KAFB-106V2 217.1	Modified TO-15 (5&20 ppbv	9 "Hg	4.9 psi
13A	KAFB-106V2 252.2	Modified TO-15 (5&20 ppbv	15.3 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified TO-15 (5&20 ppbv	7.1 "Hg	5.1 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16C	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA

Continued on next page

WORK ORDER #: 1911080A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	11/05/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/18/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
17B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/18/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 1911080A

Fourteen 6 Liter Summa Canister (SIM Certified) samples were received on November 05, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

Samples KAFB-106VI 262.6 and KAFB-106V2 252.2 were received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes and non-standard compounds.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Samples were analyzed in two analytical batches on MSD-14 on 11/12/19 and 11/14/19. The initial continuing calibration verification (CCV) for the batches are reported as lab fractions 16A and 16B and the ending CCV are reported as lab fractions 16C and 16D.

Dilution was performed on all samples due to the presence of high level target species.

Surrogate 1,2-Dichloroethane-d4 did not meet in-house generated control limits in samples KAFB-106V2 159.9 and KAFB-106V2 252.2.

Acetone, Hexane and Cyclohexane exceeded the instrument's calibration range for samples KAFB-106VI 159.6 and KAFB-106VI 159.6 DUP and were flagged accordingly.

Hexane exceeded the instrument's calibration range for sample KAFB-106V2 117.1 DUP and was flagged accordingly.

Acetone and 2-Butanone (Methyl Ethyl Ketone) exceeded the instrument's calibration range for sample

KAFB-106V2 269.5 and was flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 102.1	Date/Time Analyzed:	11/14/19 12:33 PM
Lab ID:	1911080A-01A	Dilution Factor:	430
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	msd14.i / 14111407
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2400	5200	8700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	26000	48000	64000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2000	6300	10000	14000
1,2-Dibromoethane (EDB)	106-93-4	2900	9900	16000	3100 J
1,2-Dichlorobenzene	95-50-1	3100	7800	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1800	6300	10000	6500 J
1,3-Butadiene	106-99-0	1500	2800	4800	Not Detected U
1,4-Dioxane	123-91-1	8500	23000	31000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6100	19000	25000	600000
2-Hexanone	591-78-6	13000	26000	35000	Not Detected U
2-Propanol	67-63-0	2700	16000	21000	36000
4-Methyl-2-pentanone	108-10-1	4300	5300	8800	Not Detected U
Acetone	67-64-1	3000	15000	20000	4700000
Benzene	71-43-2	960	4100	6900	2200000
Bromodichloromethane	75-27-4	1400	8600	14000	Not Detected U
Bromoform	75-25-2	3100	13000	22000	Not Detected U
Carbon Disulfide	75-15-0	4100	20000	27000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	8100	14000	Not Detected U
Chloroethane	75-00-3	6500	17000	23000	Not Detected U
Chloroform	67-66-3	1800	6300	10000	Not Detected U
Chloromethane	74-87-3	3700	13000	18000	Not Detected U
Cyclohexane	110-82-7	1600	4400	7400	5400000
Dibromochloromethane	124-48-1	3800	11000	18000	Not Detected U
Ethanol	64-17-5	3500	12000	16000	20000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 102.1	Date/Time Analyzed:	11/14/19 12:33 PM
Lab ID:	1911080A-01A	Dilution Factor:	430
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	msd14.i / 14111407
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	31000	Not Detected
Ethyl Benzene	100-41-4	1900	5600	9300	120000
Freon 11	75-69-4	1800	7200	12000	Not Detected U
Freon 113	76-13-1	2900	9900	16000	Not Detected U
Freon 12	75-71-8	2400	6400	11000	Not Detected U
Heptane	142-82-5	3000	5300	8800	2600000
Hexane	110-54-3	1900	4500	7600	10000000
m,p-Xylene	108-38-3	1800	5600	9300	160000
Methylene Chloride	75-09-2	4600	22000	30000	Not Detected U
Naphthalene	91-20-3	3500	4500	45000	Not Detected U
o-Xylene	95-47-6	2500	5600	9300	50000
Propylene	115-07-1	2500	11000	15000	Not Detected U
Styrene	100-42-5	1700	5500	9200	Not Detected U
Tetrachloroethene	127-18-4	5100	8800	14000	Not Detected U
Tetrahydrofuran	109-99-9	2200	3800	6300	Not Detected U
Toluene	108-88-3	1400	4900	8100	1600000
Total Xylene	1330-20-7	NA	D	9300	200000
Trichloroethene	79-01-6	3400	6900	12000	Not Detected U
Vinyl Chloride	75-01-4	1900	3300	5500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 102.1	Date/Time Analyzed:	11/14/19 12:33 PM
Lab ID:	1911080A-01A	Dilution Factor:	430
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	msd14.i / 14111407
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	124
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 102.1 Lab Duplicate	Date/Time Analyzed:	11/14/19 12:56 PM
Lab ID:	1911080A-01AA	Dilution Factor:	430
Date/Time Collected:	10/31/19 08:24 AM	Instrument/File Name:	msd14.i / 14111408
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2400	5200	8700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	26000	48000	64000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2000	6300	10000	14000
1,2-Dibromoethane (EDB)	106-93-4	2900	9900	16000	3200 J
1,2-Dichlorobenzene	95-50-1	3100	7800	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1800	6300	10000	6600 J
1,3-Butadiene	106-99-0	1500	2800	4800	Not Detected U
1,4-Dioxane	123-91-1	8500	23000	31000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6100	19000	25000	560000
2-Hexanone	591-78-6	13000	26000	35000	Not Detected U
2-Propanol	67-63-0	2700	16000	21000	39000
4-Methyl-2-pentanone	108-10-1	4300	5300	8800	Not Detected U
Acetone	67-64-1	3000	15000	20000	4500000
Benzene	71-43-2	960	4100	6900	2200000
Bromodichloromethane	75-27-4	1400	8600	14000	Not Detected U
Bromoform	75-25-2	3100	13000	22000	Not Detected U
Carbon Disulfide	75-15-0	4100	20000	27000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	8100	14000	Not Detected U
Chloroethane	75-00-3	6500	17000	23000	Not Detected U
Chloroform	67-66-3	1800	6300	10000	Not Detected U
Chloromethane	74-87-3	3700	13000	18000	Not Detected U
Cyclohexane	110-82-7	1600	4400	7400	5100000
Dibromochloromethane	124-48-1	3800	11000	18000	Not Detected U
Ethanol	64-17-5	3500	12000	16000	21000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 102.1 Lab Duplicate	Date/Time Analyzed:	11/14/19 12:56 PM
Lab ID:	1911080A-01AA	Dilution Factor:	430
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	msd14.i / 14111408
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	31000	Not Detected
Ethyl Benzene	100-41-4	1900	5600	9300	110000
Freon 11	75-69-4	1800	7200	12000	Not Detected U
Freon 113	76-13-1	2900	9900	16000	Not Detected U
Freon 12	75-71-8	2400	6400	11000	Not Detected U
Heptane	142-82-5	3000	5300	8800	2600000
Hexane	110-54-3	1900	4500	7600	9800000
m,p-Xylene	108-38-3	1800	5600	9300	160000
Methylene Chloride	75-09-2	4600	22000	30000	Not Detected U
Naphthalene	91-20-3	3500	4500	45000	Not Detected U
o-Xylene	95-47-6	2500	5600	9300	45000
Propylene	115-07-1	2500	11000	15000	Not Detected U
Styrene	100-42-5	1700	5500	9200	Not Detected U
Tetrachloroethene	127-18-4	5100	8800	14000	Not Detected U
Tetrahydrofuran	109-99-9	2200	3800	6300	Not Detected U
Toluene	108-88-3	1400	4900	8100	1600000
Total Xylene	1330-20-7	NA	D	9300	200000
Trichloroethene	79-01-6	3400	6900	12000	Not Detected U
Vinyl Chloride	75-01-4	1900	3300	5500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 102.1 Lab Duplicate	Date/Time Analyzed:	11/14/19 12:56 PM
Lab ID:	1911080A-01AA	Dilution Factor:	430
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	msd14.i / 14111408
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	114
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 112.6	Date/Time Analyzed:	11/14/19 02:01 PM
Lab ID:	1911080A-02A	Dilution Factor:	367
Date/Time Collected:	10/31/19 08:39 AM	Instrument/Filename:	msd14.i / 14111410
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2100	4400	7400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	22000	41000	54000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1700	5400	9000	16000
1,2-Dibromoethane (EDB)	106-93-4	2500	8500	14000	4600 J
1,2-Dichlorobenzene	95-50-1	2700	6600	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1500	5400	9000	5800 J
1,3-Butadiene	106-99-0	1300	2400	4000	Not Detected U
1,4-Dioxane	123-91-1	7300	20000	26000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5200	16000	22000	580000
2-Hexanone	591-78-6	11000	22000	30000	Not Detected U
2-Propanol	67-63-0	2300	14000	18000	97000
4-Methyl-2-pentanone	108-10-1	3600	4500	7500	Not Detected U
Acetone	67-64-1	2500	13000	17000	4100000
Benzene	71-43-2	820	3500	5900	2300000
Bromodichloromethane	75-27-4	1200	7400	12000	Not Detected U
Bromoform	75-25-2	2600	11000	19000	Not Detected U
Carbon Disulfide	75-15-0	3500	17000	23000	Not Detected U
Carbon Tetrachloride	56-23-5	2700	6900	12000	Not Detected U
Chloroethane	75-00-3	5600	14000	19000	Not Detected U
Chloroform	67-66-3	1500	5400	9000	Not Detected U
Chloromethane	74-87-3	3200	11000	15000	Not Detected U
Cyclohexane	110-82-7	1400	3800	6300	5400000
Dibromochloromethane	124-48-1	3200	9400	16000	Not Detected U
Ethanol	64-17-5	3000	10000	14000	51000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 112.6	Date/Time Analyzed:	11/14/19 02:01 PM
Lab ID:	1911080A-02A	Dilution Factor:	367
Date/Time Collected:	10/31/19 08:39 AM	Instrument/Filename:	msd14.i / 14111410
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	26000	Not Detected
Ethyl Benzene	100-41-4	1600	4800	8000	120000
Freon 11	75-69-4	1500	6200	10000	Not Detected U
Freon 113	76-13-1	2500	8400	14000	Not Detected U
Freon 12	75-71-8	2000	5400	9100	Not Detected U
Heptane	142-82-5	2500	4500	7500	3000000
Hexane	110-54-3	1600	3900	6500	10000000
m,p-Xylene	108-38-3	1500	4800	8000	160000
Methylene Chloride	75-09-2	4000	19000	25000	Not Detected U
Naphthalene	91-20-3	3000	3800	38000	Not Detected U
o-Xylene	95-47-6	2200	4800	8000	43000
Propylene	115-07-1	2200	9500	13000	Not Detected U
Styrene	100-42-5	1500	4700	7800	Not Detected U
Tetrachloroethene	127-18-4	4400	7500	12000	Not Detected U
Tetrahydrofuran	109-99-9	1900	3200	5400	Not Detected U
Toluene	108-88-3	1200	4100	6900	1900000
Total Xylene	1330-20-7	NA	D	8000	200000
Trichloroethene	79-01-6	2900	5900	9900	Not Detected U
Vinyl Chloride	75-01-4	1600	2800	4700	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 112.6	Date/Time Analyzed:	11/14/19 02:01 PM
Lab ID:	1911080A-02A	Dilution Factor:	367
Date/Time Collected:	10/31/19 08:39 AM	Instrument/Filename:	msd14.i / 14111410
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	118
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 159.6	Date/Time Analyzed:	11/13/19 05:44 AM
Lab ID:	1911080A-03A	Dilution Factor:	92.0
Date/Time Collected:	10/31/19 08:57 AM	Instrument/Filename:	msd14.i / 14111228
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	520	1100	1900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5500	10000	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	430	1400	2300	19000
1,2-Dibromoethane (EDB)	106-93-4	620	2100	3500	1800 J
1,2-Dichlorobenzene	95-50-1	670	1600	2800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	380	1400	2300	7500
1,3-Butadiene	106-99-0	320	610	1000	Not Detected U
1,4-Dioxane	123-91-1	1800	5000	6600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1300	4100	5400	91000
2-Hexanone	591-78-6	2800	5600	7500	4400 J
2-Propanol	67-63-0	580	3400	4500	120000
4-Methyl-2-pentanone	108-10-1	920	1100	1900	3700
Acetone	67-64-1	640	3300	4400	2300000 J
Benzene	71-43-2	200	880	1500	1200000
Bromodichloromethane	75-27-4	310	1800	3100	Not Detected U
Bromoform	75-25-2	660	2800	4800	Not Detected U
Carbon Disulfide	75-15-0	870	4300	5700	Not Detected U
Carbon Tetrachloride	56-23-5	690	1700	2900	Not Detected U
Chloroethane	75-00-3	1400	3600	4800	Not Detected U
Chloroform	67-66-3	390	1300	2200	Not Detected U
Chloromethane	74-87-3	800	2800	3800	Not Detected U
Cyclohexane	110-82-7	350	950	1600	3400000 J
Dibromochloromethane	124-48-1	810	2400	3900	Not Detected U
Ethanol	64-17-5	760	2600	3500	33000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 159.6	Date/Time Analyzed:	11/13/19 05:44 AM
Lab ID:	1911080A-03A	Dilution Factor:	92.0
Date/Time Collected:	10/31/19 08:57 AM	Instrument/Filename:	msd14.i / 14111228
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6600	Not Detected
Ethyl Benzene	100-41-4	400	1200	2000	190000
Freon 11	75-69-4	380	1600	2600	Not Detected U
Freon 113	76-13-1	630	2100	3500	Not Detected U
Freon 12	75-71-8	500	1400	2300	Not Detected U
Heptane	142-82-5	640	1100	1900	3000000
Hexane	110-54-3	400	970	1600	4700000 J
m,p-Xylene	108-38-3	380	1200	2000	360000
Methylene Chloride	75-09-2	990	4800	6400	Not Detected U
Naphthalene	91-20-3	740	960	9600	Not Detected U
o-Xylene	95-47-6	540	1200	2000	96000
Propylene	115-07-1	540	2400	3200	Not Detected U
Styrene	100-42-5	370	1200	2000	Not Detected U
Tetrachloroethene	127-18-4	1100	1900	3100	Not Detected U
Tetrahydrofuran	109-99-9	480	810	1400	Not Detected U
Toluene	108-88-3	310	1000	1700	2000000
Total Xylene	1330-20-7	NA	D	2000	460000
Trichloroethene	79-01-6	730	1500	2500	Not Detected U
Vinyl Chloride	75-01-4	410	700	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 159.6	Date/Time Analyzed:	11/13/19 05:44 AM
Lab ID:	1911080A-03A	Dilution Factor:	92.0
Date/Time Collected:	10/31/19 08:57 AM	Instrument/Filename:	msd14.i / 14111228
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	132
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 159.6 DUP	Date/Time Analyzed:	11/14/19 05:46 PM
Lab ID:	1911080A-04A	Dilution Factor:	91.0
Date/Time Collected:	10/31/19 09:06 AM	Instrument/File Name:	msd14.i / 14111420
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	510	1100	1800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5400	10000	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	420	1300	2200	25000
1,2-Dibromoethane (EDB)	106-93-4	620	2100	3500	1900 J
1,2-Dichlorobenzene	95-50-1	660	1600	2700	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	370	1300	2200	8800
1,3-Butadiene	106-99-0	320	600	1000	Not Detected U
1,4-Dioxane	123-91-1	1800	4900	6600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1300	4000	5400	99000
2-Hexanone	591-78-6	2800	5600	7400	3900 J
2-Propanol	67-63-0	570	3400	4500	140000
4-Methyl-2-pentanone	108-10-1	900	1100	1900	5000
Acetone	67-64-1	630	3200	4300	2400000 J
Benzene	71-43-2	200	870	1400	1300000
Bromodichloromethane	75-27-4	300	1800	3000	Not Detected U
Bromoform	75-25-2	650	2800	4700	Not Detected U
Carbon Disulfide	75-15-0	860	4200	5700	Not Detected U
Carbon Tetrachloride	56-23-5	680	1700	2900	Not Detected U
Chloroethane	75-00-3	1400	3600	4800	Not Detected U
Chloroform	67-66-3	380	1300	2200	Not Detected U
Chloromethane	74-87-3	790	2800	3800	Not Detected U
Cyclohexane	110-82-7	350	940	1600	3600000 J
Dibromochloromethane	124-48-1	800	2300	3900	Not Detected U
Ethanol	64-17-5	750	2600	3400	35000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 159.6 DUP	Date/Time Analyzed:	11/14/19 05:46 PM
Lab ID:	1911080A-04A	Dilution Factor:	91.0
Date/Time Collected:	10/31/19 09:06 AM	Instrument/File Name:	msd14.i / 14111420
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6600	Not Detected
Ethyl Benzene	100-41-4	400	1200	2000	200000
Freon 11	75-69-4	380	1500	2600	Not Detected U
Freon 113	76-13-1	620	2100	3500	Not Detected U
Freon 12	75-71-8	500	1400	2200	Not Detected U
Heptane	142-82-5	630	1100	1900	3300000
Hexane	110-54-3	390	960	1600	5000000 J
m,p-Xylene	108-38-3	370	1200	2000	400000
Methylene Chloride	75-09-2	980	4700	6300	Not Detected U
Naphthalene	91-20-3	730	950	9500	750 J
o-Xylene	95-47-6	530	1200	2000	110000
Propylene	115-07-1	540	2300	3100	Not Detected U
Styrene	100-42-5	370	1200	1900	Not Detected U
Tetrachloroethene	127-18-4	1100	1800	3100	Not Detected U
Tetrahydrofuran	109-99-9	470	800	1300	Not Detected U
Toluene	108-88-3	310	1000	1700	2200000
Total Xylene	1330-20-7	NA	D	2000	510000
Trichloroethene	79-01-6	720	1500	2400	Not Detected U
Vinyl Chloride	75-01-4	400	700	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 159.6 DUP	Date/Time Analyzed:	11/14/19 05:46 PM
Lab ID:	1911080A-04A	Dilution Factor:	91.0
Date/Time Collected:	10/31/19 09:06 AM	Instrument/Filename:	msd14.i / 14111420
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	131
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 217.1	Date/Time Analyzed:	11/12/19 04:01 PM
Lab ID:	1911080A-05A	Dilution Factor:	36.3
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	msd14.i / 14111216
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	200	440	730	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2200	4000	5400	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	170	540	890	13000
1,2-Dibromoethane (EDB)	106-93-4	240	840	1400	330 J
1,2-Dichlorobenzene	95-50-1	260	650	1100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	150	540	890	4700
1,3-Butadiene	106-99-0	130	240	400	Not Detected U
1,4-Dioxane	123-91-1	720	2000	2600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	520	1600	2100	27000
2-Hexanone	591-78-6	1100	2200	3000	Not Detected U
2-Propanol	67-63-0	230	1300	1800	11000
4-Methyl-2-pentanone	108-10-1	360	450	740	Not Detected U
Acetone	67-64-1	250	1300	1700	420000
Benzene	71-43-2	81	350	580	180000
Bromodichloromethane	75-27-4	120	730	1200	Not Detected U
Bromoform	75-25-2	260	1100	1900	Not Detected U
Carbon Disulfide	75-15-0	340	1700	2300	Not Detected U
Carbon Tetrachloride	56-23-5	270	680	1100	Not Detected U
Chloroethane	75-00-3	550	1400	1900	Not Detected U
Chloroform	67-66-3	150	530	890	Not Detected U
Chloromethane	74-87-3	310	1100	1500	Not Detected U
Cyclohexane	110-82-7	140	370	620	530000
Dibromochloromethane	124-48-1	320	930	1500	Not Detected U
Ethanol	64-17-5	300	1000	1400	3200

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 217.1	Date/Time Analyzed:	11/12/19 04:01 PM
Lab ID:	1911080A-05A	Dilution Factor:	36.3
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	msd14.i / 14111216
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	2600	Not Detected
Ethyl Benzene	100-41-4	160	470	790	46000
Freon 11	75-69-4	150	610	1000	Not Detected U
Freon 113	76-13-1	250	830	1400	Not Detected U
Freon 12	75-71-8	200	540	900	Not Detected U
Heptane	142-82-5	250	450	740	530000
Hexane	110-54-3	160	380	640	610000
m,p-Xylene	108-38-3	150	470	790	130000
Methylene Chloride	75-09-2	390	1900	2500	Not Detected U
Naphthalene	91-20-3	290	380	3800	460 J
o-Xylene	95-47-6	210	470	790	37000
Propylene	115-07-1	210	940	1200	Not Detected U
Styrene	100-42-5	150	460	770	Not Detected U
Tetrachloroethene	127-18-4	430	740	1200	Not Detected U
Tetrahydrofuran	109-99-9	190	320	540	Not Detected U
Toluene	108-88-3	120	410	680	420000
Total Xylene	1330-20-7	NA	D	790	170000
Trichloroethene	79-01-6	290	580	980	Not Detected U
Vinyl Chloride	75-01-4	160	280	460	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 217.1	Date/Time Analyzed:	11/12/19 04:01 PM
Lab ID:	1911080A-05A	Dilution Factor:	36.3
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	msd14.i / 14111216
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	128
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 217.1 Lab Duplicate	Date/Time Analyzed:	11/12/19 04:39 PM
Lab ID:	1911080A-05AA	Dilution Factor:	36.3
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	msd14.i / 14111217
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	200	440	730	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2200	4000	5400	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	170	540	890	12000
1,2-Dibromoethane (EDB)	106-93-4	240	840	1400	370 J
1,2-Dichlorobenzene	95-50-1	260	650	1100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	150	540	890	4400
1,3-Butadiene	106-99-0	130	240	400	Not Detected U
1,4-Dioxane	123-91-1	720	2000	2600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	520	1600	2100	25000
2-Hexanone	591-78-6	1100	2200	3000	Not Detected U
2-Propanol	67-63-0	230	1300	1800	10000
4-Methyl-2-pentanone	108-10-1	360	450	740	Not Detected U
Acetone	67-64-1	250	1300	1700	410000
Benzene	71-43-2	81	350	580	170000
Bromodichloromethane	75-27-4	120	730	1200	Not Detected U
Bromoform	75-25-2	260	1100	1900	Not Detected U
Carbon Disulfide	75-15-0	340	1700	2300	Not Detected U
Carbon Tetrachloride	56-23-5	270	680	1100	Not Detected U
Chloroethane	75-00-3	550	1400	1900	Not Detected U
Chloroform	67-66-3	150	530	890	Not Detected U
Chloromethane	74-87-3	310	1100	1500	Not Detected U
Cyclohexane	110-82-7	140	370	620	520000
Dibromochloromethane	124-48-1	320	930	1500	Not Detected U
Ethanol	64-17-5	300	1000	1400	2900

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 217.1 Lab Duplicate	Date/Time Analyzed:	11/12/19 04:39 PM
Lab ID:	1911080A-05AA	Dilution Factor:	36.3
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	msd14.i / 14111217
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	2600	Not Detected
Ethyl Benzene	100-41-4	160	470	790	41000
Freon 11	75-69-4	150	610	1000	Not Detected U
Freon 113	76-13-1	250	830	1400	Not Detected U
Freon 12	75-71-8	200	540	900	Not Detected U
Heptane	142-82-5	250	450	740	500000
Hexane	110-54-3	160	380	640	600000
m,p-Xylene	108-38-3	150	470	790	120000
Methylene Chloride	75-09-2	390	1900	2500	Not Detected U
Naphthalene	91-20-3	290	380	3800	Not Detected U
o-Xylene	95-47-6	210	470	790	34000
Propylene	115-07-1	210	940	1200	Not Detected U
Styrene	100-42-5	150	460	770	Not Detected U
Tetrachloroethene	127-18-4	430	740	1200	Not Detected U
Tetrahydrofuran	109-99-9	190	320	540	Not Detected U
Toluene	108-88-3	120	410	680	390000
Total Xylene	1330-20-7	NA	D	790	160000
Trichloroethene	79-01-6	290	580	980	Not Detected U
Vinyl Chloride	75-01-4	160	280	460	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 217.1 Lab Duplicate	Date/Time Analyzed:	11/12/19 04:39 PM
Lab ID:	1911080A-05AA	Dilution Factor:	36.3
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	msd14.i / 14111217
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	128
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 252.1	Date/Time Analyzed:	11/14/19 02:24 PM
Lab ID:	1911080A-06A	Dilution Factor:	194
Date/Time Collected:	10/31/19 09:45 AM	Instrument/Filename:	msd14.i / 14111411
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1100	2400	3900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	22000	29000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	900	2900	4800	6100
1,2-Dibromoethane (EDB)	106-93-4	1300	4500	7400	10000
1,2-Dichlorobenzene	95-50-1	1400	3500	5800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	790	2900	4800	3400 J
1,3-Butadiene	106-99-0	670	1300	2100	Not Detected U
1,4-Dioxane	123-91-1	3800	10000	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2800	8600	11000	230000
2-Hexanone	591-78-6	5900	12000	16000	10000 J
2-Propanol	67-63-0	1200	7200	9500	17000
4-Methyl-2-pentanone	108-10-1	1900	2400	4000	13000
Acetone	67-64-1	1300	6900	9200	1100000
Benzene	71-43-2	430	1800	3100	880000
Bromodichloromethane	75-27-4	650	3900	6500	Not Detected U
Bromoform	75-25-2	1400	6000	10000	Not Detected U
Carbon Disulfide	75-15-0	1800	9100	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1400	3700	6100	Not Detected U
Chloroethane	75-00-3	2900	7700	10000	Not Detected U
Chloroform	67-66-3	810	2800	4700	Not Detected U
Chloromethane	74-87-3	1700	6000	8000	Not Detected U
Cyclohexane	110-82-7	740	2000	3300	3100000
Dibromochloromethane	124-48-1	1700	5000	8300	Not Detected U
Ethanol	64-17-5	1600	5500	7300	3700 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 252.1	Date/Time Analyzed:	11/14/19 02:24 PM
Lab ID:	1911080A-06A	Dilution Factor:	194
Date/Time Collected:	10/31/19 09:45 AM	Instrument/Filename:	msd14.i / 14111411
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	840	2500	4200	160000
Freon 11	75-69-4	810	3300	5400	Not Detected U
Freon 113	76-13-1	1300	4500	7400	Not Detected U
Freon 12	75-71-8	1100	2900	4800	Not Detected U
Heptane	142-82-5	1300	2400	4000	5400000
Hexane	110-54-3	840	2000	3400	3900000
m,p-Xylene	108-38-3	790	2500	4200	410000
Methylene Chloride	75-09-2	2100	10000	13000	Not Detected U
Naphthalene	91-20-3	1600	2000	20000	Not Detected U
o-Xylene	95-47-6	1100	2500	4200	96000
Propylene	115-07-1	1100	5000	6700	Not Detected U
Styrene	100-42-5	780	2500	4100	Not Detected U
Tetrachloroethene	127-18-4	2300	3900	6600	Not Detected U
Tetrahydrofuran	109-99-9	1000	1700	2900	Not Detected U
Toluene	108-88-3	660	2200	3600	3400000
Total Xylene	1330-20-7	NA	D	4200	500000
Trichloroethene	79-01-6	1500	3100	5200	Not Detected U
Vinyl Chloride	75-01-4	860	1500	2500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 252.1	Date/Time Analyzed:	11/14/19 02:24 PM
Lab ID:	1911080A-06A	Dilution Factor:	194
Date/Time Collected:	10/31/19 09:45 AM	Instrument/Filename:	msd14.i / 14111411
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	118
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 262.6	Date/Time Analyzed:	11/12/19 11:20 AM
Lab ID:	1911080A-07A	Dilution Factor:	170
Date/Time Collected:	10/31/19 10:00 AM	Instrument/Filename:	msd14.i / 14111208
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	960	2100	3400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	10000	19000	25000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	790	2500	4200	5700
1,2-Dibromoethane (EDB)	106-93-4	1100	3900	6500	7900
1,2-Dichlorobenzene	95-50-1	1200	3100	5100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	690	2500	4200	2800 J
1,3-Butadiene	106-99-0	590	1100	1900	Not Detected U
1,4-Dioxane	123-91-1	3400	9200	12000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2400	7500	10000	340000
2-Hexanone	591-78-6	5200	10000	14000	14000
2-Propanol	67-63-0	1100	6300	8400	28000
4-Methyl-2-pentanone	108-10-1	1700	2100	3500	12000
Acetone	67-64-1	1200	6000	8100	1400000
Benzene	71-43-2	380	1600	2700	630000
Bromodichloromethane	75-27-4	570	3400	5700	Not Detected U
Bromoform	75-25-2	1200	5300	8800	Not Detected U
Carbon Disulfide	75-15-0	1600	7900	10000	Not Detected U
Carbon Tetrachloride	56-23-5	1300	3200	5300	Not Detected U
Chloroethane	75-00-3	2600	6700	9000	Not Detected U
Chloroform	67-66-3	710	2500	4200	Not Detected U
Chloromethane	74-87-3	1500	5300	7000	Not Detected U
Cyclohexane	110-82-7	650	1800	2900	2200000
Dibromochloromethane	124-48-1	1500	4300	7200	Not Detected U
Ethanol	64-17-5	1400	4800	6400	7400

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 262.6	Date/Time Analyzed:	11/12/19 11:20 AM
Lab ID:	1911080A-07A	Dilution Factor:	170
Date/Time Collected:	10/31/19 10:00 AM	Instrument/Filename:	msd14.i / 14111208
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	12000	Not Detected
Ethyl Benzene	100-41-4	740	2200	3700	91000
Freon 11	75-69-4	710	2900	4800	Not Detected U
Freon 113	76-13-1	1200	3900	6500	Not Detected U
Freon 12	75-71-8	930	2500	4200	Not Detected U
Heptane	142-82-5	1200	2100	3500	3900000
Hexane	110-54-3	740	1800	3000	2400000
m,p-Xylene	108-38-3	690	2200	3700	210000
Methylene Chloride	75-09-2	1800	8800	12000	Not Detected U
Naphthalene	91-20-3	1400	1800	18000	Not Detected U
o-Xylene	95-47-6	1000	2200	3700	48000
Propylene	115-07-1	1000	4400	5800	Not Detected U
Styrene	100-42-5	690	2200	3600	Not Detected U
Tetrachloroethene	127-18-4	2000	3400	5800	Not Detected U
Tetrahydrofuran	109-99-9	890	1500	2500	Not Detected U
Toluene	108-88-3	580	1900	3200	2500000
Total Xylene	1330-20-7	NA	D	3700	260000
Trichloroethene	79-01-6	1400	2700	4600	Not Detected U
Vinyl Chloride	75-01-4	750	1300	2200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106VI 262.6	Date/Time Analyzed:	11/12/19 11:20 AM
Lab ID:	1911080A-07A	Dilution Factor:	170
Date/Time Collected:	10/31/19 10:00 AM	Instrument/Filename:	msd14.i / 14111208
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	123
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/14/19 02:46 PM
Lab ID:	1911080A-08A	Dilution Factor:	386
Date/Time Collected:	10/31/19 10:30 AM	Instrument/File Name:	msd14.i / 14111412
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2200	4700	7800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	23000	43000	57000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	5700	9500	6900 J
1,2-Dibromoethane (EDB)	106-93-4	2600	8900	15000	12000 J
1,2-Dichlorobenzene	95-50-1	2800	7000	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5700	9500	3300 J
1,3-Butadiene	106-99-0	1300	2600	4300	Not Detected U
1,4-Dioxane	123-91-1	7600	21000	28000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5500	17000	23000	810000
2-Hexanone	591-78-6	12000	24000	32000	Not Detected U
2-Propanol	67-63-0	2400	14000	19000	220000
4-Methyl-2-pentanone	108-10-1	3800	4700	7900	18000
Acetone	67-64-1	2700	14000	18000	5400000
Benzene	71-43-2	860	3700	6200	2200000
Bromodichloromethane	75-27-4	1300	7800	13000	Not Detected U
Bromoform	75-25-2	2800	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	3600	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	2900	7300	12000	Not Detected U
Chloroethane	75-00-3	5800	15000	20000	Not Detected U
Chloroform	67-66-3	1600	5600	9400	Not Detected U
Chloromethane	74-87-3	3300	12000	16000	Not Detected U
Cyclohexane	110-82-7	1500	4000	6600	6600000
Dibromochloromethane	124-48-1	3400	9900	16000	Not Detected U
Ethanol	64-17-5	3200	11000	14000	24000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/14/19 02:46 PM
Lab ID:	1911080A-08A	Dilution Factor:	386
Date/Time Collected:	10/31/19 10:30 AM	Instrument/Filename:	msd14.i / 14111412
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	28000	Not Detected
Ethyl Benzene	100-41-4	1700	5000	8400	120000
Freon 11	75-69-4	1600	6500	11000	Not Detected U
Freon 113	76-13-1	2600	8900	15000	Not Detected U
Freon 12	75-71-8	2100	5700	9500	Not Detected U
Heptane	142-82-5	2700	4700	7900	5800000
Hexane	110-54-3	1700	4100	6800	8600000
m,p-Xylene	108-38-3	1600	5000	8400	270000
Methylene Chloride	75-09-2	4200	20000	27000	Not Detected U
Naphthalene	91-20-3	3100	4000	40000	Not Detected U
o-Xylene	95-47-6	2300	5000	8400	65000
Propylene	115-07-1	2300	10000	13000	20000
Styrene	100-42-5	1600	4900	8200	Not Detected U
Tetrachloroethene	127-18-4	4600	7800	13000	Not Detected U
Tetrahydrofuran	109-99-9	2000	3400	5700	Not Detected U
Toluene	108-88-3	1300	4400	7300	3700000
Total Xylene	1330-20-7	NA	D	8400	340000
Trichloroethene	79-01-6	3100	6200	10000	Not Detected U
Vinyl Chloride	75-01-4	1700	3000	4900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/14/19 02:46 PM
Lab ID:	1911080A-08A	Dilution Factor:	386
Date/Time Collected:	10/31/19 10:30 AM	Instrument/Filename:	msd14.i / 14111412
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	126
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/14/19 03:06 PM
Lab ID:	1911080A-09A	Dilution Factor:	380
Date/Time Collected:	10/31/19 10:45 AM	Instrument/Filename:	msd14.i / 14111413
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2100	4600	7700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	23000	42000	56000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	5600	9300	12000
1,2-Dibromoethane (EDB)	106-93-4	2600	8800	15000	9000 J
1,2-Dichlorobenzene	95-50-1	2800	6800	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5600	9300	6400 J
1,3-Butadiene	106-99-0	1300	2500	4200	Not Detected U
1,4-Dioxane	123-91-1	7500	20000	27000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5400	17000	22000	720000
2-Hexanone	591-78-6	12000	23000	31000	Not Detected U
2-Propanol	67-63-0	2400	14000	19000	77000
4-Methyl-2-pentanone	108-10-1	3800	4700	7800	13000
Acetone	67-64-1	2600	14000	18000	4200000
Benzene	71-43-2	850	3600	6100	2700000
Bromodichloromethane	75-27-4	1300	7600	13000	Not Detected U
Bromoform	75-25-2	2700	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	3600	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	2800	7200	12000	Not Detected U
Chloroethane	75-00-3	5800	15000	20000	Not Detected U
Chloroform	67-66-3	1600	5600	9300	Not Detected U
Chloromethane	74-87-3	3300	12000	16000	Not Detected U
Cyclohexane	110-82-7	1400	3900	6500	7600000
Dibromochloromethane	124-48-1	3300	9700	16000	Not Detected U
Ethanol	64-17-5	3100	11000	14000	6100 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/14/19 03:06 PM
Lab ID:	1911080A-09A	Dilution Factor:	380
Date/Time Collected:	10/31/19 10:45 AM	Instrument/Filename:	msd14.i / 14111413
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	27000	Not Detected
Ethyl Benzene	100-41-4	1600	4900	8200	150000
Freon 11	75-69-4	1600	6400	11000	Not Detected U
Freon 113	76-13-1	2600	8700	14000	Not Detected U
Freon 12	75-71-8	2100	5600	9400	Not Detected U
Heptane	142-82-5	2600	4700	7800	5500000
Hexane	110-54-3	1600	4000	6700	11000000
m,p-Xylene	108-38-3	1600	5000	8200	360000
Methylene Chloride	75-09-2	4100	20000	26000	Not Detected U
Naphthalene	91-20-3	3100	4000	40000	Not Detected U
o-Xylene	95-47-6	2200	5000	8200	91000
Propylene	115-07-1	2200	9800	13000	25000
Styrene	100-42-5	1500	4800	8100	Not Detected U
Tetrachloroethene	127-18-4	4500	7700	13000	Not Detected U
Tetrahydrofuran	109-99-9	2000	3400	5600	Not Detected U
Toluene	108-88-3	1300	4300	7200	3400000
Total Xylene	1330-20-7	NA	D	8200	460000
Trichloroethene	79-01-6	3000	6100	10000	Not Detected U
Vinyl Chloride	75-01-4	1700	2900	4800	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/14/19 03:06 PM
Lab ID:	1911080A-09A	Dilution Factor:	380
Date/Time Collected:	10/31/19 10:45 AM	Instrument/Filename:	msd14.i / 14111413
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	124
4-Bromofluorobenzene	460-00-4	83-110	96
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/14/19 03:28 PM
Lab ID:	1911080A-10A	Dilution Factor:	382
Date/Time Collected:	10/31/19 10:53 AM	Instrument/Filename:	msd14.i / 14111414
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2100	4600	7700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	23000	42000	57000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	5600	9400	12000
1,2-Dibromoethane (EDB)	106-93-4	2600	8800	15000	11000 J
1,2-Dichlorobenzene	95-50-1	2800	6900	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5600	9400	7000 J
1,3-Butadiene	106-99-0	1300	2500	4200	Not Detected U
1,4-Dioxane	123-91-1	7600	21000	28000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5500	17000	22000	960000
2-Hexanone	591-78-6	12000	23000	31000	Not Detected U
2-Propanol	67-63-0	2400	14000	19000	100000
4-Methyl-2-pentanone	108-10-1	3800	4700	7800	16000
Acetone	67-64-1	2600	14000	18000	5800000
Benzene	71-43-2	850	3700	6100	3400000
Bromodichloromethane	75-27-4	1300	7700	13000	Not Detected U
Bromoform	75-25-2	2700	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	3600	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	2900	7200	12000	Not Detected U
Chloroethane	75-00-3	5800	15000	20000	Not Detected U
Chloroform	67-66-3	1600	5600	9300	Not Detected U
Chloromethane	74-87-3	3300	12000	16000	Not Detected U
Cyclohexane	110-82-7	1400	3900	6600	9500000
Dibromochloromethane	124-48-1	3400	9800	16000	Not Detected U
Ethanol	64-17-5	3200	11000	14000	8900 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/14/19 03:28 PM
Lab ID:	1911080A-10A	Dilution Factor:	382
Date/Time Collected:	10/31/19 10:53 AM	Instrument/Filename:	msd14.i / 14111414
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	28000	Not Detected
Ethyl Benzene	100-41-4	1600	5000	8300	170000
Freon 11	75-69-4	1600	6400	11000	Not Detected U
Freon 113	76-13-1	2600	8800	15000	Not Detected U
Freon 12	75-71-8	2100	5700	9400	Not Detected U
Heptane	142-82-5	2600	4700	7800	6700000
Hexane	110-54-3	1600	4000	6700	14000000 J
m,p-Xylene	108-38-3	1600	5000	8300	410000
Methylene Chloride	75-09-2	4100	20000	26000	Not Detected U
Naphthalene	91-20-3	3100	4000	40000	Not Detected U
o-Xylene	95-47-6	2200	5000	8300	100000
Propylene	115-07-1	2200	9900	13000	32000
Styrene	100-42-5	1500	4900	8100	Not Detected U
Tetrachloroethene	127-18-4	4600	7800	13000	Not Detected U
Tetrahydrofuran	109-99-9	2000	3400	5600	Not Detected U
Toluene	108-88-3	1300	4300	7200	4200000
Total Xylene	1330-20-7	NA	D	8300	510000
Trichloroethene	79-01-6	3000	6200	10000	Not Detected U
Vinyl Chloride	75-01-4	1700	2900	4900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/14/19 03:28 PM
Lab ID:	1911080A-10A	Dilution Factor:	382
Date/Time Collected:	10/31/19 10:53 AM	Instrument/Filename:	msd14.i / 14111414
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	133
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	11/12/19 06:04 PM
Lab ID:	1911080A-11A	Dilution Factor:	18.3
Date/Time Collected:	10/31/19 11:11 AM	Instrument/File Name:	msd14.i / 14111219
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	100	220	370	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1100	2000	2700	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	85	270	450	73000
1,2-Dibromoethane (EDB)	106-93-4	120	420	700	800
1,2-Dichlorobenzene	95-50-1	130	330	550	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	75	270	450	26000
1,3-Butadiene	106-99-0	64	120	200	Not Detected U
1,4-Dioxane	123-91-1	360	990	1300	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	260	810	1100	3900
2-Hexanone	591-78-6	560	1100	1500	Not Detected U
2-Propanol	67-63-0	110	670	900	9400
4-Methyl-2-pentanone	108-10-1	180	220	370	1200
Acetone	67-64-1	130	650	870	150000
Benzene	71-43-2	41	180	290	57000
Bromodichloromethane	75-27-4	61	370	610	Not Detected U
Bromoform	75-25-2	130	570	940	Not Detected U
Carbon Disulfide	75-15-0	170	850	1100	190 J
Carbon Tetrachloride	56-23-5	140	340	580	Not Detected U
Chloroethane	75-00-3	280	720	960	Not Detected U
Chloroform	67-66-3	77	270	450	Not Detected U
Chloromethane	74-87-3	160	570	760	Not Detected U
Cyclohexane	110-82-7	70	190	310	200000
Dibromochloromethane	124-48-1	160	470	780	Not Detected U
Ethanol	64-17-5	150	520	690	1600

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	11/12/19 06:04 PM
Lab ID:	1911080A-11A	Dilution Factor:	18.3
Date/Time Collected:	10/31/19 11:11 AM	Instrument/Filename:	msd14.i / 14111219
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	1300	Not Detected
Ethyl Benzene	100-41-4	79	240	400	66000
Freon 11	75-69-4	76	310	510	Not Detected U
Freon 113	76-13-1	120	420	700	Not Detected U
Freon 12	75-71-8	100	270	450	Not Detected U
Heptane	142-82-5	130	220	370	360000
Hexane	110-54-3	79	190	320	100000
m,p-Xylene	108-38-3	75	240	400	210000
Methylene Chloride	75-09-2	200	950	1300	Not Detected U
Naphthalene	91-20-3	150	190	1900	Not Detected U
o-Xylene	95-47-6	110	240	400	82000
Propylene	115-07-1	110	470	630	Not Detected U
Styrene	100-42-5	74	230	390	Not Detected U
Tetrachloroethene	127-18-4	220	370	620	Not Detected U
Tetrahydrofuran	109-99-9	96	160	270	Not Detected U
Toluene	108-88-3	62	210	340	380000
Total Xylene	1330-20-7	NA	D	400	290000
Trichloroethene	79-01-6	140	300	490	Not Detected U
Vinyl Chloride	75-01-4	81	140	230	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	11/12/19 06:04 PM
Lab ID:	1911080A-11A	Dilution Factor:	18.3
Date/Time Collected:	10/31/19 11:11 AM	Instrument/Filename:	msd14.i / 14111219
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	134 Q
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/14/19 03:49 PM
Lab ID:	1911080A-12A	Dilution Factor:	380
Date/Time Collected:	10/31/19 11:25 AM	Instrument/Filename:	msd14.i / 14111415
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2100	4600	7700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	23000	42000	56000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	5600	9300	27000
1,2-Dibromoethane (EDB)	106-93-4	2600	8800	15000	5600 J
1,2-Dichlorobenzene	95-50-1	2800	6800	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	5600	9300	12000
1,3-Butadiene	106-99-0	1300	2500	4200	Not Detected U
1,4-Dioxane	123-91-1	7500	20000	27000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	5400	17000	22000	240000
2-Hexanone	591-78-6	12000	23000	31000	Not Detected U
2-Propanol	67-63-0	2400	14000	19000	52000
4-Methyl-2-pentanone	108-10-1	3800	4700	7800	Not Detected U
Acetone	67-64-1	2600	14000	18000	5900000
Benzene	71-43-2	850	3600	6100	2200000
Bromodichloromethane	75-27-4	1300	7600	13000	Not Detected U
Bromoform	75-25-2	2700	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	3600	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	2800	7200	12000	Not Detected U
Chloroethane	75-00-3	5800	15000	20000	Not Detected U
Chloroform	67-66-3	1600	5600	9300	Not Detected U
Chloromethane	74-87-3	3300	12000	16000	Not Detected U
Cyclohexane	110-82-7	1400	3900	6500	6600000
Dibromochloromethane	124-48-1	3300	9700	16000	Not Detected U
Ethanol	64-17-5	3100	11000	14000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/14/19 03:49 PM
Lab ID:	1911080A-12A	Dilution Factor:	380
Date/Time Collected:	10/31/19 11:25 AM	Instrument/Filename:	msd14.i / 14111415
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	27000	Not Detected
Ethyl Benzene	100-41-4	1600	4900	8200	190000
Freon 11	75-69-4	1600	6400	11000	Not Detected U
Freon 113	76-13-1	2600	8700	14000	Not Detected U
Freon 12	75-71-8	2100	5600	9400	Not Detected U
Heptane	142-82-5	2600	4700	7800	5700000
Hexane	110-54-3	1600	4000	6700	10000000
m,p-Xylene	108-38-3	1600	5000	8200	390000
Methylene Chloride	75-09-2	4100	20000	26000	Not Detected U
Naphthalene	91-20-3	3100	4000	40000	Not Detected U
o-Xylene	95-47-6	2200	5000	8200	96000
Propylene	115-07-1	2200	9800	13000	31000
Styrene	100-42-5	1500	4800	8100	Not Detected U
Tetrachloroethene	127-18-4	4500	7700	13000	Not Detected U
Tetrahydrofuran	109-99-9	2000	3400	5600	Not Detected U
Toluene	108-88-3	1300	4300	7200	3300000
Total Xylene	1330-20-7	NA	D	8200	490000
Trichloroethene	79-01-6	3000	6100	10000	Not Detected U
Vinyl Chloride	75-01-4	1700	2900	4800	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/14/19 03:49 PM
Lab ID:	1911080A-12A	Dilution Factor:	380
Date/Time Collected:	10/31/19 11:25 AM	Instrument/Filename:	msd14.i / 14111415
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	124
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/12/19 09:32 PM
Lab ID:	1911080A-13A	Dilution Factor:	137
Date/Time Collected:	10/31/19 11:35 AM	Instrument/Filename:	msd14.i / 14111224
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	770	1700	2800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	8200	15000	20000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	640	2000	3400	25000
1,2-Dibromoethane (EDB)	106-93-4	930	3200	5300	10000
1,2-Dichlorobenzene	95-50-1	1000	2500	4100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	560	2000	3400	10000
1,3-Butadiene	106-99-0	480	910	1500	Not Detected U
1,4-Dioxane	123-91-1	2700	7400	9900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2000	6100	8100	290000
2-Hexanone	591-78-6	4200	8400	11000	8600 J
2-Propanol	67-63-0	860	5000	6700	64000
4-Methyl-2-pentanone	108-10-1	1400	1700	2800	13000
Acetone	67-64-1	950	4900	6500	2400000
Benzene	71-43-2	310	1300	2200	760000
Bromodichloromethane	75-27-4	460	2800	4600	Not Detected U
Bromoform	75-25-2	980	4200	7100	Not Detected U
Carbon Disulfide	75-15-0	1300	6400	8500	Not Detected U
Carbon Tetrachloride	56-23-5	1000	2600	4300	Not Detected U
Chloroethane	75-00-3	2100	5400	7200	Not Detected U
Chloroform	67-66-3	580	2000	3300	Not Detected U
Chloromethane	74-87-3	1200	4200	5600	Not Detected U
Cyclohexane	110-82-7	520	1400	2400	2600000
Dibromochloromethane	124-48-1	1200	3500	5800	Not Detected U
Ethanol	64-17-5	1100	3900	5200	1600 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/12/19 09:32 PM
Lab ID:	1911080A-13A	Dilution Factor:	137
Date/Time Collected:	10/31/19 11:35 AM	Instrument/Filename:	msd14.i / 14111224
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	9900	Not Detected
Ethyl Benzene	100-41-4	590	1800	3000	140000
Freon 11	75-69-4	570	2300	3800	Not Detected U
Freon 113	76-13-1	930	3100	5200	Not Detected U
Freon 12	75-71-8	750	2000	3400	Not Detected U
Heptane	142-82-5	950	1700	2800	3500000
Hexane	110-54-3	590	1400	2400	2600000
m,p-Xylene	108-38-3	560	1800	3000	320000
Methylene Chloride	75-09-2	1500	7100	9500	Not Detected U
Naphthalene	91-20-3	1100	1400	14000	Not Detected U
o-Xylene	95-47-6	800	1800	3000	78000
Propylene	115-07-1	810	3500	4700	Not Detected U
Styrene	100-42-5	550	1800	2900	Not Detected U
Tetrachloroethene	127-18-4	1600	2800	4600	Not Detected U
Tetrahydrofuran	109-99-9	720	1200	2000	Not Detected U
Toluene	108-88-3	460	1500	2600	2900000
Total Xylene	1330-20-7	NA	D	3000	400000
Trichloroethene	79-01-6	1100	2200	3700	Not Detected U
Vinyl Chloride	75-01-4	600	1000	1800	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/12/19 09:32 PM
Lab ID:	1911080A-13A	Dilution Factor:	137
Date/Time Collected:	10/31/19 11:35 AM	Instrument/Filename:	msd14.i / 14111224
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	146 Q
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/14/19 04:10 PM
Lab ID:	1911080A-14A	Dilution Factor:	177
Date/Time Collected:	10/31/19 11:46 AM	Instrument/Filename:	msd14.i / 14111416
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1000	2100	3600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	11000	20000	26000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	830	2600	4400	40000
1,2-Dibromoethane (EDB)	106-93-4	1200	4100	6800	12000
1,2-Dichlorobenzene	95-50-1	1300	3200	5300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	720	2600	4400	16000
1,3-Butadiene	106-99-0	610	1200	2000	Not Detected U
1,4-Dioxane	123-91-1	3500	9600	13000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2500	7800	10000	570000 J
2-Hexanone	591-78-6	5400	11000	14000	10000 J
2-Propanol	67-63-0	1100	6500	8700	120000
4-Methyl-2-pentanone	108-10-1	1800	2200	3600	17000
Acetone	67-64-1	1200	6300	8400	4500000 J
Benzene	71-43-2	400	1700	2800	1200000
Bromodichloromethane	75-27-4	590	3600	5900	Not Detected U
Bromoform	75-25-2	1300	5500	9100	Not Detected U
Carbon Disulfide	75-15-0	1700	8300	11000	Not Detected U
Carbon Tetrachloride	56-23-5	1300	3300	5600	Not Detected U
Chloroethane	75-00-3	2700	7000	9300	Not Detected U
Chloroform	67-66-3	740	2600	4300	Not Detected U
Chloromethane	74-87-3	1500	5500	7300	Not Detected U
Cyclohexane	110-82-7	680	1800	3000	4200000
Dibromochloromethane	124-48-1	1600	4500	7500	Not Detected U
Ethanol	64-17-5	1500	5000	6700	6600 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/14/19 04:10 PM
Lab ID:	1911080A-14A	Dilution Factor:	177
Date/Time Collected:	10/31/19 11:46 AM	Instrument/Filename:	msd14.i / 14111416
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	13000	Not Detected
Ethyl Benzene	100-41-4	770	2300	3800	210000
Freon 11	75-69-4	740	3000	5000	Not Detected U
Freon 113	76-13-1	1200	4100	6800	Not Detected U
Freon 12	75-71-8	970	2600	4400	Not Detected U
Heptane	142-82-5	1200	2200	3600	6600000
Hexane	110-54-3	770	1900	3100	3500000
m,p-Xylene	108-38-3	720	2300	3800	480000
Methylene Chloride	75-09-2	1900	9200	12000	Not Detected U
Naphthalene	91-20-3	1400	1800	18000	Not Detected U
o-Xylene	95-47-6	1000	2300	3800	120000
Propylene	115-07-1	1000	4600	6100	Not Detected U
Styrene	100-42-5	720	2300	3800	Not Detected U
Tetrachloroethene	127-18-4	2100	3600	6000	Not Detected U
Tetrahydrofuran	109-99-9	920	1600	2600	Not Detected U
Toluene	108-88-3	600	2000	3300	4500000
Total Xylene	1330-20-7	NA	D	3800	600000
Trichloroethene	79-01-6	1400	2800	4800	Not Detected U
Vinyl Chloride	75-01-4	780	1400	2300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/14/19 04:10 PM
Lab ID:	1911080A-14A	Dilution Factor:	177
Date/Time Collected:	10/31/19 11:46 AM	Instrument/Filename:	msd14.i / 14111416
Media:	6 Liter Summa Canister (SIM Certified)		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	133
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/12/19 10:11 AM
Lab ID:	1911080A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111206a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/12/19 10:11 AM
Lab ID:	1911080A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14111206a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/12/19 10:11 AM
Lab ID:	1911080A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111206a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/14/19 11:29 AM
Lab ID:	1911080A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/14/19 11:29 AM
Lab ID:	1911080A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/14/19 11:29 AM
Lab ID:	1911080A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111406a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/12/19 08:24 AM
Lab ID:	1911080A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	101
1,2,4-Trichlorobenzene	120-82-1	85
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	103
1,4-Dioxane	123-91-1	104
2-Butanone (Methyl Ethyl Ketone)	78-93-3	97
2-Hexanone	591-78-6	98
2-Propanol	67-63-0	108
4-Methyl-2-pentanone	108-10-1	100
Acetone	67-64-1	104
Benzene	71-43-2	96
Bromodichloromethane	75-27-4	97
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	95
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	90
Chloroform	67-66-3	101
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/12/19 08:24 AM
Lab ID:	1911080A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	98
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	105
Freon 113	76-13-1	100
Freon 12	75-71-8	95
Heptane	142-82-5	95
Hexane	110-54-3	100
m,p-Xylene	108-38-3	95
Methylene Chloride	75-09-2	103
Naphthalene	91-20-3	80
o-Xylene	95-47-6	98
Propylene	115-07-1	96
Styrene	100-42-5	100
Tetrachloroethene	127-18-4	96
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	93
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/12/19 08:24 AM
Lab ID:	1911080A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111202a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 08:57 AM
Lab ID:	1911080A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	99
1,2,4-Trichlorobenzene	120-82-1	100
1,2,4-Trimethylbenzene	95-63-6	100
1,2-Dibromoethane (EDB)	106-93-4	100
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	107
1,3-Butadiene	106-99-0	113
1,4-Dioxane	123-91-1	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	96
2-Hexanone	591-78-6	100
2-Propanol	67-63-0	107
4-Methyl-2-pentanone	108-10-1	104
Acetone	67-64-1	106
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	95
Bromoform	75-25-2	104
Carbon Disulfide	75-15-0	96
Carbon Tetrachloride	56-23-5	106
Chloroethane	75-00-3	96
Chloroform	67-66-3	101
Chloromethane	74-87-3	103
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	99
Ethanol	64-17-5	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 08:57 AM
Lab ID:	1911080A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	102
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	109
Freon 113	76-13-1	105
Freon 12	75-71-8	97
Heptane	142-82-5	94
Hexane	110-54-3	103
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	101
o-Xylene	95-47-6	99
Propylene	115-07-1	97
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	98
Toluene	108-88-3	93
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 08:57 AM
Lab ID:	1911080A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/13/19 06:42 AM
Lab ID:	1911080A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111230
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	100
1,2,4-Trichlorobenzene	120-82-1	88
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	101
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	106
1,3-Butadiene	106-99-0	115
1,4-Dioxane	123-91-1	107
2-Butanone (Methyl Ethyl Ketone)	78-93-3	99
2-Hexanone	591-78-6	106
2-Propanol	67-63-0	112
4-Methyl-2-pentanone	108-10-1	106
Acetone	67-64-1	108
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	99
Bromoform	75-25-2	102
Carbon Disulfide	75-15-0	96
Carbon Tetrachloride	56-23-5	105
Chloroethane	75-00-3	96
Chloroform	67-66-3	102
Chloromethane	74-87-3	101
Cyclohexane	110-82-7	101
Dibromochloromethane	124-48-1	100
Ethanol	64-17-5	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/13/19 06:42 AM
Lab ID:	1911080A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111230
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	110
Freon 113	76-13-1	105
Freon 12	75-71-8	94
Heptane	142-82-5	101
Hexane	110-54-3	108
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	104
Naphthalene	91-20-3	84
o-Xylene	95-47-6	101
Propylene	115-07-1	99
Styrene	100-42-5	104
Tetrachloroethene	127-18-4	101
Tetrahydrofuran	109-99-9	98
Toluene	108-88-3	97
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/13/19 06:42 AM
Lab ID:	1911080A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111230
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 11:23 PM
Lab ID:	1911080A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111435
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	99
1,2,4-Trimethylbenzene	95-63-6	102
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	100
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	112
1,4-Dioxane	123-91-1	102
2-Butanone (Methyl Ethyl Ketone)	78-93-3	101
2-Hexanone	591-78-6	101
2-Propanol	67-63-0	111
4-Methyl-2-pentanone	108-10-1	106
Acetone	67-64-1	118
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	97
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	98
Chloroform	67-66-3	95
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	97
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 11:23 PM
Lab ID:	1911080A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111435
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	103
Freon 113	76-13-1	103
Freon 12	75-71-8	89
Heptane	142-82-5	95
Hexane	110-54-3	105
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	89
o-Xylene	95-47-6	98
Propylene	115-07-1	98
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	98
Tetrahydrofuran	109-99-9	95
Toluene	108-88-3	96
Total Xylene	1330-20-7	97
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 11:23 PM
Lab ID:	1911080A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111435
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/12/19 08:52 AM
Lab ID:	1911080A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	108
1,2,4-Trichlorobenzene	120-82-1	78
1,2,4-Trimethylbenzene	95-63-6	101
1,2-Dibromoethane (EDB)	106-93-4	106
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	105
1,3-Butadiene	106-99-0	108
1,4-Dioxane	123-91-1	118
2-Butanone (Methyl Ethyl Ketone)	78-93-3	110
2-Hexanone	591-78-6	115
2-Propanol	67-63-0	118
4-Methyl-2-pentanone	108-10-1	125
Acetone	67-64-1	119
Benzene	71-43-2	107
Bromodichloromethane	75-27-4	108
Bromoform	75-25-2	108
Carbon Disulfide	75-15-0	106
Carbon Tetrachloride	56-23-5	112
Chloroethane	75-00-3	105
Chloroform	67-66-3	108
Chloromethane	74-87-3	109
Cyclohexane	110-82-7	108
Dibromochloromethane	124-48-1	107
Ethanol	64-17-5	114

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/12/19 08:52 AM
Lab ID:	1911080A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	106
Freon 11	75-69-4	115
Freon 113	76-13-1	107
Freon 12	75-71-8	102
Heptane	142-82-5	107
Hexane	110-54-3	114
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	112
Naphthalene	91-20-3	82
o-Xylene	95-47-6	102
Propylene	115-07-1	102
Styrene	100-42-5	108
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	105
Toluene	108-88-3	102
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	109

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/12/19 08:52 AM
Lab ID:	1911080A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111203a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/12/19 09:20 AM
Lab ID:	1911080A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	95
1,2,4-Trimethylbenzene	95-63-6	103
1,2-Dibromoethane (EDB)	106-93-4	104
1,2-Dichlorobenzene	95-50-1	104
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	105
1,4-Dioxane	123-91-1	118
2-Butanone (Methyl Ethyl Ketone)	78-93-3	109
2-Hexanone	591-78-6	115
2-Propanol	67-63-0	115
4-Methyl-2-pentanone	108-10-1	122
Acetone	67-64-1	113
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	105
Bromoform	75-25-2	107
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	109
Chloroethane	75-00-3	98
Chloroform	67-66-3	105
Chloromethane	74-87-3	101
Cyclohexane	110-82-7	107
Dibromochloromethane	124-48-1	106
Ethanol	64-17-5	115

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/12/19 09:20 AM
Lab ID:	1911080A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	111
Freon 113	76-13-1	106
Freon 12	75-71-8	99
Heptane	142-82-5	106
Hexane	110-54-3	111
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	106
Naphthalene	91-20-3	95
o-Xylene	95-47-6	102
Propylene	115-07-1	100
Styrene	100-42-5	106
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	104
Toluene	108-88-3	101
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	105

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	103

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/12/19 09:20 AM
Lab ID:	1911080A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111204a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/14/19 09:36 AM
Lab ID:	1911080A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	74
1,2,4-Trimethylbenzene	95-63-6	101
1,2-Dibromoethane (EDB)	106-93-4	107
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	107
1,3-Butadiene	106-99-0	117
1,4-Dioxane	123-91-1	117
2-Butanone (Methyl Ethyl Ketone)	78-93-3	106
2-Hexanone	591-78-6	112
2-Propanol	67-63-0	119
4-Methyl-2-pentanone	108-10-1	122
Acetone	67-64-1	116
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	106
Bromoform	75-25-2	107
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	110
Chloroethane	75-00-3	100
Chloroform	67-66-3	107
Chloromethane	74-87-3	111
Cyclohexane	110-82-7	106
Dibromochloromethane	124-48-1	107
Ethanol	64-17-5	114

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/14/19 09:36 AM
Lab ID:	1911080A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	104
Freon 11	75-69-4	115
Freon 113	76-13-1	108
Freon 12	75-71-8	102
Heptane	142-82-5	106
Hexane	110-54-3	112
m,p-Xylene	108-38-3	103
Methylene Chloride	75-09-2	106
Naphthalene	91-20-3	80
o-Xylene	95-47-6	102
Propylene	115-07-1	102
Styrene	100-42-5	108
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	106
Toluene	108-88-3	102
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	107
Vinyl Chloride	75-01-4	113

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/14/19 09:36 AM
Lab ID:	1911080A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/14/19 10:01 AM
Lab ID:	1911080A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	84
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	106
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	116
1,4-Dioxane	123-91-1	117
2-Butanone (Methyl Ethyl Ketone)	78-93-3	108
2-Hexanone	591-78-6	115
2-Propanol	67-63-0	118
4-Methyl-2-pentanone	108-10-1	123
Acetone	67-64-1	116
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	106
Bromoform	75-25-2	111
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	108
Chloroethane	75-00-3	103
Chloroform	67-66-3	104
Chloromethane	74-87-3	109
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	108
Ethanol	64-17-5	111

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/14/19 10:01 AM
Lab ID:	1911080A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	104
Freon 11	75-69-4	114
Freon 113	76-13-1	109
Freon 12	75-71-8	100
Heptane	142-82-5	105
Hexane	110-54-3	110
m,p-Xylene	108-38-3	105
Methylene Chloride	75-09-2	107
Naphthalene	91-20-3	90
o-Xylene	95-47-6	106
Propylene	115-07-1	99
Styrene	100-42-5	108
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	106
Toluene	108-88-3	99
Total Xylene	1330-20-7	106
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	113

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/14/19 10:01 AM
Lab ID:	1911080A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	103
Toluene-d8	2037-26-5	86-115	99

* % Recovery is calculated using unrounded analytical results.



11/18/2019
Ms. Pamela Moss
EA Engineering
7995 E. Prentice Ave
Suite 206E
Greenwood Village CO 80111

Project Name: KAFB Bioventing
Project #:
Workorder #: 1911080B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 11/5/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

A handwritten signature in black ink that reads "Brian Whittaker".

Brian Whittaker
Project Manager

WORK ORDER #: 1911080B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	11/05/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/18/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106VI 102.1	Modified TO-3	11 "Hg	5.3 psi
02A	KAFB-106VI 112.6	Modified TO-3	8 "Hg	5.1 psi
02AA	KAFB-106VI 112.6 Lab Duplicate	Modified TO-3	8 "Hg	5.1 psi
03A	KAFB-106VI 159.6	Modified TO-3	8 "Hg	5.2 psi
04A	KAFB-106VI 159.6 DUP	Modified TO-3	7.8 "Hg	5.2 psi
05A	KAFB-106VI 217.1	Modified TO-3	11.4 "Hg	5.1 psi
06A	KAFB-106VI 252.1	Modified TO-3	9.2 "Hg	5.1 psi
07A	KAFB-106VI 262.6	Modified TO-3	18.2 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified TO-3	9.2 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified TO-3	8.6 "Hg	5.2 psi
10A	KAFB-106V2 117.1 DUP	Modified TO-3	8.8 "Hg	5.2 psi
11A	KAFB-106V2 159.9	Modified TO-3	8.2 "Hg	4.9 psi
12A	KAFB-106V2 217.1	Modified TO-3	9 "Hg	4.9 psi
13A	KAFB-106V2 252.2	Modified TO-3	15.3 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified TO-3	7.1 "Hg	5.1 psi
15A	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/18/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 1911080B

Fourteen 6 Liter Summa Canister (SIM Certified) samples were received on November 05, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m3. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

Samples KAFB-106VI 262.6 and KAFB-106V2 252.2 were received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

TPH (Gasoline Range) was manually integrated in samples KAFB-106VI 159.6, KAFB-106VI 159.6 DUP and KAFB-106VI 252.1.

Fluorobenzene (FID) was manually integrated in sample KAFB-106VI 252.1.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106VI 102.1	Date/Time Analyzed:	11/11/19 07:33 PM
Lab ID:	1911080B-01A	Dilution Factor:	2150
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	gcd.i / d111206
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	180000	220000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	136

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106VI 112.6	Date/Time Analyzed:	11/11/19 08:05 PM
Lab ID:	1911080B-02A	Dilution Factor:	2440
Date/Time Collected:	10/31/19 08:39 AM	Instrument/Filename:	gcd.i / d111207
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	140000	200000	250000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106VI 112.6 Lab Duplicate	Date/Time Analyzed:	11/11/19 10:48 PM
Lab ID:	1911080B-02AA	Dilution Factor:	2440
Date/Time Collected:	10/31/19 08:39 AM	Instrument/Filename:	gcd.i / d111212
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	140000	200000	250000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106VI 159.6	Date/Time Analyzed:	11/11/19 08:38 PM
Lab ID:	1911080B-03A	Dilution Factor:	1840
Date/Time Collected:	10/31/19 08:57 AM	Instrument/Filename:	gcd.i / d111208
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	150000	190000	70000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	131

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106VI 159.6 DUP	Date/Time Analyzed:	11/11/19 09:10 PM
Lab ID:	1911080B-04A	Dilution Factor:	1820
Date/Time Collected:	10/31/19 09:06 AM	Instrument/Filename:	gcd.i / d111209
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	150000	190000	76000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	131

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106VI 217.1	Date/Time Analyzed:	11/12/19 06:59 AM
Lab ID:	1911080B-05A	Dilution Factor:	291
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	gcd.i / d111213
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	17000	24000	30000	20000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	131

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106VI 252.1	Date/Time Analyzed:	11/11/19 09:43 PM
Lab ID:	1911080B-06A	Dilution Factor:	2420
Date/Time Collected:	10/31/19 09:45 AM	Instrument/Filename:	gcd.i / d111210
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	140000	200000	250000	96000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	136

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106VI 262.6	Date/Time Analyzed:	11/11/19 10:15 PM
Lab ID:	1911080B-07A	Dilution Factor:	2720
Date/Time Collected:	10/31/19 10:00 AM	Instrument/Filename:	gcd.i / d111211
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	160000	220000	280000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/12/19 07:41 AM
Lab ID:	1911080B-08A	Dilution Factor:	3090
Date/Time Collected:	10/31/19 10:30 AM	Instrument/Filename:	gcd.i / d111214
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	180000	250000	320000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	143

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/12/19 08:16 AM
Lab ID:	1911080B-09A	Dilution Factor:	3800
Date/Time Collected:	10/31/19 10:45 AM	Instrument/Filename:	gcd.i / d111215
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	220000	310000	390000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/12/19 08:53 AM
Lab ID:	1911080B-10A	Dilution Factor:	3820
Date/Time Collected:	10/31/19 10:53 AM	Instrument/Filename:	gcd.i / d111216
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	220000	310000	390000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	134

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	11/12/19 09:26 AM
Lab ID:	1911080B-11A	Dilution Factor:	366
Date/Time Collected:	10/31/19 11:11 AM	Instrument/Filename:	gcd.i / d111217
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	21000	30000	37000	22000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	127

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/12/19 10:03 AM
Lab ID:	1911080B-12A	Dilution Factor:	3040
Date/Time Collected:	10/31/19 11:25 AM	Instrument/Filename:	gcd.i / d111218
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	180000	250000	310000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	132

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/12/19 10:37 AM
Lab ID:	1911080B-13A	Dilution Factor:	1830
Date/Time Collected:	10/31/19 11:35 AM	Instrument/Filename:	gcd.i / d111219
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	150000	190000	74000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/12/19 11:36 AM
Lab ID:	1911080B-14A	Dilution Factor:	2210
Date/Time Collected:	10/31/19 11:46 AM	Instrument/Filename:	gcd.i / d111220
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	220000	86000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	142

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/11/19 06:52 PM
Lab ID:	1911080B-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d111205
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	105

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/11/19 04:35 PM
Lab ID:	1911080B-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d111202
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		109

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	128

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/11/19 05:12 PM
Lab ID:	1911080B-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d111203
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		109

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	128

* % Recovery is calculated using unrounded analytical results.

11/18/2019

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 1911080C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 11/5/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1911080C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	11/05/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/18/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106VI 102.1	Modified ASTM D-1945	11 "Hg	5.3 psi
01AA	KAFB-106VI 102.1 Lab Duplicate	Modified ASTM D-1945	11 "Hg	5.3 psi
02A	KAFB-106VI 112.6	Modified ASTM D-1945	8 "Hg	5.1 psi
03A	KAFB-106VI 159.6	Modified ASTM D-1945	8 "Hg	5.2 psi
04A	KAFB-106VI 159.6 DUP	Modified ASTM D-1945	7.8 "Hg	5.2 psi
05A	KAFB-106VI 217.1	Modified ASTM D-1945	11.4 "Hg	5.1 psi
06A	KAFB-106VI 252.1	Modified ASTM D-1945	9.2 "Hg	5.1 psi
07A	KAFB-106VI 262.6	Modified ASTM D-1945	18.2 "Hg	5 psi
08A	KAFB-106V2 102.2	Modified ASTM D-1945	9.2 "Hg	5 psi
09A	KAFB-106V2 117.1	Modified ASTM D-1945	8.6 "Hg	5.2 psi
10A	KAFB-106V2 117.1 DUP	Modified ASTM D-1945	8.8 "Hg	5.2 psi
11A	KAFB-106V2 159.9	Modified ASTM D-1945	8.2 "Hg	4.9 psi
12A	KAFB-106V2 217.1	Modified ASTM D-1945	9 "Hg	4.9 psi
13A	KAFB-106V2 252.2	Modified ASTM D-1945	15.3 "Hg	5 psi
14A	KAFB-106V2 269.5	Modified ASTM D-1945	7.1 "Hg	5.1 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 11/18/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 1911080C

Fourteen 6 Liter Summa Canister (SIM Certified) samples were received on November 05, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

Samples KAFB-106VI 262.6 and KAFB-106V2 252.2 were received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Methane was manually integrated in samples KAFB-106VI 102.1, KAFB-106VI 102.1 Lab Duplicate, KAFB-106VI 112.6, KAFB-106VI 159.6, KAFB-106VI 159.6 DUP, KAFB-106VI 252.1, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP, KAFB-106V2 159.9, KAFB-106V2 217.1, KAFB-106V2 252.2 and KAFB-106V2 269.5.

Ethane was manually integrated in samples KAFB-106VI 112.6, KAFB-106V2 102.2, KAFB-106V2 117.1 and KAFB-106V2 217.1.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106VI 102.1	Date/Time Analyzed:	11/13/19 08:27 AM
Lab ID:	1911080C-01A	Dilution Factor:	2.15
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	gc10.i / 10111319
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0035
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	2.4
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.00054 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0019
Nitrogen	7727-37-9	0.14	0.14	0.22	78
Oxygen	7782-44-7	0.040	0.040	0.22	18
Pentane	109-66-0	0.000054	0.00024	0.0022	0.099
Propane	74-98-6	0.000064	0.00024	0.0022	0.00050 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 68

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106VI 102.1 Lab Duplicate	Date/Time Analyzed:	11/13/19 09:39 AM
Lab ID:	1911080C-01AA	Dilution Factor:	2.15
Date/Time Collected:	10/31/19 08:24 AM	Instrument/Filename:	gc10.i / 10111322
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0035
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	2.4
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.00049 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0019
Nitrogen	7727-37-9	0.14	0.14	0.22	78
Oxygen	7782-44-7	0.040	0.040	0.22	18
Pentane	109-66-0	0.000054	0.00024	0.0022	0.096
Propane	74-98-6	0.000064	0.00024	0.0022	0.00048 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 63

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106VI 112.6	Date/Time Analyzed:	11/13/19 10:45 AM
Lab ID:	1911080C-02A	Dilution Factor:	1.83
Date/Time Collected:	10/31/19 08:39 AM	Instrument/Filename:	gc10.i / 10111324
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000026	0.00020	0.0018	0.0048
Carbon Dioxide	124-38-9	0.0020	0.0088	0.018	3.5
Carbon Monoxide	630-08-0	0.0024	0.0088	0.018	Not Detected U
Ethane	74-84-0	0.000046	0.00020	0.0018	0.00068 J
Hydrogen	1333-74-0	0.0028	0.011	0.018	Not Detected U
Methane	74-82-8	0.000049	0.000092	0.00018	0.0022
Nitrogen	7727-37-9	0.12	0.12	0.18	77
Oxygen	7782-44-7	0.034	0.034	0.18	18
Pentane	109-66-0	0.000046	0.00020	0.0018	0.14
Propane	74-98-6	0.000055	0.00020	0.0018	0.00053 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 75

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106VI 159.6	Date/Time Analyzed:	11/13/19 11:15 AM
Lab ID:	1911080C-03A	Dilution Factor:	1.84
Date/Time Collected:	10/31/19 08:57 AM	Instrument/Filename:	gc10.i / 10111325
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000026	0.00020	0.0018	0.00054 J
Carbon Dioxide	124-38-9	0.0020	0.0088	0.018	0.48
Carbon Monoxide	630-08-0	0.0024	0.0088	0.018	Not Detected U
Ethane	74-84-0	0.000046	0.00020	0.0018	Not Detected U
Hydrogen	1333-74-0	0.0028	0.011	0.018	Not Detected U
Methane	74-82-8	0.000050	0.000092	0.00018	0.00014 J
Nitrogen	7727-37-9	0.12	0.12	0.18	78
Oxygen	7782-44-7	0.034	0.034	0.18	20
Pentane	109-66-0	0.000046	0.00020	0.0018	0.11
Propane	74-98-6	0.000055	0.00020	0.0018	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 54

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106VI 159.6 DUP	Date/Time Analyzed:	11/13/19 12:20 PM
Lab ID:	1911080C-04A	Dilution Factor:	1.82
Date/Time Collected:	10/31/19 09:06 AM	Instrument/File Name:	gc10.i / 10111327
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000025	0.00020	0.0018	0.00056 J
Carbon Dioxide	124-38-9	0.0020	0.0087	0.018	0.48
Carbon Monoxide	630-08-0	0.0024	0.0087	0.018	Not Detected U
Ethane	74-84-0	0.000046	0.00020	0.0018	Not Detected U
Hydrogen	1333-74-0	0.0027	0.011	0.018	Not Detected U
Methane	74-82-8	0.000049	0.000091	0.00018	0.00015 J
Nitrogen	7727-37-9	0.12	0.12	0.18	78
Oxygen	7782-44-7	0.034	0.034	0.18	20
Pentane	109-66-0	0.000046	0.00020	0.0018	0.10
Propane	74-98-6	0.000055	0.00020	0.0018	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 50

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106VI 217.1	Date/Time Analyzed:	11/12/19 09:07 PM
Lab ID:	1911080C-05A	Dilution Factor:	2.18
Date/Time Collected:	10/31/19 09:26 AM	Instrument/Filename:	gc10.i / 10111310
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.000083 J
Carbon Dioxide	124-38-9	0.0024	0.010	0.022	0.37
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0033	0.014	0.022	Not Detected U
Methane	74-82-8	0.000059	0.00011	0.00022	0.00021 J
Nitrogen	7727-37-9	0.15	0.15	0.22	79
Oxygen	7782-44-7	0.040	0.040	0.22	20
Pentane	109-66-0	0.000054	0.00024	0.0022	0.0053
Propane	74-98-6	0.000065	0.00024	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 8.4

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106VI 252.1	Date/Time Analyzed:	11/13/19 12:42 PM
Lab ID:	1911080C-06A	Dilution Factor:	1.94
Date/Time Collected:	10/31/19 09:45 AM	Instrument/Filename:	gc10.i / 10111328
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.00017 J
Carbon Dioxide	124-38-9	0.0021	0.0093	0.019	0.20
Carbon Monoxide	630-08-0	0.0026	0.0093	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000097	0.00019	0.00018 J
Nitrogen	7727-37-9	0.13	0.13	0.19	79
Oxygen	7782-44-7	0.036	0.036	0.19	20
Pentane	109-66-0	0.000048	0.00021	0.0019	0.044
Propane	74-98-6	0.000058	0.00021	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 50

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106VI 262.6	Date/Time Analyzed:	11/12/19 10:45 PM
Lab ID:	1911080C-07A	Dilution Factor:	3.40
Date/Time Collected:	10/31/19 10:00 AM	Instrument/Filename:	gc10.i / 10111314
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000048	0.00037	0.0034	0.00064 J
Carbon Dioxide	124-38-9	0.0037	0.016	0.034	0.24
Carbon Monoxide	630-08-0	0.0045	0.016	0.034	Not Detected U
Ethane	74-84-0	0.000085	0.00037	0.0034	Not Detected U
Hydrogen	1333-74-0	0.0051	0.021	0.034	Not Detected U
Methane	74-82-8	0.000092	0.00017	0.00034	Not Detected U
Nitrogen	7727-37-9	0.23	0.23	0.34	78
Oxygen	7782-44-7	0.063	0.063	0.34	20
Pentane	109-66-0	0.000085	0.00037	0.0034	0.052
Propane	74-98-6	0.00010	0.00037	0.0034	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 55

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 102.2	Date/Time Analyzed:	11/13/19 01:50 PM
Lab ID:	1911080C-08A	Dilution Factor:	1.93
Date/Time Collected:	10/31/19 10:30 AM	Instrument/Filename:	gc10.i / 10111330
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0034
Carbon Dioxide	124-38-9	0.0021	0.0093	0.019	4.0
Carbon Monoxide	630-08-0	0.0026	0.0093	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.00074 J
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000096	0.00019	0.0039
Nitrogen	7727-37-9	0.13	0.13	0.19	77
Oxygen	7782-44-7	0.036	0.036	0.19	17
Pentane	109-66-0	0.000048	0.00021	0.0019	0.083
Propane	74-98-6	0.000058	0.00021	0.0019	0.00085 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 77

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 117.1	Date/Time Analyzed:	11/13/19 02:12 PM
Lab ID:	1911080C-09A	Dilution Factor:	1.90
Date/Time Collected:	10/31/19 10:45 AM	Instrument/Filename:	gc10.i / 10111331
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0045
Carbon Dioxide	124-38-9	0.0020	0.0091	0.019	5.4
Carbon Monoxide	630-08-0	0.0025	0.0091	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.00099 J
Hydrogen	1333-74-0	0.0028	0.012	0.019	Not Detected U
Methane	74-82-8	0.000051	0.000095	0.00019	0.0052
Nitrogen	7727-37-9	0.13	0.13	0.19	77
Oxygen	7782-44-7	0.035	0.035	0.19	15
Pentane	109-66-0	0.000048	0.00021	0.0019	0.14
Propane	74-98-6	0.000057	0.00021	0.0019	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 99

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117.1 DUP	Date/Time Analyzed:	11/13/19 02:55 PM
Lab ID:	1911080C-10A	Dilution Factor:	1.91
Date/Time Collected:	10/31/19 10:53 AM	Instrument/Filename:	gc10.i / 10111333
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0046
Carbon Dioxide	124-38-9	0.0021	0.0092	0.019	5.3
Carbon Monoxide	630-08-0	0.0025	0.0092	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.0010 J
Hydrogen	1333-74-0	0.0029	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000096	0.00019	0.0052
Nitrogen	7727-37-9	0.13	0.13	0.19	78
Oxygen	7782-44-7	0.035	0.035	0.19	15
Pentane	109-66-0	0.000048	0.00021	0.0019	0.14
Propane	74-98-6	0.000057	0.00021	0.0019	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 94

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 159.9	Date/Time Analyzed:	11/12/19 09:32 PM
Lab ID:	1911080C-11A	Dilution Factor:	1.83
Date/Time Collected:	10/31/19 11:11 AM	Instrument/Filename:	gc10.i / 10111311
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000026	0.00020	0.0018	Not Detected U
Carbon Dioxide	124-38-9	0.0020	0.0088	0.018	0.17
Carbon Monoxide	630-08-0	0.0024	0.0088	0.018	Not Detected U
Ethane	74-84-0	0.000046	0.00020	0.0018	Not Detected U
Hydrogen	1333-74-0	0.0028	0.011	0.018	Not Detected U
Methane	74-82-8	0.000049	0.000092	0.00018	0.00013 J
Nitrogen	7727-37-9	0.12	0.12	0.18	80
Oxygen	7782-44-7	0.034	0.034	0.18	20
Pentane	109-66-0	0.000046	0.00020	0.0018	0.00040 J
Propane	74-98-6	0.000055	0.00020	0.0018	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 7.1

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 217.1	Date/Time Analyzed:	11/13/19 03:17 PM
Lab ID:	1911080C-12A	Dilution Factor:	1.90
Date/Time Collected:	10/31/19 11:25 AM	Instrument/Filename:	gc10.i / 10111334
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000027	0.00021	0.0019	0.0017 J
Carbon Dioxide	124-38-9	0.0020	0.0091	0.019	3.8
Carbon Monoxide	630-08-0	0.0025	0.0091	0.019	Not Detected U
Ethane	74-84-0	0.000048	0.00021	0.0019	0.00037 J
Hydrogen	1333-74-0	0.0028	0.012	0.019	Not Detected U
Methane	74-82-8	0.000051	0.000095	0.00019	0.00070
Nitrogen	7727-37-9	0.13	0.13	0.19	78
Oxygen	7782-44-7	0.035	0.035	0.19	16
Pentane	109-66-0	0.000048	0.00021	0.0019	0.063
Propane	74-98-6	0.000057	0.00021	0.0019	0.00070 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 80

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 252.2	Date/Time Analyzed:	11/13/19 07:19 AM
Lab ID:	1911080C-13A	Dilution Factor:	2.74
Date/Time Collected:	10/31/19 11:35 AM	Instrument/Filename:	gc10.i / 10111316
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00030	0.0027	Not Detected U
Carbon Dioxide	124-38-9	0.0030	0.013	0.027	0.099
Carbon Monoxide	630-08-0	0.0036	0.013	0.027	Not Detected U
Ethane	74-84-0	0.000068	0.00030	0.0027	Not Detected U
Hydrogen	1333-74-0	0.0041	0.017	0.027	Not Detected U
Methane	74-82-8	0.000074	0.00014	0.00027	0.000098 J
Nitrogen	7727-37-9	0.18	0.18	0.27	79
Oxygen	7782-44-7	0.051	0.051	0.27	20
Pentane	109-66-0	0.000068	0.00030	0.0027	0.012
Propane	74-98-6	0.000082	0.00030	0.0027	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 43

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 269.5	Date/Time Analyzed:	11/13/19 03:39 PM
Lab ID:	1911080C-14A	Dilution Factor:	1.77
Date/Time Collected:	10/31/19 11:46 AM	Instrument/Filename:	gc10.i / 10111335
Media:	6 Liter Summa Canister (SIM Certified)		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000025	0.00019	0.0018	0.000026 J
Carbon Dioxide	124-38-9	0.0019	0.0085	0.018	0.19
Carbon Monoxide	630-08-0	0.0023	0.0085	0.018	Not Detected U
Ethane	74-84-0	0.000044	0.00019	0.0018	Not Detected U
Hydrogen	1333-74-0	0.0027	0.011	0.018	Not Detected U
Methane	74-82-8	0.000048	0.000088	0.00018	0.00012 J
Nitrogen	7727-37-9	0.12	0.12	0.18	79
Oxygen	7782-44-7	0.033	0.033	0.18	20
Pentane	109-66-0	0.000044	0.00019	0.0018	0.0051
Propane	74-98-6	0.000053	0.00019	0.0018	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 57

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/12/19 08:36 PM
Lab ID:	1911080C-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10111309
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/12/19 07:32 PM
Lab ID:	1911080C-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10111307c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/12/19 05:20 PM
Lab ID:	1911080C-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10111302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	101
Carbon Dioxide	124-38-9	97
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	103
Methane	74-82-8	103
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	102
Pentane	109-66-0	102
Propane	74-98-6	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/12/19 05:43 PM
Lab ID:	1911080C-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10111303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	101
Carbon Dioxide	124-38-9	97
Carbon Monoxide	630-08-0	90
Ethane	74-84-0	103
Methane	74-82-8	103
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	102
Pentane	109-66-0	102
Propane	74-98-6	103

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/12/19 06:42 PM
Lab ID:	1911080C-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10111305c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/12/19 07:08 PM
Lab ID:	1911080C-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10111306c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.



Air Toxics

12/6/2019
Ms. Pamela Moss
EA Engineering
7995 E. Prentice Ave
Suite 206E
Greenwood Village CO 80111

Project Name: KAFB Bioventing
Project #: 6275DM02
Workorder #: 1911173AR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 11/8/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

A handwritten signature in black ink that reads "Brian Whittaker". The signature is written in a cursive, flowing style.

Brian Whittaker
Project Manager

WORK ORDER #: 1911173AR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	6275DM02 KAFB Bioventing
DATE RECEIVED:	11/08/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/21/2019		
DATE REISSUED:	11/25/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102	Modified TO-15 (5&20 ppbv	10 "Hg	5.1 psi
02A	KAFB-106V1 113	Modified TO-15 (5&20 ppbv	11.4 "Hg	4.9 psi
03A	KAFB-106V1 160	Modified TO-15 (5&20 ppbv	8.4 "Hg	5.3 psi
04A	KAFB-106V1 160 DUP	Modified TO-15 (5&20 ppbv	8.2 "Hg	4.9 psi
05A	KAFB-106V1 217	Modified TO-15 (5&20 ppbv	10.4 "Hg	5.1 psi
06A	KAFB-106V1 252	Modified TO-15 (5&20 ppbv	11.8 "Hg	5.1 psi
06AA	KAFB-106V1 252 Lab Duplicate	Modified TO-15 (5&20 ppbv	11.8 "Hg	5.1 psi
07A	KAFB-106V1 263	Modified TO-15 (5&20 ppbv	10.8 "Hg	5.3 psi
08A	KAFB-106V2 102	Modified TO-15 (5&20 ppbv	10.8 "Hg	5 psi
09A	KAFB-106V2 117	Modified TO-15 (5&20 ppbv	13.3 "Hg	4.6 psi
10A	KAFB-106V2 117 DUP	Modified TO-15 (5&20 ppbv	13.3 "Hg	5.3 psi
11A	KAFB-106V2 160	Modified TO-15 (5&20 ppbv	10.4 "Hg	4.9 psi
12A	KAFB-106V2 217	Modified TO-15 (5&20 ppbv	13.9 "Hg	5.1 psi
13A	KAFB-106V2 252	Modified TO-15 (5&20 ppbv	12.4 "Hg	5 psi
14A	KAFB-106V2 270	Modified TO-15 (5&20 ppbv	13.5 "Hg	5 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16C	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

Continued on next page

WORK ORDER #: 191173AR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	6275DM02 KAFB Bioventing
DATE RECEIVED:	11/08/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/21/2019		
DATE REISSUED:	11/25/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
17B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 12/06/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 1911173AR1

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on November 08, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

The Work Order was reissued on December 6, 2019 to revise all sample IDs per the revised COC provided by the client.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes and non-standard compounds.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Samples were analyzed in two analytical batches on MSD-14 on 11/14/19 and 11/20/19. The initial continuing calibration verification (CCV) for the batches are reported as lab fractions 16A and 16C and the ending CCV are reported as lab fractions 16B and 16D.

The per analytical batch (11/14/19) duplicate analysis required for this project is associated with work order 1911080A.

Dilution was performed on all samples due to the presence of high level target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in samples KAFB-106V1 102.1, KAFB-106V1 159.6, KAFB-106V1 159.6 DUP, KAFB-106V2 217.1 and KAFB-106V2 252.2 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Acetone, Hexane, Cyclohexane and 2-Butanone exceeded the instrument's calibration range for samples KAFB-106V1 102.1 and KAFB-106V1 112.6 and were flagged accordingly.

Acetone, Hexane, Cyclohexane and Heptane exceeded the instrument's calibration range for samples KAFB-106V1 159.6, KAFB-106V1 159.6 DUP and KAFB-106V2 217.1 and were flagged accordingly.

Acetone and 2-Butanone exceeded the instrument's calibration range for sample KAFB-106V2 252.2 and were flagged accordingly.

2-Butanone and Heptane exceeded the instrument's calibration range for sample KAFB-106V1 262.6 and were flagged accordingly.

Heptane exceeded the instrument's calibration range for sample KAFB-106V1 252.1 and was flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

- B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

- J - Estimated value.

- S - Saturated peak.

- Q - Exceeds quality control limits.

- U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

- UJ- Non-detected compound associated with low bias in the CCV

- N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified

- b-File was quantified by a second column and detector

- r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102	Date/Time Analyzed:	11/14/19 09:09 PM
Lab ID:	1911173AR1-01A	Dilution Factor:	101
Date/Time Collected:	11/5/19 08:25 AM	Instrument/Filename:	msd14.i / 14111429
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	570	1200	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6000	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	470	1500	2500	77000
1,2-Dibromoethane (EDB)	106-93-4	680	2300	3900	4500
1,2-Dichlorobenzene	95-50-1	730	1800	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	410	1500	2500	25000
1,3-Butadiene	106-99-0	350	670	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5400	7300	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	4500	6000	700000 J
2-Hexanone	591-78-6	3100	6200	8300	Not Detected U
2-Propanol	67-63-0	630	3700	5000	240000
4-Methyl-2-pentanone	108-10-1	1000	1200	2100	Not Detected U
Acetone	67-64-1	700	3600	4800	4600000 J
Benzene	71-43-2	220	970	1600	2300000
Bromodichloromethane	75-27-4	340	2000	3400	Not Detected U
Bromoform	75-25-2	720	3100	5200	Not Detected U
Carbon Disulfide	75-15-0	960	4700	6300	Not Detected U
Carbon Tetrachloride	56-23-5	760	1900	3200	Not Detected U
Chloroethane	75-00-3	1500	4000	5300	Not Detected U
Chloroform	67-66-3	420	1500	2500	Not Detected U
Chloromethane	74-87-3	880	3100	4200	Not Detected U
Cyclohexane	110-82-7	380	1000	1700	5700000 J
Dibromochloromethane	124-48-1	890	2600	4300	Not Detected U
Ethanol	64-17-5	830	2800	3800	120000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102	Date/Time Analyzed:	11/14/19 09:09 PM
Lab ID:	1911173AR1-01A	Dilution Factor:	101
Date/Time Collected:	11/5/19 08:25 AM	Instrument/Filename:	msd14.i / 14111429
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7300	Not Detected
Ethyl Benzene	100-41-4	440	1300	2200	230000
Freon 11	75-69-4	420	1700	2800	Not Detected U
Freon 113	76-13-1	690	2300	3900	Not Detected U
Freon 12	75-71-8	550	1500	2500	Not Detected U
Heptane	142-82-5	700	1200	2100	3100000
Hexane	110-54-3	440	1100	1800	10000000 J
m,p-Xylene	108-38-3	410	1300	2200	340000
Methylene Chloride	75-09-2	1100	5300	7000	Not Detected U
Naphthalene	91-20-3	820	1000	10000	Not Detected U
o-Xylene	95-47-6	590	1300	2200	110000
Propylene	115-07-1	590	2600	3500	9100
Styrene	100-42-5	410	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2000	3400	Not Detected U
Tetrahydrofuran	109-99-9	530	890	1500	Not Detected U
Toluene	108-88-3	340	1100	1900	2100000
Total Xylene	1330-20-7	NA	D	2200	450000
Trichloroethene	79-01-6	800	1600	2700	Not Detected U
Vinyl Chloride	75-01-4	450	770	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 102	Date/Time Analyzed:	11/14/19 09:09 PM
Lab ID:	1911173AR1-01A	Dilution Factor:	101
Date/Time Collected:	11/5/19 08:25 AM	Instrument/Filename:	msd14.i / 14111429
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	137 Q
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 113	Date/Time Analyzed:	11/14/19 08:47 PM
Lab ID:	1911173AR1-02A	Dilution Factor:	108
Date/Time Collected:	11/5/19 08:37 AM	Instrument/Filename:	msd14.i / 14111428
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	610	1300	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6500	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	1600	2600	72000
1,2-Dibromoethane (EDB)	106-93-4	730	2500	4100	6900
1,2-Dichlorobenzene	95-50-1	780	1900	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	440	1600	2600	23000
1,3-Butadiene	106-99-0	380	720	1200	Not Detected U
1,4-Dioxane	123-91-1	2100	5800	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4800	6400	680000 J
2-Hexanone	591-78-6	3300	6600	8800	Not Detected U
2-Propanol	67-63-0	680	4000	5300	230000
4-Methyl-2-pentanone	108-10-1	1100	1300	2200	Not Detected U
Acetone	67-64-1	750	3800	5100	4000000 J
Benzene	71-43-2	240	1000	1700	2500000
Bromodichloromethane	75-27-4	360	2200	3600	Not Detected U
Bromoform	75-25-2	770	3300	5600	Not Detected U
Carbon Disulfide	75-15-0	1000	5000	6700	Not Detected U
Carbon Tetrachloride	56-23-5	810	2000	3400	Not Detected U
Chloroethane	75-00-3	1600	4300	5700	Not Detected U
Chloroform	67-66-3	450	1600	2600	Not Detected U
Chloromethane	74-87-3	940	3300	4500	Not Detected U
Cyclohexane	110-82-7	410	1100	1800	6000000 J
Dibromochloromethane	124-48-1	950	2800	4600	Not Detected U
Ethanol	64-17-5	890	3000	4100	150000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 113	Date/Time Analyzed:	11/14/19 08:47 PM
Lab ID:	1911173AR1-02A	Dilution Factor:	108
Date/Time Collected:	11/5/19 08:37 AM	Instrument/Filename:	msd14.i / 14111428
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected
Ethyl Benzene	100-41-4	470	1400	2300	250000
Freon 11	75-69-4	450	1800	3000	Not Detected U
Freon 113	76-13-1	740	2500	4100	Not Detected U
Freon 12	75-71-8	590	1600	2700	Not Detected U
Heptane	142-82-5	750	1300	2200	3800000
Hexane	110-54-3	470	1100	1900	10000000 J
m,p-Xylene	108-38-3	440	1400	2300	370000
Methylene Chloride	75-09-2	1200	5600	7500	Not Detected U
Naphthalene	91-20-3	870	1100	11000	Not Detected U
o-Xylene	95-47-6	630	1400	2300	110000
Propylene	115-07-1	640	2800	3700	9700
Styrene	100-42-5	440	1400	2300	Not Detected U
Tetrachloroethene	127-18-4	1300	2200	3700	Not Detected U
Tetrahydrofuran	109-99-9	560	960	1600	Not Detected U
Toluene	108-88-3	370	1200	2000	2700000
Total Xylene	1330-20-7	NA	D	2300	480000
Trichloroethene	79-01-6	860	1700	2900	Not Detected U
Vinyl Chloride	75-01-4	480	830	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 113	Date/Time Analyzed:	11/14/19 08:47 PM
Lab ID:	1911173AR1-02A	Dilution Factor:	108
Date/Time Collected:	11/5/19 08:37 AM	Instrument/Filename:	msd14.i / 14111428
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	128
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 160	Date/Time Analyzed:	11/14/19 09:52 PM
Lab ID:	1911173AR1-03A	Dilution Factor:	94.5
Date/Time Collected:	11/5/19 08:53 AM	Instrument/Filename:	msd14.i / 14111431
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	530	1100	1900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5700	10000	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	440	1400	2300	78000
1,2-Dibromoethane (EDB)	106-93-4	640	2200	3600	2600 J
1,2-Dichlorobenzene	95-50-1	690	1700	2800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	380	1400	2300	26000
1,3-Butadiene	106-99-0	330	630	1000	Not Detected U
1,4-Dioxane	123-91-1	1900	5100	6800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	4200	5600	120000
2-Hexanone	591-78-6	2900	5800	7700	Not Detected U
2-Propanol	67-63-0	590	3500	4600	340000
4-Methyl-2-pentanone	108-10-1	940	1200	1900	Not Detected U
Acetone	67-64-1	660	3400	4500	2900000 J
Benzene	71-43-2	210	900	1500	1500000
Bromodichloromethane	75-27-4	320	1900	3200	Not Detected U
Bromoform	75-25-2	670	2900	4900	Not Detected U
Carbon Disulfide	75-15-0	890	4400	5900	Not Detected U
Carbon Tetrachloride	56-23-5	710	1800	3000	Not Detected U
Chloroethane	75-00-3	1400	3700	5000	Not Detected U
Chloroform	67-66-3	400	1400	2300	Not Detected U
Chloromethane	74-87-3	820	2900	3900	Not Detected U
Cyclohexane	110-82-7	360	980	1600	4300000 J
Dibromochloromethane	124-48-1	830	2400	4000	Not Detected U
Ethanol	64-17-5	780	2700	3600	88000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 160	Date/Time Analyzed:	11/14/19 09:52 PM
Lab ID:	1911173AR1-03A	Dilution Factor:	94.5
Date/Time Collected:	11/5/19 08:53 AM	Instrument/Filename:	msd14.i / 14111431
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6800	Not Detected
Ethyl Benzene	100-41-4	410	1200	2000	360000
Freon 11	75-69-4	390	1600	2600	Not Detected U
Freon 113	76-13-1	640	2200	3600	Not Detected U
Freon 12	75-71-8	520	1400	2300	Not Detected U
Heptane	142-82-5	650	1200	1900	4400000 J
Hexane	110-54-3	410	1000	1700	5800000 J
m,p-Xylene	108-38-3	380	1200	2000	740000
Methylene Chloride	75-09-2	1000	4900	6600	Not Detected U
Naphthalene	91-20-3	760	990	9900	1200 J
o-Xylene	95-47-6	550	1200	2000	220000
Propylene	115-07-1	560	2400	3200	Not Detected U
Styrene	100-42-5	380	1200	2000	Not Detected U
Tetrachloroethene	127-18-4	1100	1900	3200	Not Detected U
Tetrahydrofuran	109-99-9	490	840	1400	Not Detected U
Toluene	108-88-3	320	1100	1800	3000000
Total Xylene	1330-20-7	NA	D	2000	960000
Trichloroethene	79-01-6	750	1500	2500	Not Detected U
Vinyl Chloride	75-01-4	420	720	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 160	Date/Time Analyzed:	11/14/19 09:52 PM
Lab ID:	1911173AR1-03A	Dilution Factor:	94.5
Date/Time Collected:	11/5/19 08:53 AM	Instrument/Filename:	msd14.i / 14111431
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	136 Q
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 160 DUP	Date/Time Analyzed:	11/14/19 09:30 PM
Lab ID:	1911173AR1-04A	Dilution Factor:	91.5
Date/Time Collected:	11/5/19 09:03 AM	Instrument/Filename:	msd14.i / 14111430
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	510	1100	1800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5500	10000	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	430	1300	2200	74000
1,2-Dibromoethane (EDB)	106-93-4	620	2100	3500	3100 J
1,2-Dichlorobenzene	95-50-1	660	1600	2800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	370	1300	2200	25000
1,3-Butadiene	106-99-0	320	610	1000	Not Detected U
1,4-Dioxane	123-91-1	1800	4900	6600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1300	4000	5400	130000
2-Hexanone	591-78-6	2800	5600	7500	Not Detected U
2-Propanol	67-63-0	570	3400	4500	340000
4-Methyl-2-pentanone	108-10-1	910	1100	1900	Not Detected U
Acetone	67-64-1	630	3300	4300	2900000 J
Benzene	71-43-2	200	880	1500	1500000
Bromodichloromethane	75-27-4	310	1800	3100	Not Detected U
Bromoform	75-25-2	650	2800	4700	Not Detected U
Carbon Disulfide	75-15-0	870	4300	5700	Not Detected U
Carbon Tetrachloride	56-23-5	680	1700	2900	Not Detected U
Chloroethane	75-00-3	1400	3600	4800	Not Detected U
Chloroform	67-66-3	380	1300	2200	Not Detected U
Chloromethane	74-87-3	790	2800	3800	Not Detected U
Cyclohexane	110-82-7	350	940	1600	4300000 J
Dibromochloromethane	124-48-1	800	2300	3900	Not Detected U
Ethanol	64-17-5	760	2600	3400	87000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 160 DUP	Date/Time Analyzed:	11/14/19 09:30 PM
Lab ID:	1911173AR1-04A	Dilution Factor:	91.5
Date/Time Collected:	11/5/19 09:03 AM	Instrument/Filename:	msd14.i / 14111430
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6600	Not Detected
Ethyl Benzene	100-41-4	400	1200	2000	380000
Freon 11	75-69-4	380	1500	2600	Not Detected U
Freon 113	76-13-1	620	2100	3500	Not Detected U
Freon 12	75-71-8	500	1400	2300	Not Detected U
Heptane	142-82-5	630	1100	1900	4300000 J
Hexane	110-54-3	400	970	1600	5700000 J
m,p-Xylene	108-38-3	370	1200	2000	770000
Methylene Chloride	75-09-2	980	4800	6400	Not Detected U
Naphthalene	91-20-3	740	960	9600	Not Detected U
o-Xylene	95-47-6	540	1200	2000	220000
Propylene	115-07-1	540	2400	3100	Not Detected U
Styrene	100-42-5	370	1200	1900	Not Detected U
Tetrachloroethene	127-18-4	1100	1900	3100	Not Detected U
Tetrahydrofuran	109-99-9	480	810	1300	Not Detected U
Toluene	108-88-3	310	1000	1700	2900000
Total Xylene	1330-20-7	NA	D	2000	990000
Trichloroethene	79-01-6	730	1500	2400	Not Detected U
Vinyl Chloride	75-01-4	400	700	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 160 DUP	Date/Time Analyzed:	11/14/19 09:30 PM
Lab ID:	1911173AR1-04A	Dilution Factor:	91.5
Date/Time Collected:	11/5/19 09:03 AM	Instrument/Filename:	msd14.i / 14111430
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	136 Q
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217	Date/Time Analyzed:	11/14/19 08:24 PM
Lab ID:	1911173AR1-05A	Dilution Factor:	103
Date/Time Collected:	11/5/19 09:19 AM	Instrument/Filename:	msd14.i / 14111427
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	580	1200	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6200	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	480	1500	2500	38000
1,2-Dibromoethane (EDB)	106-93-4	700	2400	4000	2000 J
1,2-Dichlorobenzene	95-50-1	750	1800	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	420	1500	2500	12000
1,3-Butadiene	106-99-0	360	680	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5600	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4600	6100	150000
2-Hexanone	591-78-6	3200	6300	8400	Not Detected U
2-Propanol	67-63-0	640	3800	5100	Not Detected U
4-Methyl-2-pentanone	108-10-1	1000	1300	2100	Not Detected U
Acetone	67-64-1	710	3700	4900	1600000
Benzene	71-43-2	230	990	1600	770000
Bromodichloromethane	75-27-4	340	2100	3400	Not Detected U
Bromoform	75-25-2	730	3200	5300	Not Detected U
Carbon Disulfide	75-15-0	980	4800	6400	Not Detected U
Carbon Tetrachloride	56-23-5	770	1900	3200	Not Detected U
Chloroethane	75-00-3	1600	4100	5400	Not Detected U
Chloroform	67-66-3	430	1500	2500	Not Detected U
Chloromethane	74-87-3	890	3200	4200	Not Detected U
Cyclohexane	110-82-7	390	1100	1800	2400000
Dibromochloromethane	124-48-1	900	2600	4400	Not Detected U
Ethanol	64-17-5	850	2900	3900	6000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217	Date/Time Analyzed:	11/14/19 08:24 PM
Lab ID:	1911173AR1-05A	Dilution Factor:	103
Date/Time Collected:	11/5/19 09:19 AM	Instrument/File Name:	msd14.i / 14111427
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	450	1300	2200	170000
Freon 11	75-69-4	430	1700	2900	Not Detected U
Freon 113	76-13-1	700	2400	3900	Not Detected U
Freon 12	75-71-8	560	1500	2500	Not Detected U
Heptane	142-82-5	710	1300	2100	2800000
Hexane	110-54-3	450	1100	1800	2900000
m,p-Xylene	108-38-3	420	1300	2200	480000
Methylene Chloride	75-09-2	1100	5400	7200	Not Detected U
Naphthalene	91-20-3	830	1100	11000	2200 J
o-Xylene	95-47-6	600	1300	2200	110000
Propylene	115-07-1	610	2600	3500	Not Detected U
Styrene	100-42-5	420	1300	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2100	3500	Not Detected U
Tetrahydrofuran	109-99-9	540	910	1500	Not Detected U
Toluene	108-88-3	350	1200	1900	2000000
Total Xylene	1330-20-7	NA	D	2200	590000
Trichloroethene	79-01-6	820	1700	2800	Not Detected U
Vinyl Chloride	75-01-4	460	790	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 217	Date/Time Analyzed:	11/14/19 08:24 PM
Lab ID:	1911173AR1-05A	Dilution Factor:	103
Date/Time Collected:	11/5/19 09:19 AM	Instrument/Filename:	msd14.i / 14111427
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	120
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252	Date/Time Analyzed:	11/20/19 07:59 PM
Lab ID:	1911173AR1-06A	Dilution Factor:	222
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	msd14.i / 14112108
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2700	4500	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	25000	33000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	3300	5400	41000
1,2-Dibromoethane (EDB)	106-93-4	1500	5100	8500	24000
1,2-Dichlorobenzene	95-50-1	1600	4000	6700	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	900	3300	5400	19000
1,3-Butadiene	106-99-0	770	1500	2400	Not Detected U
1,4-Dioxane	123-91-1	4400	12000	16000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3200	9800	13000	400000
2-Hexanone	591-78-6	6800	14000	18000	Not Detected U
2-Propanol	67-63-0	1400	8200	11000	42000
4-Methyl-2-pentanone	108-10-1	2200	2700	4500	Not Detected U
Acetone	67-64-1	1500	7900	10000	1800000
Benzene	71-43-2	500	2100	3500	1300000
Bromodichloromethane	75-27-4	740	4500	7400	Not Detected U
Bromoform	75-25-2	1600	6900	11000	Not Detected U
Carbon Disulfide	75-15-0	2100	10000	14000	Not Detected U
Carbon Tetrachloride	56-23-5	1700	4200	7000	Not Detected U
Chloroethane	75-00-3	3400	8800	12000	Not Detected U
Chloroform	67-66-3	930	3200	5400	Not Detected U
Chloromethane	74-87-3	1900	6900	9200	Not Detected U
Cyclohexane	110-82-7	850	2300	3800	4800000
Dibromochloromethane	124-48-1	1900	5700	9400	Not Detected U
Ethanol	64-17-5	1800	6300	8400	14000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252	Date/Time Analyzed:	11/20/19 07:59 PM
Lab ID:	1911173AR1-06A	Dilution Factor:	222
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	msd14.i / 14112108
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	16000	Not Detected
Ethyl Benzene	100-41-4	960	2900	4800	440000
Freon 11	75-69-4	920	3700	6200	Not Detected U
Freon 113	76-13-1	1500	5100	8500	Not Detected U
Freon 12	75-71-8	1200	3300	5500	Not Detected U
Heptane	142-82-5	1500	2700	4500	960000 J
Hexane	110-54-3	960	2300	3900	5600000
m,p-Xylene	108-38-3	910	2900	4800	1200000
Methylene Chloride	75-09-2	2400	12000	15000	Not Detected U
Naphthalene	91-20-3	1800	2300	23000	Not Detected U
o-Xylene	95-47-6	1300	2900	4800	310000
Propylene	115-07-1	1300	5700	7600	Not Detected U
Styrene	100-42-5	900	2800	4700	Not Detected U
Tetrachloroethene	127-18-4	2600	4500	7500	Not Detected U
Tetrahydrofuran	109-99-9	1200	2000	3300	Not Detected U
Toluene	108-88-3	750	2500	4200	6500000
Total Xylene	1330-20-7	NA	D	4800	1500000
Trichloroethene	79-01-6	1800	3600	6000	Not Detected U
Vinyl Chloride	75-01-4	980	1700	2800	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252	Date/Time Analyzed:	11/20/19 07:59 PM
Lab ID:	1911173AR1-06A	Dilution Factor:	222
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	msd14.i / 14112108
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	122
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252 Lab Duplicate	Date/Time Analyzed:	11/20/19 08:25 PM
Lab ID:	1911173AR1-06AA	Dilution Factor:	222
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	msd14.i / 14112109
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2700	4500	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	25000	33000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	3300	5400	41000
1,2-Dibromoethane (EDB)	106-93-4	1500	5100	8500	23000
1,2-Dichlorobenzene	95-50-1	1600	4000	6700	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	900	3300	5400	19000
1,3-Butadiene	106-99-0	770	1500	2400	Not Detected U
1,4-Dioxane	123-91-1	4400	12000	16000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3200	9800	13000	390000
2-Hexanone	591-78-6	6800	14000	18000	Not Detected U
2-Propanol	67-63-0	1400	8200	11000	42000
4-Methyl-2-pentanone	108-10-1	2200	2700	4500	Not Detected U
Acetone	67-64-1	1500	7900	10000	1700000
Benzene	71-43-2	500	2100	3500	1200000
Bromodichloromethane	75-27-4	740	4500	7400	Not Detected U
Bromoform	75-25-2	1600	6900	11000	Not Detected U
Carbon Disulfide	75-15-0	2100	10000	14000	Not Detected U
Carbon Tetrachloride	56-23-5	1700	4200	7000	Not Detected U
Chloroethane	75-00-3	3400	8800	12000	Not Detected U
Chloroform	67-66-3	930	3200	5400	Not Detected U
Chloromethane	74-87-3	1900	6900	9200	Not Detected U
Cyclohexane	110-82-7	850	2300	3800	4400000
Dibromochloromethane	124-48-1	1900	5700	9400	Not Detected U
Ethanol	64-17-5	1800	6300	8400	14000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252 Lab Duplicate	Date/Time Analyzed:	11/20/19 08:25 PM
Lab ID:	1911173AR1-06AA	Dilution Factor:	222
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	msd14.i / 14112109
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	16000	Not Detected
Ethyl Benzene	100-41-4	960	2900	4800	440000
Freon 11	75-69-4	920	3700	6200	Not Detected U
Freon 113	76-13-1	1500	5100	8500	Not Detected U
Freon 12	75-71-8	1200	3300	5500	Not Detected U
Heptane	142-82-5	1500	2700	4500	9400000 J
Hexane	110-54-3	960	2300	3900	5400000
m,p-Xylene	108-38-3	910	2900	4800	1200000
Methylene Chloride	75-09-2	2400	12000	15000	Not Detected U
Naphthalene	91-20-3	1800	2300	23000	Not Detected U
o-Xylene	95-47-6	1300	2900	4800	300000
Propylene	115-07-1	1300	5700	7600	Not Detected U
Styrene	100-42-5	900	2800	4700	Not Detected U
Tetrachloroethene	127-18-4	2600	4500	7500	Not Detected U
Tetrahydrofuran	109-99-9	1200	2000	3300	Not Detected U
Toluene	108-88-3	750	2500	4200	6400000
Total Xylene	1330-20-7	NA	D	4800	1500000
Trichloroethene	79-01-6	1800	3600	6000	Not Detected U
Vinyl Chloride	75-01-4	980	1700	2800	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 252 Lab Duplicate	Date/Time Analyzed:	11/20/19 08:25 PM
Lab ID:	1911173AR1-06AA	Dilution Factor:	222
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	msd14.i / 14112109
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	121
4-Bromofluorobenzene	460-00-4	83-110	96
Toluene-d8	2037-26-5	86-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 263	Date/Time Analyzed:	11/20/19 08:45 PM
Lab ID:	1911173AR1-07A	Dilution Factor:	213
Date/Time Collected:	11/5/19 09:54 AM	Instrument/Filename:	msd14.i / 14112110
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	2600	4300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	13000	24000	32000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	990	3100	5200	57000
1,2-Dibromoethane (EDB)	106-93-4	1400	4900	8200	32000
1,2-Dichlorobenzene	95-50-1	1500	3800	6400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	870	3100	5200	25000
1,3-Butadiene	106-99-0	740	1400	2400	Not Detected U
1,4-Dioxane	123-91-1	4200	12000	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3000	9400	12000	680000 J
2-Hexanone	591-78-6	6500	13000	17000	Not Detected U
2-Propanol	67-63-0	1300	7800	10000	Not Detected U
4-Methyl-2-pentanone	108-10-1	2100	2600	4400	Not Detected U
Acetone	67-64-1	1500	7600	10000	2800000
Benzene	71-43-2	480	2000	3400	1400000
Bromodichloromethane	75-27-4	710	4300	7100	Not Detected U
Bromoform	75-25-2	1500	6600	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	9900	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	4000	6700	Not Detected U
Chloroethane	75-00-3	3200	8400	11000	Not Detected U
Chloroform	67-66-3	890	3100	5200	Not Detected U
Chloromethane	74-87-3	1800	6600	8800	Not Detected U
Cyclohexane	110-82-7	810	2200	3700	4900000
Dibromochloromethane	124-48-1	1900	5400	9100	Not Detected U
Ethanol	64-17-5	1800	6000	8000	15000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 263	Date/Time Analyzed:	11/20/19 08:45 PM
Lab ID:	1911173AR1-07A	Dilution Factor:	213
Date/Time Collected:	11/5/19 09:54 AM	Instrument/Filename:	msd14.i / 14112110
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	920	2800	4600	480000
Freon 11	75-69-4	880	3600	6000	Not Detected U
Freon 113	76-13-1	1400	4900	8200	Not Detected U
Freon 12	75-71-8	1200	3200	5300	Not Detected U
Heptane	142-82-5	1500	2600	4400	11000000 J
Hexane	110-54-3	920	2200	3800	5200000
m,p-Xylene	108-38-3	870	2800	4600	1200000
Methylene Chloride	75-09-2	2300	11000	15000	Not Detected U
Naphthalene	91-20-3	1700	2200	22000	Not Detected U
o-Xylene	95-47-6	1200	2800	4600	300000
Propylene	115-07-1	1200	5500	7300	Not Detected U
Styrene	100-42-5	860	2700	4500	Not Detected U
Tetrachloroethene	127-18-4	2500	4300	7200	Not Detected U
Tetrahydrofuran	109-99-9	1100	1900	3100	Not Detected U
Toluene	108-88-3	720	2400	4000	7800000
Total Xylene	1330-20-7	NA	D	4600	1500000
Trichloroethene	79-01-6	1700	3400	5700	Not Detected U
Vinyl Chloride	75-01-4	940	1600	2700	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1 263	Date/Time Analyzed:	11/20/19 08:45 PM
Lab ID:	1911173AR1-07A	Dilution Factor:	213
Date/Time Collected:	11/5/19 09:54 AM	Instrument/Filename:	msd14.i / 14112110
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	125
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102	Date/Time Analyzed:	11/20/19 09:05 PM
Lab ID:	1911173AR1-08A	Dilution Factor:	420
Date/Time Collected:	11/5/19 10:26 AM	Instrument/Filename:	msd14.i / 14112111
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2400	5100	8500	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	25000	47000	62000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2000	6200	10000	79000
1,2-Dibromoethane (EDB)	106-93-4	2800	9700	16000	32000
1,2-Dichlorobenzene	95-50-1	3000	7600	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	6200	10000	36000
1,3-Butadiene	106-99-0	1400	2800	4600	Not Detected U
1,4-Dioxane	123-91-1	8300	23000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6000	18000	25000	1200000 J
2-Hexanone	591-78-6	13000	26000	34000	Not Detected U
2-Propanol	67-63-0	2600	15000	21000	510000
4-Methyl-2-pentanone	108-10-1	4200	5200	8600	Not Detected U
Acetone	67-64-1	2900	15000	20000	8100000
Benzene	71-43-2	940	4000	6700	3200000
Bromodichloromethane	75-27-4	1400	8400	14000	Not Detected U
Bromoform	75-25-2	3000	13000	22000	Not Detected U
Carbon Disulfide	75-15-0	4000	20000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	7900	13000	Not Detected U
Chloroethane	75-00-3	6400	17000	22000	Not Detected U
Chloroform	67-66-3	1800	6200	10000	Not Detected U
Chloromethane	74-87-3	3600	13000	17000	Not Detected U
Cyclohexane	110-82-7	1600	4300	7200	10000000
Dibromochloromethane	124-48-1	3700	11000	18000	Not Detected U
Ethanol	64-17-5	3500	12000	16000	80000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102	Date/Time Analyzed:	11/20/19 09:05 PM
Lab ID:	1911173AR1-08A	Dilution Factor:	420
Date/Time Collected:	11/5/19 10:26 AM	Instrument/Filename:	msd14.i / 14112111
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected
Ethyl Benzene	100-41-4	1800	5500	9100	520000
Freon 11	75-69-4	1700	7100	12000	Not Detected U
Freon 113	76-13-1	2900	9600	16000	Not Detected U
Freon 12	75-71-8	2300	6200	10000	Not Detected U
Heptane	142-82-5	2900	5200	8600	11000000
Hexane	110-54-3	1800	4400	7400	13000000
m,p-Xylene	108-38-3	1700	5500	9100	1300000
Methylene Chloride	75-09-2	4500	22000	29000	Not Detected U
Naphthalene	91-20-3	3400	4400	44000	Not Detected U
o-Xylene	95-47-6	2500	5500	9100	340000
Propylene	115-07-1	2500	11000	14000	18000
Styrene	100-42-5	1700	5400	8900	Not Detected U
Tetrachloroethene	127-18-4	5000	8500	14000	Not Detected U
Tetrahydrofuran	109-99-9	2200	3700	6200	Not Detected U
Toluene	108-88-3	1400	4700	7900	7800000
Total Xylene	1330-20-7	NA	D	9100	1600000
Trichloroethene	79-01-6	3300	6800	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3200	5400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 102	Date/Time Analyzed:	11/20/19 09:05 PM
Lab ID:	1911173AR1-08A	Dilution Factor:	420
Date/Time Collected:	11/5/19 10:26 AM	Instrument/Filename:	msd14.i / 14112111
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	122
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117	Date/Time Analyzed:	11/20/19 09:31 PM
Lab ID:	1911173AR1-09A	Dilution Factor:	470
Date/Time Collected:	11/5/19 10:39 AM	Instrument/Filename:	msd14.i / 14112112
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	5700	9500	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	28000	52000	70000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2200	6900	12000	72000
1,2-Dibromoethane (EDB)	106-93-4	3200	11000	18000	21000
1,2-Dichlorobenzene	95-50-1	3400	8500	14000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1900	6900	12000	36000
1,3-Butadiene	106-99-0	1600	3100	5200	Not Detected U
1,4-Dioxane	123-91-1	9300	25000	34000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6700	21000	28000	780000
2-Hexanone	591-78-6	14000	29000	38000	Not Detected U
2-Propanol	67-63-0	2900	17000	23000	Not Detected U
4-Methyl-2-pentanone	108-10-1	4700	5800	9600	Not Detected U
Acetone	67-64-1	3300	17000	22000	5000000
Benzene	71-43-2	1000	4500	7500	4200000
Bromodichloromethane	75-27-4	1600	9400	16000	Not Detected U
Bromoform	75-25-2	3400	14000	24000	Not Detected U
Carbon Disulfide	75-15-0	4400	22000	29000	Not Detected U
Carbon Tetrachloride	56-23-5	3500	8900	15000	Not Detected U
Chloroethane	75-00-3	7100	19000	25000	Not Detected U
Chloroform	67-66-3	2000	6900	11000	Not Detected U
Chloromethane	74-87-3	4100	14000	19000	Not Detected U
Cyclohexane	110-82-7	1800	4800	8100	12000000
Dibromochloromethane	124-48-1	4100	12000	20000	Not Detected U
Ethanol	64-17-5	3900	13000	18000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117	Date/Time Analyzed:	11/20/19 09:31 PM
Lab ID:	1911173AR1-09A	Dilution Factor:	470
Date/Time Collected:	11/5/19 10:39 AM	Instrument/Filename:	msd14.i / 14112112
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	34000	Not Detected
Ethyl Benzene	100-41-4	2000	6100	10000	510000
Freon 11	75-69-4	2000	7900	13000	Not Detected U
Freon 113	76-13-1	3200	11000	18000	Not Detected U
Freon 12	75-71-8	2600	7000	12000	Not Detected U
Heptane	142-82-5	3200	5800	9600	12000000
Hexane	110-54-3	2000	5000	8300	17000000 J
m,p-Xylene	108-38-3	1900	6100	10000	1300000
Methylene Chloride	75-09-2	5100	24000	33000	Not Detected U
Naphthalene	91-20-3	3800	4900	49000	Not Detected U
o-Xylene	95-47-6	2800	6100	10000	360000
Propylene	115-07-1	2800	12000	16000	26000
Styrene	100-42-5	1900	6000	10000	Not Detected U
Tetrachloroethene	127-18-4	5600	9600	16000	Not Detected U
Tetrahydrofuran	109-99-9	2400	4200	6900	Not Detected U
Toluene	108-88-3	1600	5300	8800	7500000
Total Xylene	1330-20-7	NA	D	10000	1700000
Trichloroethene	79-01-6	3700	7600	13000	Not Detected U
Vinyl Chloride	75-01-4	2100	3600	6000	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117	Date/Time Analyzed:	11/20/19 09:31 PM
Lab ID:	1911173AR1-09A	Dilution Factor:	470
Date/Time Collected:	11/5/19 10:39 AM	Instrument/Filename:	msd14.i / 14112112
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	121
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117 DUP	Date/Time Analyzed:	11/20/19 09:52 PM
Lab ID:	1911173AR1-10A	Dilution Factor:	488
Date/Time Collected:	11/5/19 10:45 AM	Instrument/Filename:	msd14.i / 14112113
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2700	5900	9900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	29000	54000	72000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2300	7200	12000	95000
1,2-Dibromoethane (EDB)	106-93-4	3300	11000	19000	24000
1,2-Dichlorobenzene	95-50-1	3600	8800	15000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2000	7200	12000	44000
1,3-Butadiene	106-99-0	1700	3200	5400	Not Detected U
1,4-Dioxane	123-91-1	9700	26000	35000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7000	22000	29000	1000000
2-Hexanone	591-78-6	15000	30000	40000	Not Detected U
2-Propanol	67-63-0	3000	18000	24000	Not Detected U
4-Methyl-2-pentanone	108-10-1	4800	6000	10000	Not Detected U
Acetone	67-64-1	3400	17000	23000	6000000
Benzene	71-43-2	1100	4700	7800	4400000
Bromodichloromethane	75-27-4	1600	9800	16000	Not Detected U
Bromoform	75-25-2	3500	15000	25000	Not Detected U
Carbon Disulfide	75-15-0	4600	23000	30000	Not Detected U
Carbon Tetrachloride	56-23-5	3600	9200	15000	Not Detected U
Chloroethane	75-00-3	7400	19000	26000	Not Detected U
Chloroform	67-66-3	2000	7100	12000	Not Detected U
Chloromethane	74-87-3	4200	15000	20000	Not Detected U
Cyclohexane	110-82-7	1900	5000	8400	13000000
Dibromochloromethane	124-48-1	4300	12000	21000	Not Detected U
Ethanol	64-17-5	4000	14000	18000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117 DUP	Date/Time Analyzed:	11/20/19 09:52 PM
Lab ID:	1911173AR1-10A	Dilution Factor:	488
Date/Time Collected:	11/5/19 10:45 AM	Instrument/Filename:	msd14.i / 14112113
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	35000	Not Detected
Ethyl Benzene	100-41-4	2100	6400	10000	560000
Freon 11	75-69-4	2000	8200	14000	Not Detected U
Freon 113	76-13-1	3300	11000	19000	Not Detected U
Freon 12	75-71-8	2700	7200	12000	Not Detected U
Heptane	142-82-5	3400	6000	10000	12000000
Hexane	110-54-3	2100	5200	8600	18000000 J
m,p-Xylene	108-38-3	2000	6400	10000	1500000
Methylene Chloride	75-09-2	5200	25000	34000	Not Detected U
Naphthalene	91-20-3	3900	5100	51000	Not Detected U
o-Xylene	95-47-6	2900	6400	10000	400000
Propylene	115-07-1	2900	12000	17000	29000
Styrene	100-42-5	2000	6200	10000	Not Detected U
Tetrachloroethene	127-18-4	5800	9900	16000	Not Detected U
Tetrahydrofuran	109-99-9	2500	4300	7200	Not Detected U
Toluene	108-88-3	1600	5500	9200	7900000
Total Xylene	1330-20-7	NA	D	10000	1900000
Trichloroethene	79-01-6	3900	7900	13000	Not Detected U
Vinyl Chloride	75-01-4	2200	3700	6200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 117 DUP	Date/Time Analyzed:	11/20/19 09:52 PM
Lab ID:	1911173AR1-10A	Dilution Factor:	488
Date/Time Collected:	11/5/19 10:45 AM	Instrument/Filename:	msd14.i / 14112113
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	120
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 160	Date/Time Analyzed:	11/14/19 05:23 PM
Lab ID:	1911173AR1-11A	Dilution Factor:	20.4
Date/Time Collected:	11/5/19 10:59 AM	Instrument/Filename:	msd14.i / 14111419
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	110	250	410	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1200	2300	3000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	95	300	500	160000
1,2-Dibromoethane (EDB)	106-93-4	140	470	780	880
1,2-Dichlorobenzene	95-50-1	150	370	610	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	83	300	500	46000
1,3-Butadiene	106-99-0	71	140	220	Not Detected U
1,4-Dioxane	123-91-1	400	1100	1500	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	290	900	1200	1000 J
2-Hexanone	591-78-6	620	1200	1700	Not Detected U
2-Propanol	67-63-0	130	750	1000	2000
4-Methyl-2-pentanone	108-10-1	200	250	420	Not Detected U
Acetone	67-64-1	140	730	970	72000
Benzene	71-43-2	46	200	320	34000
Bromodichloromethane	75-27-4	68	410	680	Not Detected U
Bromoform	75-25-2	140	630	1000	Not Detected U
Carbon Disulfide	75-15-0	190	950	1300	Not Detected U
Carbon Tetrachloride	56-23-5	150	380	640	Not Detected U
Chloroethane	75-00-3	310	810	1100	Not Detected U
Chloroform	67-66-3	86	300	500	Not Detected U
Chloromethane	74-87-3	180	630	840	Not Detected U
Cyclohexane	110-82-7	78	210	350	140000
Dibromochloromethane	124-48-1	180	520	870	Not Detected U
Ethanol	64-17-5	170	580	770	490 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 160	Date/Time Analyzed:	11/14/19 05:23 PM
Lab ID:	1911173AR1-11A	Dilution Factor:	20.4
Date/Time Collected:	11/5/19 10:59 AM	Instrument/Filename:	msd14.i / 14111419
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	1500	Not Detected
Ethyl Benzene	100-41-4	88	260	440	71000
Freon 11	75-69-4	85	340	570	Not Detected U
Freon 113	76-13-1	140	470	780	Not Detected U
Freon 12	75-71-8	110	300	500	Not Detected U
Heptane	142-82-5	140	250	420	290000
Hexane	110-54-3	88	220	360	74000
m,p-Xylene	108-38-3	83	260	440	220000
Methylene Chloride	75-09-2	220	1100	1400	Not Detected U
Naphthalene	91-20-3	160	210	2100	4100
o-Xylene	95-47-6	120	260	440	90000
Propylene	115-07-1	120	530	700	Not Detected U
Styrene	100-42-5	82	260	430	Not Detected U
Tetrachloroethene	127-18-4	240	420	690	Not Detected U
Tetrahydrofuran	109-99-9	110	180	300	Not Detected U
Toluene	108-88-3	69	230	380	340000
Total Xylene	1330-20-7	NA	D	440	310000
Trichloroethene	79-01-6	160	330	550	Not Detected U
Vinyl Chloride	75-01-4	90	160	260	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 160	Date/Time Analyzed:	11/14/19 05:23 PM
Lab ID:	1911173AR1-11A	Dilution Factor:	20.4
Date/Time Collected:	11/5/19 10:59 AM	Instrument/Filename:	msd14.i / 14111419
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	122
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217	Date/Time Analyzed:	11/14/19 06:08 PM
Lab ID:	1911173AR1-12A	Dilution Factor:	126
Date/Time Collected:	11/5/19 11:10 AM	Instrument/Filename:	msd14.i / 14111421
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	710	1500	2600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	7600	14000	19000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	590	1800	3100	130000
1,2-Dibromoethane (EDB)	106-93-4	850	2900	4800	7700
1,2-Dichlorobenzene	95-50-1	920	2300	3800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	510	1800	3100	44000
1,3-Butadiene	106-99-0	440	840	1400	Not Detected U
1,4-Dioxane	123-91-1	2500	6800	9100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1800	5600	7400	250000
2-Hexanone	591-78-6	3900	7700	10000	Not Detected U
2-Propanol	67-63-0	790	4600	6200	150000
4-Methyl-2-pentanone	108-10-1	1200	1500	2600	Not Detected U
Acetone	67-64-1	870	4500	6000	5200000 J
Benzene	71-43-2	280	1200	2000	1900000
Bromodichloromethane	75-27-4	420	2500	4200	Not Detected U
Bromoform	75-25-2	900	3900	6500	Not Detected U
Carbon Disulfide	75-15-0	1200	5900	7800	Not Detected U
Carbon Tetrachloride	56-23-5	940	2400	4000	Not Detected U
Chloroethane	75-00-3	1900	5000	6600	Not Detected U
Chloroform	67-66-3	530	1800	3100	Not Detected U
Chloromethane	74-87-3	1100	3900	5200	Not Detected U
Cyclohexane	110-82-7	480	1300	2200	5900000 J
Dibromochloromethane	124-48-1	1100	3200	5400	Not Detected U
Ethanol	64-17-5	1000	3600	4700	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217	Date/Time Analyzed:	11/14/19 06:08 PM
Lab ID:	1911173AR1-12A	Dilution Factor:	126
Date/Time Collected:	11/5/19 11:10 AM	Instrument/Filename:	msd14.i / 14111421
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	9100	Not Detected
Ethyl Benzene	100-41-4	550	1600	2700	390000
Freon 11	75-69-4	520	2100	3500	Not Detected U
Freon 113	76-13-1	860	2900	4800	Not Detected U
Freon 12	75-71-8	690	1900	3100	Not Detected U
Heptane	142-82-5	870	1500	2600	5800000 J
Hexane	110-54-3	550	1300	2200	8300000 J
m,p-Xylene	108-38-3	510	1600	2700	930000
Methylene Chloride	75-09-2	1400	6600	8800	Not Detected U
Naphthalene	91-20-3	1000	1300	13000	1800 J
o-Xylene	95-47-6	740	1600	2700	270000
Propylene	115-07-1	740	3200	4300	15000
Styrene	100-42-5	510	1600	2700	Not Detected U
Tetrachloroethene	127-18-4	1500	2600	4300	Not Detected U
Tetrahydrofuran	109-99-9	660	1100	1800	Not Detected U
Toluene	108-88-3	430	1400	2400	3900000
Total Xylene	1330-20-7	NA	D	2700	1200000
Trichloroethene	79-01-6	1000	2000	3400	Not Detected U
Vinyl Chloride	75-01-4	560	970	1600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 217	Date/Time Analyzed:	11/14/19 06:08 PM
Lab ID:	1911173AR1-12A	Dilution Factor:	126
Date/Time Collected:	11/5/19 11:10 AM	Instrument/Filename:	msd14.i / 14111421
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	140 Q
4-Bromofluorobenzene	460-00-4	83-110	98
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252	Date/Time Analyzed:	11/14/19 06:30 PM
Lab ID:	1911173AR1-13A	Dilution Factor:	114
Date/Time Collected:	11/5/19 11:22 AM	Instrument/Filename:	msd14.i / 14111422
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	640	1400	2300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6800	13000	17000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	530	1700	2800	150000
1,2-Dibromoethane (EDB)	106-93-4	770	2600	4400	18000
1,2-Dichlorobenzene	95-50-1	830	2000	3400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	460	1700	2800	49000
1,3-Butadiene	106-99-0	400	760	1300	Not Detected U
1,4-Dioxane	123-91-1	2200	6200	8200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	5000	6700	370000 J
2-Hexanone	591-78-6	3500	7000	9300	Not Detected U
2-Propanol	67-63-0	710	4200	5600	120000
4-Methyl-2-pentanone	108-10-1	1100	1400	2300	Not Detected U
Acetone	67-64-1	790	4100	5400	3000000 J
Benzene	71-43-2	250	1100	1800	940000
Bromodichloromethane	75-27-4	380	2300	3800	Not Detected U
Bromoform	75-25-2	810	3500	5900	Not Detected U
Carbon Disulfide	75-15-0	1100	5300	7100	Not Detected U
Carbon Tetrachloride	56-23-5	850	2200	3600	Not Detected U
Chloroethane	75-00-3	1700	4500	6000	Not Detected U
Chloroform	67-66-3	480	1700	2800	Not Detected U
Chloromethane	74-87-3	990	3500	4700	Not Detected U
Cyclohexane	110-82-7	440	1200	2000	3100000
Dibromochloromethane	124-48-1	1000	2900	4800	Not Detected U
Ethanol	64-17-5	940	3200	4300	2900 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252	Date/Time Analyzed:	11/14/19 06:30 PM
Lab ID:	1911173AR1-13A	Dilution Factor:	114
Date/Time Collected:	11/5/19 11:22 AM	Instrument/Filename:	msd14.i / 14111422
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	8200	Not Detected
Ethyl Benzene	100-41-4	490	1500	2500	390000
Freon 11	75-69-4	470	1900	3200	Not Detected U
Freon 113	76-13-1	780	2600	4400	Not Detected U
Freon 12	75-71-8	620	1700	2800	Not Detected U
Heptane	142-82-5	790	1400	2300	4700000 J
Hexane	110-54-3	490	1200	2000	3000000
m,p-Xylene	108-38-3	460	1500	2500	930000
Methylene Chloride	75-09-2	1200	5900	7900	Not Detected U
Naphthalene	91-20-3	920	1200	12000	4200 J
o-Xylene	95-47-6	670	1500	2500	270000
Propylene	115-07-1	670	2900	3900	Not Detected U
Styrene	100-42-5	460	1400	2400	Not Detected U
Tetrachloroethene	127-18-4	1400	2300	3900	Not Detected U
Tetrahydrofuran	109-99-9	600	1000	1700	Not Detected U
Toluene	108-88-3	390	1300	2100	4200000
Total Xylene	1330-20-7	NA	D	2500	1200000
Trichloroethene	79-01-6	910	1800	3100	Not Detected U
Vinyl Chloride	75-01-4	500	870	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 252	Date/Time Analyzed:	11/14/19 06:30 PM
Lab ID:	1911173AR1-13A	Dilution Factor:	114
Date/Time Collected:	11/5/19 11:22 AM	Instrument/Filename:	msd14.i / 14111422
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	135 Q
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 270	Date/Time Analyzed:	11/20/19 10:14 PM
Lab ID:	1911173AR1-14A	Dilution Factor:	243
Date/Time Collected:	11/5/19 11:34 AM	Instrument/Filename:	msd14.i / 14112114
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1400	3000	4900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	14000	27000	36000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1100	3600	6000	110000
1,2-Dibromoethane (EDB)	106-93-4	1600	5600	9300	14000
1,2-Dichlorobenzene	95-50-1	1800	4400	7300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	990	3600	6000	41000
1,3-Butadiene	106-99-0	840	1600	2700	Not Detected U
1,4-Dioxane	123-91-1	4800	13000	18000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3500	11000	14000	450000
2-Hexanone	591-78-6	7400	15000	20000	Not Detected U
2-Propanol	67-63-0	1500	9000	12000	Not Detected U
4-Methyl-2-pentanone	108-10-1	2400	3000	5000	Not Detected U
Acetone	67-64-1	1700	8600	12000	3700000
Benzene	71-43-2	540	2300	3900	980000
Bromodichloromethane	75-27-4	810	4900	8100	Not Detected U
Bromoform	75-25-2	1700	7500	12000	Not Detected U
Carbon Disulfide	75-15-0	2300	11000	15000	Not Detected U
Carbon Tetrachloride	56-23-5	1800	4600	7600	Not Detected U
Chloroethane	75-00-3	3700	9600	13000	Not Detected U
Chloroform	67-66-3	1000	3600	5900	Not Detected U
Chloromethane	74-87-3	2100	7500	10000	Not Detected U
Cyclohexane	110-82-7	930	2500	4200	3400000
Dibromochloromethane	124-48-1	2100	6200	10000	Not Detected U
Ethanol	64-17-5	2000	6900	9200	10000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 270	Date/Time Analyzed:	11/20/19 10:14 PM
Lab ID:	1911173AR1-14A	Dilution Factor:	243
Date/Time Collected:	11/5/19 11:34 AM	Instrument/Filename:	msd14.i / 14112114
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	18000	Not Detected
Ethyl Benzene	100-41-4	1000	3200	5300	280000
Freon 11	75-69-4	1000	4100	6800	Not Detected U
Freon 113	76-13-1	1600	5600	9300	Not Detected U
Freon 12	75-71-8	1300	3600	6000	Not Detected U
Heptane	142-82-5	1700	3000	5000	6100000
Hexane	110-54-3	1000	2600	4300	2600000
m,p-Xylene	108-38-3	990	3200	5300	690000
Methylene Chloride	75-09-2	2600	13000	17000	Not Detected U
Naphthalene	91-20-3	2000	2500	25000	Not Detected U
o-Xylene	95-47-6	1400	3200	5300	180000
Propylene	115-07-1	1400	6300	8400	Not Detected U
Styrene	100-42-5	980	3100	5200	Not Detected U
Tetrachloroethene	127-18-4	2900	4900	8200	Not Detected U
Tetrahydrofuran	109-99-9	1300	2100	3600	Not Detected U
Toluene	108-88-3	820	2700	4600	4400000
Total Xylene	1330-20-7	NA	D	5300	870000
Trichloroethene	79-01-6	1900	3900	6500	Not Detected U
Vinyl Chloride	75-01-4	1100	1900	3100	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	117

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2 270	Date/Time Analyzed:	11/20/19 10:14 PM
Lab ID:	1911173AR1-14A	Dilution Factor:	243
Date/Time Collected:	11/5/19 11:34 AM	Instrument/Filename:	msd14.i / 14112114
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	97
Toluene-d8	2037-26-5	86-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/14/19 11:29 AM
Lab ID:	1911173AR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/14/19 11:29 AM
Lab ID:	1911173AR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/14/19 11:29 AM
Lab ID:	1911173AR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111406a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/20/19 06:57 PM
Lab ID:	1911173AR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112106a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	15	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	20	34	Not Detected U
Bromoform	75-25-2	7.1	31	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	19	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	15	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	10	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	26	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/20/19 06:57 PM
Lab ID:	1911173AR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112106a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	13	22	Not Detected U
Freon 11	75-69-4	4.2	17	28	Not Detected U
Freon 113	76-13-1	6.8	23	38	Not Detected U
Freon 12	75-71-8	5.5	15	25	Not Detected U
Heptane	142-82-5	6.9	12	20	Not Detected U
Hexane	110-54-3	4.3	10	18	Not Detected U
m,p-Xylene	108-38-3	4.1	13	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	9.9 J
o-Xylene	95-47-6	5.9	13	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	13	21	Not Detected U
Tetrachloroethene	127-18-4	12	20	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	8.8	15	Not Detected U
Toluene	108-88-3	3.4	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	22	Not Detected
Trichloroethene	79-01-6	8.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/20/19 06:57 PM
Lab ID:	1911173AR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112106a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	100
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 08:57 AM
Lab ID:	1911173AR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	99
1,2,4-Trichlorobenzene	120-82-1	100
1,2,4-Trimethylbenzene	95-63-6	100
1,2-Dibromoethane (EDB)	106-93-4	100
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	107
1,3-Butadiene	106-99-0	113
1,4-Dioxane	123-91-1	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	96
2-Hexanone	591-78-6	100
2-Propanol	67-63-0	107
4-Methyl-2-pentanone	108-10-1	104
Acetone	67-64-1	106
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	95
Bromoform	75-25-2	104
Carbon Disulfide	75-15-0	96
Carbon Tetrachloride	56-23-5	106
Chloroethane	75-00-3	96
Chloroform	67-66-3	101
Chloromethane	74-87-3	103
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	99
Ethanol	64-17-5	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 08:57 AM
Lab ID:	1911173AR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	102
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	109
Freon 113	76-13-1	105
Freon 12	75-71-8	97
Heptane	142-82-5	94
Hexane	110-54-3	103
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	101
o-Xylene	95-47-6	99
Propylene	115-07-1	97
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	98
Toluene	108-88-3	93
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 08:57 AM
Lab ID:	1911173AR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 11:23 PM
Lab ID:	1911173AR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111435
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	99
1,2,4-Trimethylbenzene	95-63-6	102
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	100
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	112
1,4-Dioxane	123-91-1	102
2-Butanone (Methyl Ethyl Ketone)	78-93-3	101
2-Hexanone	591-78-6	101
2-Propanol	67-63-0	111
4-Methyl-2-pentanone	108-10-1	106
Acetone	67-64-1	118
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	97
Carbon Disulfide	75-15-0	90
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	98
Chloroform	67-66-3	95
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	97
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 11:23 PM
Lab ID:	1911173AR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111435
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	103
Freon 113	76-13-1	103
Freon 12	75-71-8	89
Heptane	142-82-5	95
Hexane	110-54-3	105
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	89
o-Xylene	95-47-6	98
Propylene	115-07-1	98
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	98
Tetrahydrofuran	109-99-9	95
Toluene	108-88-3	96
Total Xylene	1330-20-7	97
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/14/19 11:23 PM
Lab ID:	1911173AR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111435
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/20/19 05:09 PM
Lab ID:	1911173AR1-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112102a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	97
1,2,4-Trichlorobenzene	120-82-1	109
1,2,4-Trimethylbenzene	95-63-6	100
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	108
1,4-Dioxane	123-91-1	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	97
2-Hexanone	591-78-6	99
2-Propanol	67-63-0	108
4-Methyl-2-pentanone	108-10-1	102
Acetone	67-64-1	103
Benzene	71-43-2	93
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	97
Carbon Disulfide	75-15-0	93
Carbon Tetrachloride	56-23-5	100
Chloroethane	75-00-3	95
Chloroform	67-66-3	96
Chloromethane	74-87-3	98
Cyclohexane	110-82-7	95
Dibromochloromethane	124-48-1	93
Ethanol	64-17-5	111

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/20/19 05:09 PM
Lab ID:	1911173AR1-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112102a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	105
Ethyl Benzene	100-41-4	94
Freon 11	75-69-4	104
Freon 113	76-13-1	102
Freon 12	75-71-8	87
Heptane	142-82-5	92
Hexane	110-54-3	104
m,p-Xylene	108-38-3	93
Methylene Chloride	75-09-2	101
Naphthalene	91-20-3	122
o-Xylene	95-47-6	95
Propylene	115-07-1	78
Styrene	100-42-5	100
Tetrachloroethene	127-18-4	96
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	92
Total Xylene	1330-20-7	94
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/20/19 05:09 PM
Lab ID:	1911173AR1-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112102a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	99
Toluene-d8	2037-26-5	86-115	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/20/19 10:37 PM
Lab ID:	1911173AR1-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112115
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	107
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	108
1,4-Dioxane	123-91-1	103
2-Butanone (Methyl Ethyl Ketone)	78-93-3	97
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	111
4-Methyl-2-pentanone	108-10-1	102
Acetone	67-64-1	122
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	89
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	91
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	94
Chloroform	67-66-3	96
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	95
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/20/19 10:37 PM
Lab ID:	1911173AR1-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112115
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	96
Freon 11	75-69-4	102
Freon 113	76-13-1	104
Freon 12	75-71-8	90
Heptane	142-82-5	94
Hexane	110-54-3	105
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	101
Naphthalene	91-20-3	103
o-Xylene	95-47-6	96
Propylene	115-07-1	88
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	98
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	94
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	11/20/19 10:37 PM
Lab ID:	1911173AR1-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112115
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/14/19 09:36 AM
Lab ID:	1911173AR1-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	74
1,2,4-Trimethylbenzene	95-63-6	101
1,2-Dibromoethane (EDB)	106-93-4	107
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	107
1,3-Butadiene	106-99-0	117
1,4-Dioxane	123-91-1	117
2-Butanone (Methyl Ethyl Ketone)	78-93-3	106
2-Hexanone	591-78-6	112
2-Propanol	67-63-0	119
4-Methyl-2-pentanone	108-10-1	122
Acetone	67-64-1	116
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	106
Bromoform	75-25-2	107
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	110
Chloroethane	75-00-3	100
Chloroform	67-66-3	107
Chloromethane	74-87-3	111
Cyclohexane	110-82-7	106
Dibromochloromethane	124-48-1	107
Ethanol	64-17-5	114

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/14/19 09:36 AM
Lab ID:	1911173AR1-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	104
Freon 11	75-69-4	115
Freon 113	76-13-1	108
Freon 12	75-71-8	102
Heptane	142-82-5	106
Hexane	110-54-3	112
m,p-Xylene	108-38-3	103
Methylene Chloride	75-09-2	106
Naphthalene	91-20-3	80
o-Xylene	95-47-6	102
Propylene	115-07-1	102
Styrene	100-42-5	108
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	106
Toluene	108-88-3	102
Total Xylene	1330-20-7	102
Trichloroethene	79-01-6	107
Vinyl Chloride	75-01-4	113

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/14/19 09:36 AM
Lab ID:	1911173AR1-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	102
Toluene-d8	2037-26-5	86-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/14/19 10:01 AM
Lab ID:	1911173AR1-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	84
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	106
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	108
1,3-Butadiene	106-99-0	116
1,4-Dioxane	123-91-1	117
2-Butanone (Methyl Ethyl Ketone)	78-93-3	108
2-Hexanone	591-78-6	115
2-Propanol	67-63-0	118
4-Methyl-2-pentanone	108-10-1	123
Acetone	67-64-1	116
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	106
Bromoform	75-25-2	111
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	108
Chloroethane	75-00-3	103
Chloroform	67-66-3	104
Chloromethane	74-87-3	109
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	108
Ethanol	64-17-5	111

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/14/19 10:01 AM
Lab ID:	1911173AR1-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	104
Freon 11	75-69-4	114
Freon 113	76-13-1	109
Freon 12	75-71-8	100
Heptane	142-82-5	105
Hexane	110-54-3	110
m,p-Xylene	108-38-3	105
Methylene Chloride	75-09-2	107
Naphthalene	91-20-3	90
o-Xylene	95-47-6	106
Propylene	115-07-1	99
Styrene	100-42-5	108
Tetrachloroethene	127-18-4	105
Tetrahydrofuran	109-99-9	106
Toluene	108-88-3	99
Total Xylene	1330-20-7	106
Trichloroethene	79-01-6	106
Vinyl Chloride	75-01-4	113

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/14/19 10:01 AM
Lab ID:	1911173AR1-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14111404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	103
Toluene-d8	2037-26-5	86-115	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/20/19 05:38 PM
Lab ID:	1911173AR1-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112103a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	103
1,2,4-Trichlorobenzene	120-82-1	81
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	117
1,4-Dioxane	123-91-1	114
2-Butanone (Methyl Ethyl Ketone)	78-93-3	107
2-Hexanone	591-78-6	112
2-Propanol	67-63-0	118
4-Methyl-2-pentanone	108-10-1	116
Acetone	67-64-1	119
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	100
Bromoform	75-25-2	105
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	108
Chloroethane	75-00-3	115
Chloroform	67-66-3	100
Chloromethane	74-87-3	117
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	101
Ethanol	64-17-5	114

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/20/19 05:38 PM
Lab ID:	1911173AR1-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112103a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	111
Freon 113	76-13-1	108
Freon 12	75-71-8	97
Heptane	142-82-5	104
Hexane	110-54-3	110
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	86
o-Xylene	95-47-6	99
Propylene	115-07-1	92
Styrene	100-42-5	102
Tetrachloroethene	127-18-4	101
Tetrahydrofuran	109-99-9	103
Toluene	108-88-3	97
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	111

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	99

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/20/19 05:38 PM
Lab ID:	1911173AR1-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112103a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	101
Toluene-d8	2037-26-5	86-115	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/20/19 06:03 PM
Lab ID:	1911173AR1-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112104a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	104
1,2,4-Trichlorobenzene	120-82-1	79
1,2,4-Trimethylbenzene	95-63-6	99
1,2-Dibromoethane (EDB)	106-93-4	103
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	118
1,4-Dioxane	123-91-1	114
2-Butanone (Methyl Ethyl Ketone)	78-93-3	112
2-Hexanone	591-78-6	111
2-Propanol	67-63-0	119
4-Methyl-2-pentanone	108-10-1	122
Acetone	67-64-1	122
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	101
Bromoform	75-25-2	106
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	108
Chloroethane	75-00-3	112
Chloroform	67-66-3	103
Chloromethane	74-87-3	108
Cyclohexane	110-82-7	107
Dibromochloromethane	124-48-1	101
Ethanol	64-17-5	120

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/20/19 06:03 PM
Lab ID:	1911173AR1-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112104a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	101
Freon 11	75-69-4	114
Freon 113	76-13-1	108
Freon 12	75-71-8	98
Heptane	142-82-5	102
Hexane	110-54-3	111
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	108
Naphthalene	91-20-3	85
o-Xylene	95-47-6	101
Propylene	115-07-1	93
Styrene	100-42-5	102
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	105
Toluene	108-88-3	98
Total Xylene	1330-20-7	99
Trichloroethene	79-01-6	105
Vinyl Chloride	75-01-4	112

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	64-133	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/20/19 06:03 PM
Lab ID:	1911173AR1-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14112104a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	83-110	100
Toluene-d8	2037-26-5	86-115	99

* % Recovery is calculated using unrounded analytical results.

12/6/2019
Ms. Pamela Moss
EA Engineering
7995 E. Prentice Ave
Suite 206E
Greenwood Village CO 80111

Project Name: KAFB Bioventing
Project #: 6275DM02
Workorder #: 1911173BR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 11/8/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker
Project Manager

WORK ORDER #: 1911173BR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	6275DM02 KAFB Bioventing
DATE RECEIVED:	11/08/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/21/2019		
DATE REISSUED:	11/25/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102	Modified TO-3	10 "Hg	5.1 psi
02A	KAFB-106V1 113	Modified TO-3	11.4 "Hg	4.9 psi
03A	KAFB-106V1 160	Modified TO-3	8.4 "Hg	5.3 psi
04A	KAFB-106V1 160 DUP	Modified TO-3	8.2 "Hg	4.9 psi
05A	KAFB-106V1 217	Modified TO-3	10.4 "Hg	5.1 psi
06A	KAFB-106V1 252	Modified TO-3	11.8 "Hg	5.1 psi
07A	KAFB-106V1 263	Modified TO-3	10.8 "Hg	5.3 psi
08A	KAFB-106V2 102	Modified TO-3	10.8 "Hg	5 psi
09A	KAFB-106V2 117	Modified TO-3	13.3 "Hg	4.6 psi
10A	KAFB-106V2 117 DUP	Modified TO-3	13.3 "Hg	5.3 psi
11A	KAFB-106V2 160	Modified TO-3	10.4 "Hg	4.9 psi
12A	KAFB-106V2 217	Modified TO-3	13.9 "Hg	5.1 psi
13A	KAFB-106V2 252	Modified TO-3	12.4 "Hg	5 psi
14A	KAFB-106V2 270	Modified TO-3	13.5 "Hg	5 psi
14AA	KAFB-106V2 270 Lab Duplicate	Modified TO-3	13.5 "Hg	5 psi
15A	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 12/06/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 1911173BR1

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on November 08, 2019. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m3. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	TO-3	ATL Modifications
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

The Work Order was reissued on December 6, 2019 to revise all sample IDs per the revised COC provided by the client.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

TPH (Gasoline Range) and Fluorobenzene (FID) were manually integrated in samples KAFB-106V1 102.1 and KAFB-106V2 217.1.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 102	Date/Time Analyzed:	11/13/19 08:37 AM
Lab ID:	1911173BR1-01A	Dilution Factor:	2020
Date/Time Collected:	11/5/19 08:25 AM	Instrument/Filename:	gcd.i / d111307
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	160000	210000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 113	Date/Time Analyzed:	11/13/19 09:17 AM
Lab ID:	1911173BR1-02A	Dilution Factor:	2150
Date/Time Collected:	11/5/19 08:37 AM	Instrument/Filename:	gcd.i / d111308
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	180000	220000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 160	Date/Time Analyzed:	11/13/19 09:54 AM
Lab ID:	1911173BR1-03A	Dilution Factor:	2360
Date/Time Collected:	11/5/19 08:53 AM	Instrument/Filename:	gcd.i / d111309
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	140000	190000	240000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	130

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 160 DUP	Date/Time Analyzed:	11/13/19 10:27 AM
Lab ID:	1911173BR1-04A	Dilution Factor:	2290
Date/Time Collected:	11/5/19 09:03 AM	Instrument/Filename:	gcd.i / d111310
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	190000	230000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	132

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 217	Date/Time Analyzed:	11/13/19 11:23 AM
Lab ID:	1911173BR1-05A	Dilution Factor:	1650
Date/Time Collected:	11/5/19 09:19 AM	Instrument/Filename:	gcd.i / d111311
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	96000	130000	170000	57000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	132

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1 252	Date/Time Analyzed:	11/13/19 11:58 AM
Lab ID:	1911173BR1-06A	Dilution Factor:	2220
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	gcd.i / d111312
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	180000	230000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1 263	Date/Time Analyzed:	11/13/19 12:43 PM
Lab ID:	1911173BR1-07A	Dilution Factor:	2130
Date/Time Collected:	11/5/19 09:54 AM	Instrument/Filename:	gcd.i / d111313
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	220000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	147

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2 102	Date/Time Analyzed:	11/13/19 01:33 PM
Lab ID:	1911173BR1-08A	Dilution Factor:	2100
Date/Time Collected:	11/5/19 10:26 AM	Instrument/Filename:	gcd.i / d111314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	170000	210000	220000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	153

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117	Date/Time Analyzed:	11/13/19 02:06 PM
Lab ID:	1911173BR1-09A	Dilution Factor:	2940
Date/Time Collected:	11/5/19 10:39 AM	Instrument/Filename:	gcd.i / d111315
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	170000	240000	300000	250000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 117 DUP	Date/Time Analyzed:	11/13/19 02:59 PM
Lab ID:	1911173BR1-10A	Dilution Factor:	3050
Date/Time Collected:	11/5/19 10:45 AM	Instrument/Filename:	gcd.i / d111316
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	180000	250000	310000	260000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	140

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 160	Date/Time Analyzed:	11/13/19 03:32 PM
Lab ID:	1911173BR1-11A	Dilution Factor:	408
Date/Time Collected:	11/5/19 10:59 AM	Instrument/Filename:	gcd.i / d111317
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	24000	33000	42000	20000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	118

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 217	Date/Time Analyzed:	11/13/19 04:04 PM
Lab ID:	1911173BR1-12A	Dilution Factor:	2510
Date/Time Collected:	11/5/19 11:10 AM	Instrument/Filename:	gcd.i / d111318
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	150000	200000	260000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	135

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 252	Date/Time Analyzed:	11/13/19 04:37 PM
Lab ID:	1911173BR1-13A	Dilution Factor:	1530
Date/Time Collected:	11/5/19 11:22 AM	Instrument/Filename:	gcd.i / d111319
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	90000	120000	160000	94000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	138

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 270	Date/Time Analyzed:	11/13/19 07:27 AM
Lab ID:	1911173BR1-14A	Dilution Factor:	1620
Date/Time Collected:	11/5/19 11:34 AM	Instrument/Filename:	gcd.i / d111305
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	95000	130000	160000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	147

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2 270 Lab Duplicate	Date/Time Analyzed:	11/13/19 08:04 AM
Lab ID:	1911173BR1-14AA	Dilution Factor:	1620
Date/Time Collected:	11/5/19 11:34 AM	Instrument/Filename:	gcd.i / d111306
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	95000	130000	160000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	148

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/12/19 09:07 PM
Lab ID:	1911173BR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d111304
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	105

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/12/19 07:31 PM
Lab ID:	1911173BR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d111302
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		104

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	129

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/12/19 08:22 PM
Lab ID:	1911173BR1-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d111303
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		106

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	65-154	130

* % Recovery is calculated using unrounded analytical results.

12/11/2019
Ms. Pamela Moss
EA Engineering
7995 E. Prentice Ave
Suite 206E
Greenwood Village CO 80111

Project Name: KAFB Bioventing
Project #: 6275DM02
Workorder #: 1911173CR2

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 11/8/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker
Project Manager

WORK ORDER #: 1911173CR2

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	6275DM02 KAFB Bioventing
DATE RECEIVED:	11/08/2019	CONTACT:	Brian Whittaker
DATE COMPLETED:	11/21/2019		
DATE REISSUED:	12/11/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1 102	Modified ASTM D-1945	10 "Hg	5.1 psi
01AA	KAFB-106V1 102 Lab Duplicate	Modified ASTM D-1945	10 "Hg	5.1 psi
02A	KAFB-106V1 113	Modified ASTM D-1945	11.4 "Hg	4.9 psi
03A	KAFB-106V1 160	Modified ASTM D-1945	8.4 "Hg	5.3 psi
04A	KAFB-106V1 160 DUP	Modified ASTM D-1945	8.2 "Hg	4.9 psi
05A	KAFB-106V1 217	Modified ASTM D-1945	10.4 "Hg	5.1 psi
06A	KAFB-106V1 252	Modified ASTM D-1945	11.8 "Hg	5.1 psi
07A	KAFB-106V1 263	Modified ASTM D-1945	10.8 "Hg	5.3 psi
08A	KAFB-106V2 102	Modified ASTM D-1945	10.8 "Hg	5 psi
09A	KAFB-106V2 117	Modified ASTM D-1945	13.3 "Hg	4.6 psi
10A	KAFB-106V2 117 DUP	Modified ASTM D-1945	13.3 "Hg	5.3 psi
11A	KAFB-106V2 160	Modified ASTM D-1945	10.4 "Hg	4.9 psi
12A	KAFB-106V2 217	Modified ASTM D-1945	13.9 "Hg	5.1 psi
13A	KAFB-106V2 252	Modified ASTM D-1945	12.4 "Hg	5 psi
14A	KAFB-106V2 270	Modified ASTM D-1945	13.5 "Hg	5 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 12/11/19

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 1911173CR2

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on November 08, 2019. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

The Work Order was reissued on December 6, 2019 to revise all sample IDs per the revised COC provided by the client.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Methane and Ethane were manually integrated in samples KAFB-106V1 102.1, KAFB-106V1 102.1 Lab Duplicate, KAFB-106V2 102.2, KAFB-106V2 117.1, KAFB-106V2 117.1 DUP and KAFB-106V2 217.1.

Methane was manually integrated in samples KAFB-106V1 112.6, KAFB-106V1 159.6, KAFB-106V1 159.6 DUP, KAFB-106V1 217.1, KAFB-106V1 252.1 and KAFB-106V1 262.6.

The work order was reissued on 12/11/2019 to correct the Limit of Detections and Method Detection Limits.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 102	Date/Time Analyzed:	11/20/19 04:09 PM
Lab ID:	1911173CR2-01A	Dilution Factor:	2.02
Date/Time Collected:	11/5/19 08:25 AM	Instrument/Filename:	gc10.i / 10112034
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0035
Carbon Dioxide	124-38-9	0.0022	0.0097	0.020	2.0
Carbon Monoxide	630-08-0	0.0027	0.0097	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.00043 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0014
Nitrogen	7727-37-9	0.14	0.14	0.20	77
Oxygen	7782-44-7	0.037	0.037	0.20	19
Pentane	109-66-0	0.000050	0.00022	0.0020	0.10
Propane	74-98-6	0.000061	0.00022	0.0020	0.00039 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 73

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 102 Lab Duplicate	Date/Time Analyzed:	11/20/19 05:15 PM
Lab ID:	1911173CR2-01AA	Dilution Factor:	2.02
Date/Time Collected:	11/5/19 08:25 AM	Instrument/Filename:	gc10.i / 10112036
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	0.0034
Carbon Dioxide	124-38-9	0.0022	0.0097	0.020	2.0
Carbon Monoxide	630-08-0	0.0027	0.0097	0.020	Not Detected U
Ethane	74-84-0	0.000050	0.00022	0.0020	0.00040 J
Hydrogen	1333-74-0	0.0030	0.012	0.020	Not Detected U
Methane	74-82-8	0.000054	0.00010	0.00020	0.0013
Nitrogen	7727-37-9	0.14	0.14	0.20	77
Oxygen	7782-44-7	0.037	0.037	0.20	19
Pentane	109-66-0	0.000050	0.00022	0.0020	0.10
Propane	74-98-6	0.000061	0.00022	0.0020	0.00040 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 73

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 113	Date/Time Analyzed:	11/20/19 06:21 PM
Lab ID:	1911173CR2-02A	Dilution Factor:	2.15
Date/Time Collected:	11/5/19 08:37 AM	Instrument/Filename:	gc10.i / 10112038
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00024	0.0022	0.0042
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	3.0
Carbon Monoxide	630-08-0	0.0028	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000054	0.00024	0.0022	0.00059 J
Hydrogen	1333-74-0	0.0032	0.013	0.022	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00022	0.0015
Nitrogen	7727-37-9	0.14	0.14	0.22	77
Oxygen	7782-44-7	0.040	0.040	0.22	18
Pentane	109-66-0	0.000054	0.00024	0.0022	0.13
Propane	74-98-6	0.000064	0.00024	0.0022	0.00046 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 80

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 160	Date/Time Analyzed:	11/20/19 07:28 PM
Lab ID:	1911173CR2-03A	Dilution Factor:	1.89
Date/Time Collected:	11/5/19 08:53 AM	Instrument/Filename:	gc10.i / 10112040
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000026	0.00021	0.0019	0.00048 J
Carbon Dioxide	124-38-9	0.0020	0.0091	0.019	0.44
Carbon Monoxide	630-08-0	0.0025	0.0091	0.019	Not Detected U
Ethane	74-84-0	0.000047	0.00021	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0028	0.012	0.019	Not Detected U
Methane	74-82-8	0.000051	0.000094	0.00019	0.00014 J
Nitrogen	7727-37-9	0.13	0.13	0.19	78
Oxygen	7782-44-7	0.035	0.035	0.19	20
Pentane	109-66-0	0.000047	0.00021	0.0019	0.11
Propane	74-98-6	0.000057	0.00021	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 64

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 160 DUP	Date/Time Analyzed:	11/20/19 08:34 PM
Lab ID:	1911173CR2-04A	Dilution Factor:	1.83
Date/Time Collected:	11/5/19 09:03 AM	Instrument/Filename:	gc10.i / 10112042
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000026	0.00020	0.0018	0.00046 J
Carbon Dioxide	124-38-9	0.0020	0.0088	0.018	0.44
Carbon Monoxide	630-08-0	0.0024	0.0088	0.018	Not Detected U
Ethane	74-84-0	0.000046	0.00020	0.0018	Not Detected U
Hydrogen	1333-74-0	0.0028	0.011	0.018	Not Detected U
Methane	74-82-8	0.000049	0.000092	0.00018	0.00013 J
Nitrogen	7727-37-9	0.12	0.12	0.18	78
Oxygen	7782-44-7	0.034	0.034	0.18	20
Pentane	109-66-0	0.000046	0.00020	0.0018	0.11
Propane	74-98-6	0.000055	0.00020	0.0018	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 64

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1 217	Date/Time Analyzed:	11/20/19 09:41 PM
Lab ID:	1911173CR2-05A	Dilution Factor:	2.06
Date/Time Collected:	11/5/19 09:19 AM	Instrument/File Name:	gc10.i / 10112045
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.00027 J
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.88
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.021	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00021	0.00021
Nitrogen	7727-37-9	0.14	0.14	0.21	78
Oxygen	7782-44-7	0.038	0.038	0.21	20
Pentane	109-66-0	0.000052	0.00023	0.0021	0.022
Propane	74-98-6	0.000062	0.00023	0.0021	0.000091 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 31

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 252	Date/Time Analyzed:	11/21/19 07:45 AM
Lab ID:	1911173CR2-06A	Dilution Factor:	2.22
Date/Time Collected:	11/5/19 09:38 AM	Instrument/Filename:	gc10.i / 10112056
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000031	0.00024	0.0022	0.000062 J
Carbon Dioxide	124-38-9	0.0024	0.011	0.022	0.17
Carbon Monoxide	630-08-0	0.0029	0.011	0.022	Not Detected U
Ethane	74-84-0	0.000056	0.00024	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0033	0.014	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	0.000094 J
Nitrogen	7727-37-9	0.15	0.15	0.22	78
Oxygen	7782-44-7	0.041	0.041	0.22	20
Pentane	109-66-0	0.000056	0.00024	0.0022	0.038
Propane	74-98-6	0.000067	0.00024	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 59

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1 263	Date/Time Analyzed:	11/21/19 08:28 AM
Lab ID:	1911173CR2-07A	Dilution Factor:	2.13
Date/Time Collected:	11/5/19 09:54 AM	Instrument/Filename:	gc10.i / 10112058
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000030	0.00023	0.0021	0.00031 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	0.20
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000053	0.00023	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00011	0.00021	0.00012 J
Nitrogen	7727-37-9	0.14	0.14	0.21	78
Oxygen	7782-44-7	0.039	0.039	0.21	20
Pentane	109-66-0	0.000053	0.00023	0.0021	0.050
Propane	74-98-6	0.000064	0.00023	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 65

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 102	Date/Time Analyzed:	11/21/19 09:11 AM
Lab ID:	1911173CR2-08A	Dilution Factor:	2.10
Date/Time Collected:	11/5/19 10:26 AM	Instrument/Filename:	gc10.i / 10112060
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000029	0.00023	0.0021	0.0035
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	3.4
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000052	0.00023	0.0021	0.00059 J
Hydrogen	1333-74-0	0.0032	0.013	0.021	Not Detected U
Methane	74-82-8	0.000057	0.00010	0.00021	0.0036
Nitrogen	7727-37-9	0.14	0.14	0.21	77
Oxygen	7782-44-7	0.039	0.039	0.21	17
Pentane	109-66-0	0.000052	0.00023	0.0021	0.088
Propane	74-98-6	0.000063	0.00023	0.0021	0.00077 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 100

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117	Date/Time Analyzed:	11/21/19 09:57 AM
Lab ID:	1911173CR2-09A	Dilution Factor:	2.35
Date/Time Collected:	11/5/19 10:39 AM	Instrument/Filename:	gc10.i / 10112062
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000033	0.00026	0.0024	0.0050
Carbon Dioxide	124-38-9	0.0025	0.011	0.024	5.3
Carbon Monoxide	630-08-0	0.0031	0.011	0.024	Not Detected U
Ethane	74-84-0	0.000059	0.00026	0.0024	0.00095 J
Hydrogen	1333-74-0	0.0035	0.014	0.024	Not Detected U
Methane	74-82-8	0.000063	0.00012	0.00024	0.0052
Nitrogen	7727-37-9	0.16	0.16	0.24	77
Oxygen	7782-44-7	0.044	0.044	0.24	15
Pentane	109-66-0	0.000059	0.00026	0.0024	0.16
Propane	74-98-6	0.000070	0.00026	0.0024	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 130

Total Sp. Gravity = 1.1

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 117 DUP	Date/Time Analyzed:	11/21/19 10:41 AM
Lab ID:	1911173CR2-10A	Dilution Factor:	2.44
Date/Time Collected:	11/5/19 10:45 AM	Instrument/Filename:	gc10.i / 10112064
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000034	0.00027	0.0024	0.0051
Carbon Dioxide	124-38-9	0.0026	0.012	0.024	5.3
Carbon Monoxide	630-08-0	0.0032	0.012	0.024	Not Detected U
Ethane	74-84-0	0.000061	0.00027	0.0024	0.00095 J
Hydrogen	1333-74-0	0.0037	0.015	0.024	Not Detected U
Methane	74-82-8	0.000066	0.00012	0.00024	0.0053
Nitrogen	7727-37-9	0.16	0.16	0.24	76
Oxygen	7782-44-7	0.045	0.045	0.24	16
Pentane	109-66-0	0.000061	0.00027	0.0024	0.17
Propane	74-98-6	0.000073	0.00027	0.0024	0.0011 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 130

Total Sp. Gravity = 1.1

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 160	Date/Time Analyzed:	11/20/19 10:27 PM
Lab ID:	1911173CR2-11A	Dilution Factor:	2.04
Date/Time Collected:	11/5/19 10:59 AM	Instrument/File Name:	gc10.i / 10112047
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000028	0.00022	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0022	0.0098	0.020	0.15
Carbon Monoxide	630-08-0	0.0027	0.0098	0.020	Not Detected U
Ethane	74-84-0	0.000051	0.00022	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0031	0.013	0.020	Not Detected U
Methane	74-82-8	0.000055	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.14	0.14	0.20	80
Oxygen	7782-44-7	0.038	0.038	0.20	20
Pentane	109-66-0	0.000051	0.00022	0.0020	0.00025 J
Propane	74-98-6	0.000061	0.00022	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 7.1

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 217	Date/Time Analyzed:	11/21/19 05:32 AM
Lab ID:	1911173CR2-12A	Dilution Factor:	2.51
Date/Time Collected:	11/5/19 11:10 AM	Instrument/Filename:	gc10.i / 10112050
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000035	0.00028	0.0025	0.0015 J
Carbon Dioxide	124-38-9	0.0027	0.012	0.025	2.6
Carbon Monoxide	630-08-0	0.0033	0.012	0.025	Not Detected U
Ethane	74-84-0	0.000063	0.00028	0.0025	0.00020 J
Hydrogen	1333-74-0	0.0038	0.016	0.025	Not Detected U
Methane	74-82-8	0.000068	0.00012	0.00025	0.00036
Nitrogen	7727-37-9	0.17	0.17	0.25	78
Oxygen	7782-44-7	0.046	0.046	0.25	18
Pentane	109-66-0	0.000063	0.00028	0.0025	0.064
Propane	74-98-6	0.000075	0.00028	0.0025	0.00046 J

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 85

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V2 252	Date/Time Analyzed:	11/21/19 06:40 AM
Lab ID:	1911173CR2-13A	Dilution Factor:	2.29
Date/Time Collected:	11/5/19 11:22 AM	Instrument/File Name:	gc10.i / 10112053
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000032	0.00025	0.0023	Not Detected U
Carbon Dioxide	124-38-9	0.0025	0.011	0.023	0.10
Carbon Monoxide	630-08-0	0.0030	0.011	0.023	Not Detected U
Ethane	74-84-0	0.000057	0.00025	0.0023	Not Detected U
Hydrogen	1333-74-0	0.0034	0.014	0.023	Not Detected U
Methane	74-82-8	0.000062	0.00011	0.00023	Not Detected U
Nitrogen	7727-37-9	0.16	0.16	0.23	79
Oxygen	7782-44-7	0.042	0.042	0.23	20
Pentane	109-66-0	0.000057	0.00025	0.0023	0.0061
Propane	74-98-6	0.000069	0.00025	0.0023	Not Detected U

U = The analyte was not detected above the MDL.

Total BTU/Cu.F. = 41

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2 270	Date/Time Analyzed:	11/21/19 07:02 AM
Lab ID:	1911173CR2-14A	Dilution Factor:	2.43
Date/Time Collected:	11/5/19 11:34 AM	Instrument/File Name:	gc10.i / 10112054
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000034	0.00027	0.0024	Not Detected U
Carbon Dioxide	124-38-9	0.0026	0.012	0.024	0.17
Carbon Monoxide	630-08-0	0.0032	0.012	0.024	Not Detected U
Ethane	74-84-0	0.000061	0.00027	0.0024	Not Detected U
Hydrogen	1333-74-0	0.0036	0.015	0.024	Not Detected U
Methane	74-82-8	0.000066	0.00012	0.00024	Not Detected U
Nitrogen	7727-37-9	0.16	0.16	0.24	78
Oxygen	7782-44-7	0.045	0.045	0.24	20
Pentane	109-66-0	0.000061	0.00027	0.0024	0.0024 J
Propane	74-98-6	0.000073	0.00027	0.0024	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Total BTU/Cu.F. = 62

Total Sp. Gravity = 1.0

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/20/19 03:07 PM
Lab ID:	1911173CR2-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10112032
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000014	0.00011	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000025	0.00011	0.0010	Not Detected U
Methane	74-82-8	0.000027	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000025	0.00011	0.0010	Not Detected U
Propane	74-98-6	0.000030	0.00011	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	11/20/19 03:43 PM
Lab ID:	1911173CR2-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10112033c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.0015	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/20/19 12:37 PM
Lab ID:	1911173CR2-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10112027
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	98
Carbon Dioxide	124-38-9	96
Carbon Monoxide	630-08-0	88
Ethane	74-84-0	99
Methane	74-82-8	99
Nitrogen	7727-37-9	97
Oxygen	7782-44-7	100
Pentane	109-66-0	98
Propane	74-98-6	98

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/20/19 02:45 PM
Lab ID:	1911173CR2-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10112031a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	99
Carbon Dioxide	124-38-9	96
Carbon Monoxide	630-08-0	88
Ethane	74-84-0	100
Methane	74-82-8	101
Nitrogen	7727-37-9	97
Oxygen	7782-44-7	101
Pentane	109-66-0	100
Propane	74-98-6	100

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	11/20/19 01:27 PM
Lab ID:	1911173CR2-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10112029c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	97

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	11/20/19 02:22 PM
Lab ID:	1911173CR2-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10112030c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

1/29/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2001312A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 1/16/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2001312A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	01/16/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	01/29/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
01AA	KAFB-106V1-102 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
02A	KAFB-106V1-113	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
03A	KAFB-106V1-160	Modified TO-15 (5&20 ppbv	14.0 "Hg	5 psi
04A	KAFB-106V1-160-DUP	Modified TO-15 (5&20 ppbv	13.0 "Hg	5 psi
05A	KAFB-106V1-217	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
06A	KAFB-106V1-252	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
06AA	KAFB-106V1-252 Lab Duplicate	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
07A	KAFB-106V1-263	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
08A	KAFB-106V2-102	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
12A	KAFB-106V2-217	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
13A	KAFB-106V2-252	Modified TO-15 (5&20 ppbv	9.4 "Hg	5.4 psi
14A	KAFB-106V2-270	Modified TO-15 (5&20 ppbv	8 "Hg	5.3 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16C	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA

Continued on next page

WORK ORDER #: 2001312A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	01/16/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	01/29/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
17B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 01/29/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 2001312A

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on January 16, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V2-270 did not match the information on the canister with regard to canister barcode. The sample labeled 6L2716A on the COC is labeled as 9275 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes and non-standard compounds.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Samples were analyzed in two analytical batches on MSD-14 on 1/22/20 and 1/23/20. The initial continuing calibration verification (CCV) for the batches are reported as lab fractions 16A and 16B and the ending CCV are reported as lab fractions 16C and 16D.

Dilution was performed on all samples due to the presence of high level target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in samples KAFB-106V1-102, KAFB-106V1-102 Lab Duplicate, KAFB-106V1-160, KAFB-106V2-117, KAFB-106V2-217, KAFB-106V2-252 and KAFB-106V2-270 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Acetone and Hexane exceeded the instrument's calibration range for samples KAFB-106V1-102 and KAFB-106V1-102 Lab Duplicate and were flagged accordingly.

Hexane and Cyclohexane exceeded the instrument's calibration range for sample KAFB-106V2-117 and were flagged accordingly.

Acetone, Hexane and Cyclohexane exceeded the instrument's calibration range for sample KAFB-106V2-217 and were flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	1/22/20 06:27 PM
Lab ID:	2001312A-01A	Dilution Factor:	206
Date/Time Collected:	1/13/20 09:03 AM	Instrument/File Name:	msd14.i / 14012223
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	3300	4200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	23000	30000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	960	4000	5100	32000
1,2-Dibromoethane (EDB)	106-93-4	1400	6300	7900	3600 J
1,2-Dichlorobenzene	95-50-1	1500	5000	6200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	840	4000	5100	13000
1,3-Butadiene	106-99-0	720	1800	2300	Not Detected U
1,4-Dioxane	123-91-1	4100	11000	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2900	9100	12000	550000
2-Hexanone	591-78-6	6300	13000	17000	Not Detected U
2-Propanol	67-63-0	1300	7600	10000	160000
4-Methyl-2-pentanone	108-10-1	2000	3400	4200	Not Detected U
Acetone	67-64-1	1400	7300	9800	4900000 J
Benzene	71-43-2	460	2600	3300	2300000
Bromodichloromethane	75-27-4	690	5500	6900	Not Detected U
Bromoform	75-25-2	1500	8500	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	9600	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1500	5200	6500	Not Detected U
Chloroethane	75-00-3	3100	8200	11000	Not Detected U
Chloroform	67-66-3	860	4000	5000	Not Detected U
Chloromethane	74-87-3	1800	6400	8500	Not Detected U
Cyclohexane	110-82-7	790	2800	3500	5300000
Dibromochloromethane	124-48-1	1800	7000	8800	Not Detected U
Ethanol	64-17-5	1700	5800	7800	70000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	1/22/20 06:27 PM
Lab ID:	2001312A-01A	Dilution Factor:	206
Date/Time Collected:	1/13/20 09:03 AM	Instrument/Filename:	msd14.i / 14012223
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	890	3600	4500	160000
Freon 11	75-69-4	860	4600	5800	Not Detected U
Freon 113	76-13-1	1400	6300	7900	Not Detected U
Freon 12	75-71-8	1100	4100	5100	Not Detected U
Heptane	142-82-5	1400	3400	4200	2700000
Hexane	110-54-3	890	2900	3600	9700000 J
m,p-Xylene	108-38-3	840	3600	4500	250000
Methylene Chloride	75-09-2	2200	11000	14000	Not Detected U
Naphthalene	91-20-3	1700	2200	22000	Not Detected U
o-Xylene	95-47-6	1200	3600	4500	74000
Propylene	115-07-1	1200	5300	7100	Not Detected U
Styrene	100-42-5	830	3500	4400	Not Detected U
Tetrachloroethene	127-18-4	2400	5600	7000	Not Detected U
Tetrahydrofuran	109-99-9	1100	2400	3000	Not Detected U
Toluene	108-88-3	700	3100	3900	1800000
Total Xylene	1330-20-7	NA	D	8900	320000
Trichloroethene	79-01-6	1600	4400	5500	Not Detected U
Vinyl Chloride	75-01-4	910	2100	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	1/22/20 06:27 PM
Lab ID:	2001312A-01A	Dilution Factor:	206
Date/Time Collected:	1/13/20 09:03 AM	Instrument/Filename:	msd14.i / 14012223
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	143 Q
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	1/22/20 06:50 PM
Lab ID:	2001312A-01AA	Dilution Factor:	206
Date/Time Collected:	1/13/20 09:03 AM	Instrument/File Name:	msd14.i / 14012224
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	3300	4200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	23000	30000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	960	4000	5100	31000
1,2-Dibromoethane (EDB)	106-93-4	1400	6300	7900	3600 J
1,2-Dichlorobenzene	95-50-1	1500	5000	6200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	840	4000	5100	14000
1,3-Butadiene	106-99-0	720	1800	2300	Not Detected U
1,4-Dioxane	123-91-1	4100	11000	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2900	9100	12000	560000
2-Hexanone	591-78-6	6300	13000	17000	Not Detected U
2-Propanol	67-63-0	1300	7600	10000	160000
4-Methyl-2-pentanone	108-10-1	2000	3400	4200	Not Detected U
Acetone	67-64-1	1400	7300	9800	5000000 J
Benzene	71-43-2	460	2600	3300	2300000
Bromodichloromethane	75-27-4	690	5500	6900	Not Detected U
Bromoform	75-25-2	1500	8500	11000	Not Detected U
Carbon Disulfide	75-15-0	2000	9600	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1500	5200	6500	Not Detected U
Chloroethane	75-00-3	3100	8200	11000	Not Detected U
Chloroform	67-66-3	860	4000	5000	Not Detected U
Chloromethane	74-87-3	1800	6400	8500	Not Detected U
Cyclohexane	110-82-7	790	2800	3500	5300000
Dibromochloromethane	124-48-1	1800	7000	8800	Not Detected U
Ethanol	64-17-5	1700	5800	7800	73000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	1/22/20 06:50 PM
Lab ID:	2001312A-01AA	Dilution Factor:	206
Date/Time Collected:	1/13/20 09:03 AM	Instrument/Filename:	msd14.i / 14012224
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	890	3600	4500	160000
Freon 11	75-69-4	860	4600	5800	Not Detected U
Freon 113	76-13-1	1400	6300	7900	Not Detected U
Freon 12	75-71-8	1100	4100	5100	Not Detected U
Heptane	142-82-5	1400	3400	4200	2800000
Hexane	110-54-3	890	2900	3600	9700000 J
m,p-Xylene	108-38-3	840	3600	4500	250000
Methylene Chloride	75-09-2	2200	11000	14000	Not Detected U
Naphthalene	91-20-3	1700	2200	22000	Not Detected U
o-Xylene	95-47-6	1200	3600	4500	78000
Propylene	115-07-1	1200	5300	7100	Not Detected U
Styrene	100-42-5	830	3500	4400	Not Detected U
Tetrachloroethene	127-18-4	2400	5600	7000	Not Detected U
Tetrahydrofuran	109-99-9	1100	2400	3000	Not Detected U
Toluene	108-88-3	700	3100	3900	1800000
Total Xylene	1330-20-7	NA	D	8900	330000
Trichloroethene	79-01-6	1600	4400	5500	Not Detected U
Vinyl Chloride	75-01-4	910	2100	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	1/22/20 06:50 PM
Lab ID:	2001312A-01AA	Dilution Factor:	206
Date/Time Collected:	1/13/20 09:03 AM	Instrument/Filename:	msd14.i / 14012224
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	144 Q
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	1/22/20 07:40 PM
Lab ID:	2001312A-02A	Dilution Factor:	515
Date/Time Collected:	1/13/20 09:18 AM	Instrument/File Name:	msd14.i / 14012226
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2900	8300	10000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	31000	57000	76000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2400	10000	13000	42000
1,2-Dibromoethane (EDB)	106-93-4	3500	16000	20000	4300 J
1,2-Dichlorobenzene	95-50-1	3700	12000	15000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	10000	13000	16000
1,3-Butadiene	106-99-0	1800	4600	5700	Not Detected U
1,4-Dioxane	123-91-1	10000	28000	37000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7400	23000	30000	520000
2-Hexanone	591-78-6	16000	32000	42000	Not Detected U
2-Propanol	67-63-0	3200	19000	25000	180000
4-Methyl-2-pentanone	108-10-1	5100	8400	10000	Not Detected U
Acetone	67-64-1	3600	18000	24000	3600000
Benzene	71-43-2	1200	6600	8200	1900000
Bromodichloromethane	75-27-4	1700	14000	17000	Not Detected U
Bromoform	75-25-2	3700	21000	27000	Not Detected U
Carbon Disulfide	75-15-0	4900	24000	32000	Not Detected U
Carbon Tetrachloride	56-23-5	3800	13000	16000	Not Detected U
Chloroethane	75-00-3	7800	20000	27000	Not Detected U
Chloroform	67-66-3	2200	10000	12000	Not Detected U
Chloromethane	74-87-3	4500	16000	21000	Not Detected U
Cyclohexane	110-82-7	2000	7100	8900	4500000
Dibromochloromethane	124-48-1	4500	18000	22000	Not Detected U
Ethanol	64-17-5	4200	14000	19000	120000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	1/22/20 07:40 PM
Lab ID:	2001312A-02A	Dilution Factor:	515
Date/Time Collected:	1/13/20 09:18 AM	Instrument/File Name:	msd14.i / 14012226
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	37000	Not Detected
Ethyl Benzene	100-41-4	2200	8900	11000	160000
Freon 11	75-69-4	2100	12000	14000	Not Detected U
Freon 113	76-13-1	3500	16000	20000	Not Detected U
Freon 12	75-71-8	2800	10000	13000	Not Detected U
Heptane	142-82-5	3600	8400	10000	2500000
Hexane	110-54-3	2200	7300	9100	7900000
m,p-Xylene	108-38-3	2100	8900	11000	250000
Methylene Chloride	75-09-2	5500	27000	36000	Not Detected U
Naphthalene	91-20-3	4200	5400	54000	Not Detected U
o-Xylene	95-47-6	3000	8900	11000	74000
Propylene	115-07-1	3000	13000	18000	Not Detected U
Styrene	100-42-5	2100	8800	11000	Not Detected U
Tetrachloroethene	127-18-4	6100	14000	17000	Not Detected U
Tetrahydrofuran	109-99-9	2700	6100	7600	Not Detected U
Toluene	108-88-3	1700	7800	9700	1800000
Total Xylene	1330-20-7	NA	D	22000	320000
Trichloroethene	79-01-6	4100	11000	14000	Not Detected U
Vinyl Chloride	75-01-4	2300	5300	6600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	1/22/20 07:40 PM
Lab ID:	2001312A-02A	Dilution Factor:	515
Date/Time Collected:	1/13/20 09:18 AM	Instrument/Filename:	msd14.i / 14012226
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	125
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	1/22/20 10:47 PM
Lab ID:	2001312A-03A	Dilution Factor:	126
Date/Time Collected:	1/13/20 09:30 AM	Instrument/File Name:	msd14.i / 14012233
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	710	2000	2600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	7600	14000	19000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	590	2500	3100	46000
1,2-Dibromoethane (EDB)	106-93-4	850	3900	4800	1700 J
1,2-Dichlorobenzene	95-50-1	920	3000	3800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	510	2500	3100	18000
1,3-Butadiene	106-99-0	440	1100	1400	Not Detected U
1,4-Dioxane	123-91-1	2500	6800	9100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1800	5600	7400	87000
2-Hexanone	591-78-6	3900	7700	10000	Not Detected U
2-Propanol	67-63-0	790	4600	6200	290000
4-Methyl-2-pentanone	108-10-1	1200	2100	2600	Not Detected U
Acetone	67-64-1	870	4500	6000	2500000
Benzene	71-43-2	280	1600	2000	1100000
Bromodichloromethane	75-27-4	420	3400	4200	Not Detected U
Bromoform	75-25-2	900	5200	6500	Not Detected U
Carbon Disulfide	75-15-0	1200	5900	7800	Not Detected U
Carbon Tetrachloride	56-23-5	940	3200	4000	Not Detected U
Chloroethane	75-00-3	1900	5000	6600	Not Detected U
Chloroform	67-66-3	530	2500	3100	Not Detected U
Chloromethane	74-87-3	1100	3900	5200	Not Detected U
Cyclohexane	110-82-7	480	1700	2200	3000000
Dibromochloromethane	124-48-1	1100	4300	5400	Not Detected U
Ethanol	64-17-5	1000	3600	4700	69000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	1/22/20 10:47 PM
Lab ID:	2001312A-03A	Dilution Factor:	126
Date/Time Collected:	1/13/20 09:30 AM	Instrument/Filename:	msd14.i / 14012233
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	9100	Not Detected
Ethyl Benzene	100-41-4	550	2200	2700	280000
Freon 11	75-69-4	520	2800	3500	Not Detected U
Freon 113	76-13-1	860	3900	4800	Not Detected U
Freon 12	75-71-8	690	2500	3100	Not Detected U
Heptane	142-82-5	870	2100	2600	2900000
Hexane	110-54-3	550	1800	2200	3700000
m,p-Xylene	108-38-3	510	2200	2700	610000
Methylene Chloride	75-09-2	1400	6600	8800	Not Detected U
Naphthalene	91-20-3	1000	1300	13000	Not Detected U
o-Xylene	95-47-6	740	2200	2700	170000
Propylene	115-07-1	740	3200	4300	Not Detected U
Styrene	100-42-5	510	2100	2700	Not Detected U
Tetrachloroethene	127-18-4	1500	3400	4300	Not Detected U
Tetrahydrofuran	109-99-9	660	1500	1800	Not Detected U
Toluene	108-88-3	430	1900	2400	2200000
Total Xylene	1330-20-7	NA	D	5500	780000
Trichloroethene	79-01-6	1000	2700	3400	Not Detected U
Vinyl Chloride	75-01-4	560	1300	1600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	1/22/20 10:47 PM
Lab ID:	2001312A-03A	Dilution Factor:	126
Date/Time Collected:	1/13/20 09:30 AM	Instrument/Filename:	msd14.i / 14012233
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	150 Q
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	1/22/20 10:24 PM
Lab ID:	2001312A-04A	Dilution Factor:	236
Date/Time Collected:	1/13/20 09:37 AM	Instrument/File Name:	msd14.i / 14012232
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1300	3800	4800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	14000	26000	35000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1100	4600	5800	40000
1,2-Dibromoethane (EDB)	106-93-4	1600	7200	9100	2100 J
1,2-Dichlorobenzene	95-50-1	1700	5700	7100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	960	4600	5800	16000
1,3-Butadiene	106-99-0	820	2100	2600	Not Detected U
1,4-Dioxane	123-91-1	4700	13000	17000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3400	10000	14000	95000
2-Hexanone	591-78-6	7200	14000	19000	Not Detected U
2-Propanol	67-63-0	1500	8700	12000	280000
4-Methyl-2-pentanone	108-10-1	2300	3900	4800	Not Detected U
Acetone	67-64-1	1600	8400	11000	2800000
Benzene	71-43-2	530	3000	3800	1100000
Bromodichloromethane	75-27-4	790	6300	7900	Not Detected U
Bromoform	75-25-2	1700	9800	12000	Not Detected U
Carbon Disulfide	75-15-0	2200	11000	15000	Not Detected U
Carbon Tetrachloride	56-23-5	1800	5900	7400	Not Detected U
Chloroethane	75-00-3	3600	9300	12000	Not Detected U
Chloroform	67-66-3	990	4600	5800	Not Detected U
Chloromethane	74-87-3	2000	7300	9700	Not Detected U
Cyclohexane	110-82-7	900	3200	4100	3300000
Dibromochloromethane	124-48-1	2100	8000	10000	Not Detected U
Ethanol	64-17-5	1900	6700	8900	58000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	1/22/20 10:24 PM
Lab ID:	2001312A-04A	Dilution Factor:	236
Date/Time Collected:	1/13/20 09:37 AM	Instrument/File Name:	msd14.i / 14012232
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	17000	Not Detected
Ethyl Benzene	100-41-4	1000	4100	5100	240000
Freon 11	75-69-4	980	5300	6600	Not Detected U
Freon 113	76-13-1	1600	7200	9000	Not Detected U
Freon 12	75-71-8	1300	4700	5800	Not Detected U
Heptane	142-82-5	1600	3900	4800	3000000
Hexane	110-54-3	1000	3300	4200	4100000
m,p-Xylene	108-38-3	960	4100	5100	480000
Methylene Chloride	75-09-2	2500	12000	16000	Not Detected U
Naphthalene	91-20-3	1900	2500	25000	Not Detected U
o-Xylene	95-47-6	1400	4100	5100	140000
Propylene	115-07-1	1400	6100	8100	Not Detected U
Styrene	100-42-5	950	4000	5000	Not Detected U
Tetrachloroethene	127-18-4	2800	6400	8000	Not Detected U
Tetrahydrofuran	109-99-9	1200	2800	3500	Not Detected U
Toluene	108-88-3	800	3600	4400	2100000
Total Xylene	1330-20-7	NA	D	10000	620000
Trichloroethene	79-01-6	1900	5100	6300	Not Detected U
Vinyl Chloride	75-01-4	1000	2400	3000	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	1/22/20 10:24 PM
Lab ID:	2001312A-04A	Dilution Factor:	236
Date/Time Collected:	1/13/20 09:37 AM	Instrument/Filename:	msd14.i / 14012232
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	125
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	1/22/20 08:06 PM
Lab ID:	2001312A-05A	Dilution Factor:	542
Date/Time Collected:	1/13/20 09:52 AM	Instrument/Filename:	msd14.i / 14012227
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	3000	8800	11000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	32000	60000	80000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2500	11000	13000	8600 J
1,2-Dibromoethane (EDB)	106-93-4	3700	17000	21000	Not Detected U
1,2-Dichlorobenzene	95-50-1	3900	13000	16000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2200	11000	13000	2900 J
1,3-Butadiene	106-99-0	1900	4800	6000	Not Detected U
1,4-Dioxane	123-91-1	11000	29000	39000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7800	24000	32000	290000
2-Hexanone	591-78-6	17000	33000	44000	Not Detected U
2-Propanol	67-63-0	3400	20000	27000	54000
4-Methyl-2-pentanone	108-10-1	5400	8900	11000	Not Detected U
Acetone	67-64-1	3800	19000	26000	3900000
Benzene	71-43-2	1200	6900	8600	1200000
Bromodichloromethane	75-27-4	1800	14000	18000	Not Detected U
Bromoform	75-25-2	3900	22000	28000	Not Detected U
Carbon Disulfide	75-15-0	5100	25000	34000	Not Detected U
Carbon Tetrachloride	56-23-5	4000	14000	17000	Not Detected U
Chloroethane	75-00-3	8200	21000	29000	Not Detected U
Chloroform	67-66-3	2300	10000	13000	Not Detected U
Chloromethane	74-87-3	4700	17000	22000	Not Detected U
Cyclohexane	110-82-7	2100	7500	9300	4200000
Dibromochloromethane	124-48-1	4800	18000	23000	Not Detected U
Ethanol	64-17-5	4500	15000	20000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	1/22/20 08:06 PM
Lab ID:	2001312A-05A	Dilution Factor:	542
Date/Time Collected:	1/13/20 09:52 AM	Instrument/File Name:	msd14.i / 14012227
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	39000	Not Detected
Ethyl Benzene	100-41-4	2400	9400	12000	350000
Freon 11	75-69-4	2200	12000	15000	Not Detected U
Freon 113	76-13-1	3700	17000	21000	Not Detected U
Freon 12	75-71-8	3000	11000	13000	Not Detected U
Heptane	142-82-5	3800	8900	11000	4200000
Hexane	110-54-3	2300	7600	9600	5200000
m,p-Xylene	108-38-3	2200	9400	12000	1100000
Methylene Chloride	75-09-2	5800	28000	38000	Not Detected U
Naphthalene	91-20-3	4400	5700	57000	Not Detected U
o-Xylene	95-47-6	3200	9400	12000	310000
Propylene	115-07-1	3200	14000	19000	Not Detected U
Styrene	100-42-5	2200	9200	12000	Not Detected U
Tetrachloroethene	127-18-4	6500	15000	18000	Not Detected U
Tetrahydrofuran	109-99-9	2800	6400	8000	Not Detected U
Toluene	108-88-3	1800	8200	10000	2800000
Total Xylene	1330-20-7	NA	D	24000	1400000
Trichloroethene	79-01-6	4300	12000	14000	Not Detected U
Vinyl Chloride	75-01-4	2400	5500	6900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	1/22/20 08:06 PM
Lab ID:	2001312A-05A	Dilution Factor:	542
Date/Time Collected:	1/13/20 09:52 AM	Instrument/Filename:	msd14.i / 14012227
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	129
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	1/23/20 12:00 PM
Lab ID:	2001312A-06A	Dilution Factor:	196
Date/Time Collected:	1/13/20 10:07 AM	Instrument/File name:	msd14.i / 14012307
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1100	3200	4000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	22000	29000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	920	3800	4800	13000
1,2-Dibromoethane (EDB)	106-93-4	1300	6000	7500	18000
1,2-Dichlorobenzene	95-50-1	1400	4700	5900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	800	3800	4800	7800
1,3-Butadiene	106-99-0	680	1700	2200	Not Detected U
1,4-Dioxane	123-91-1	3900	10000	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2800	8700	12000	320000
2-Hexanone	591-78-6	6000	12000	16000	Not Detected U
2-Propanol	67-63-0	1200	7200	9600	22000
4-Methyl-2-pentanone	108-10-1	2000	3200	4000	Not Detected U
Acetone	67-64-1	1400	7000	9300	1500000
Benzene	71-43-2	440	2500	3100	1200000
Bromodichloromethane	75-27-4	660	5200	6600	Not Detected U
Bromoform	75-25-2	1400	8100	10000	Not Detected U
Carbon Disulfide	75-15-0	1800	9200	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1500	4900	6200	Not Detected U
Chloroethane	75-00-3	3000	7800	10000	Not Detected U
Chloroform	67-66-3	820	3800	4800	Not Detected U
Chloromethane	74-87-3	1700	6100	8100	Not Detected U
Cyclohexane	110-82-7	750	2700	3400	4200000
Dibromochloromethane	124-48-1	1700	6700	8300	Not Detected U
Ethanol	64-17-5	1600	5500	7400	6600 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	1/23/20 12:00 PM
Lab ID:	2001312A-06A	Dilution Factor:	196
Date/Time Collected:	1/13/20 10:07 AM	Instrument/File Name:	msd14.i / 14012307
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	850	3400	4200	330000
Freon 11	75-69-4	810	4400	5500	Not Detected U
Freon 113	76-13-1	1300	6000	7500	Not Detected U
Freon 12	75-71-8	1100	3900	4800	Not Detected U
Heptane	142-82-5	1400	3200	4000	7600000
Hexane	110-54-3	850	2800	3400	4000000
m,p-Xylene	108-38-3	800	3400	4200	910000
Methylene Chloride	75-09-2	2100	10000	14000	Not Detected U
Naphthalene	91-20-3	1600	2000	20000	Not Detected U
o-Xylene	95-47-6	1100	3400	4200	230000
Propylene	115-07-1	1200	5000	6700	Not Detected U
Styrene	100-42-5	790	3300	4200	Not Detected U
Tetrachloroethene	127-18-4	2300	5300	6600	Not Detected U
Tetrahydrofuran	109-99-9	1000	2300	2900	Not Detected U
Toluene	108-88-3	660	3000	3700	5300000
Total Xylene	1330-20-7	NA	D	8500	1100000
Trichloroethene	79-01-6	1600	4200	5300	Not Detected U
Vinyl Chloride	75-01-4	870	2000	2500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	1/23/20 12:00 PM
Lab ID:	2001312A-06A	Dilution Factor:	196
Date/Time Collected:	1/13/20 10:07 AM	Instrument/Filename:	msd14.i / 14012307
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	132
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252 Lab Duplicate	Date/Time Analyzed:	1/23/20 12:37 PM
Lab ID:	2001312A-06AA	Dilution Factor:	196
Date/Time Collected:	1/13/20 10:07 AM	Instrument/File Name:	msd14.i / 14012308
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1100	3200	4000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	22000	29000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	920	3800	4800	14000
1,2-Dibromoethane (EDB)	106-93-4	1300	6000	7500	16000
1,2-Dichlorobenzene	95-50-1	1400	4700	5900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	800	3800	4800	7500
1,3-Butadiene	106-99-0	680	1700	2200	Not Detected U
1,4-Dioxane	123-91-1	3900	10000	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2800	8700	12000	320000
2-Hexanone	591-78-6	6000	12000	16000	Not Detected U
2-Propanol	67-63-0	1200	7200	9600	23000
4-Methyl-2-pentanone	108-10-1	2000	3200	4000	Not Detected U
Acetone	67-64-1	1400	7000	9300	1500000
Benzene	71-43-2	440	2500	3100	1200000
Bromodichloromethane	75-27-4	660	5200	6600	Not Detected U
Bromoform	75-25-2	1400	8100	10000	Not Detected U
Carbon Disulfide	75-15-0	1800	9200	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1500	4900	6200	Not Detected U
Chloroethane	75-00-3	3000	7800	10000	Not Detected U
Chloroform	67-66-3	820	3800	4800	Not Detected U
Chloromethane	74-87-3	1700	6100	8100	Not Detected U
Cyclohexane	110-82-7	750	2700	3400	4300000
Dibromochloromethane	124-48-1	1700	6700	8300	Not Detected U
Ethanol	64-17-5	1600	5500	7400	6800 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252 Lab Duplicate	Date/Time Analyzed:	1/23/20 12:37 PM
Lab ID:	2001312A-06AA	Dilution Factor:	196
Date/Time Collected:	1/13/20 10:07 AM	Instrument/File Name:	msd14.i / 14012308
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	850	3400	4200	330000
Freon 11	75-69-4	810	4400	5500	Not Detected U
Freon 113	76-13-1	1300	6000	7500	Not Detected U
Freon 12	75-71-8	1100	3900	4800	Not Detected U
Heptane	142-82-5	1400	3200	4000	7600000
Hexane	110-54-3	850	2800	3400	4100000
m,p-Xylene	108-38-3	800	3400	4200	960000
Methylene Chloride	75-09-2	2100	10000	14000	Not Detected U
Naphthalene	91-20-3	1600	2000	20000	Not Detected U
o-Xylene	95-47-6	1100	3400	4200	230000
Propylene	115-07-1	1200	5000	6700	Not Detected U
Styrene	100-42-5	790	3300	4200	Not Detected U
Tetrachloroethene	127-18-4	2300	5300	6600	Not Detected U
Tetrahydrofuran	109-99-9	1000	2300	2900	Not Detected U
Toluene	108-88-3	660	3000	3700	5200000
Total Xylene	1330-20-7	NA	D	8500	1200000
Trichloroethene	79-01-6	1600	4200	5300	Not Detected U
Vinyl Chloride	75-01-4	870	2000	2500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252 Lab Duplicate	Date/Time Analyzed:	1/23/20 12:37 PM
Lab ID:	2001312A-06AA	Dilution Factor:	196
Date/Time Collected:	1/13/20 10:07 AM	Instrument/Filename:	msd14.i / 14012308
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	140
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	1/23/20 04:09 PM
Lab ID:	2001312A-07A	Dilution Factor:	335
Date/Time Collected:	1/13/20 10:22 AM	Instrument/File Name:	msd14.i / 14012314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1900	5400	6800	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	20000	37000	50000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1600	6600	8200	34000
1,2-Dibromoethane (EDB)	106-93-4	2300	10000	13000	20000
1,2-Dichlorobenzene	95-50-1	2400	8000	10000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1400	6600	8200	16000
1,3-Butadiene	106-99-0	1200	3000	3700	Not Detected U
1,4-Dioxane	123-91-1	6600	18000	24000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4800	15000	20000	540000
2-Hexanone	591-78-6	10000	20000	27000	Not Detected U
2-Propanol	67-63-0	2100	12000	16000	50000
4-Methyl-2-pentanone	108-10-1	3300	5500	6900	Not Detected U
Acetone	67-64-1	2300	12000	16000	2400000
Benzene	71-43-2	750	4300	5400	1100000
Bromodichloromethane	75-27-4	1100	9000	11000	Not Detected U
Bromoform	75-25-2	2400	14000	17000	Not Detected U
Carbon Disulfide	75-15-0	3200	16000	21000	Not Detected U
Carbon Tetrachloride	56-23-5	2500	8400	10000	Not Detected U
Chloroethane	75-00-3	5100	13000	18000	Not Detected U
Chloroform	67-66-3	1400	6500	8200	Not Detected U
Chloromethane	74-87-3	2900	10000	14000	Not Detected U
Cyclohexane	110-82-7	1300	4600	5800	3800000
Dibromochloromethane	124-48-1	2900	11000	14000	Not Detected U
Ethanol	64-17-5	2800	9500	13000	19000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	1/23/20 04:09 PM
Lab ID:	2001312A-07A	Dilution Factor:	335
Date/Time Collected:	1/13/20 10:22 AM	Instrument/Filename:	msd14.i / 14012314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	24000	Not Detected
Ethyl Benzene	100-41-4	1400	5800	7300	350000
Freon 11	75-69-4	1400	7500	9400	Not Detected U
Freon 113	76-13-1	2300	10000	13000	Not Detected U
Freon 12	75-71-8	1800	6600	8300	Not Detected U
Heptane	142-82-5	2300	5500	6900	7300000
Hexane	110-54-3	1400	4700	5900	3800000
m,p-Xylene	108-38-3	1400	5800	7300	910000
Methylene Chloride	75-09-2	3600	17000	23000	Not Detected U
Naphthalene	91-20-3	2700	3500	35000	Not Detected U
o-Xylene	95-47-6	2000	5800	7300	230000
Propylene	115-07-1	2000	8600	12000	Not Detected U
Styrene	100-42-5	1400	5700	7100	Not Detected U
Tetrachloroethene	127-18-4	4000	9100	11000	Not Detected U
Tetrahydrofuran	109-99-9	1700	4000	4900	Not Detected U
Toluene	108-88-3	1100	5000	6300	5600000
Total Xylene	1330-20-7	NA	D	14000	1100000
Trichloroethene	79-01-6	2700	7200	9000	Not Detected U
Vinyl Chloride	75-01-4	1500	3400	4300	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	128

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	1/23/20 04:09 PM
Lab ID:	2001312A-07A	Dilution Factor:	335
Date/Time Collected:	1/13/20 10:22 AM	Instrument/Filename:	msd14.i / 14012314
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	1/22/20 08:40 PM
Lab ID:	2001312A-08A	Dilution Factor:	490
Date/Time Collected:	1/13/20 10:53 AM	Instrument/Filename:	msd14.i / 14012228
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2800	7900	9900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	29000	54000	73000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2300	9600	12000	25000
1,2-Dibromoethane (EDB)	106-93-4	3300	15000	19000	17000 J
1,2-Dichlorobenzene	95-50-1	3600	12000	15000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2000	9600	12000	12000
1,3-Butadiene	106-99-0	1700	4300	5400	Not Detected U
1,4-Dioxane	123-91-1	9700	26000	35000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7000	22000	29000	790000
2-Hexanone	591-78-6	15000	30000	40000	Not Detected U
2-Propanol	67-63-0	3100	18000	24000	320000
4-Methyl-2-pentanone	108-10-1	4900	8000	10000	Not Detected U
Acetone	67-64-1	3400	17000	23000	5400000
Benzene	71-43-2	1100	6300	7800	2000000
Bromodichloromethane	75-27-4	1600	13000	16000	Not Detected U
Bromoform	75-25-2	3500	20000	25000	Not Detected U
Carbon Disulfide	75-15-0	4600	23000	30000	Not Detected U
Carbon Tetrachloride	56-23-5	3700	12000	15000	Not Detected U
Chloroethane	75-00-3	7400	19000	26000	Not Detected U
Chloroform	67-66-3	2000	9600	12000	Not Detected U
Chloromethane	74-87-3	4200	15000	20000	Not Detected U
Cyclohexane	110-82-7	1900	6700	8400	6100000
Dibromochloromethane	124-48-1	4300	17000	21000	Not Detected U
Ethanol	64-17-5	4000	14000	18000	55000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	1/22/20 08:40 PM
Lab ID:	2001312A-08A	Dilution Factor:	490
Date/Time Collected:	1/13/20 10:53 AM	Instrument/Filename:	msd14.i / 14012228
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	35000	Not Detected
Ethyl Benzene	100-41-4	2100	8500	11000	230000
Freon 11	75-69-4	2000	11000	14000	Not Detected U
Freon 113	76-13-1	3300	15000	19000	Not Detected U
Freon 12	75-71-8	2700	9700	12000	Not Detected U
Heptane	142-82-5	3400	8000	10000	5500000
Hexane	110-54-3	2100	6900	8600	7600000
m,p-Xylene	108-38-3	2000	8500	11000	520000
Methylene Chloride	75-09-2	5300	26000	34000	Not Detected U
Naphthalene	91-20-3	4000	5100	51000	Not Detected U
o-Xylene	95-47-6	2900	8500	11000	130000
Propylene	115-07-1	2900	13000	17000	Not Detected U
Styrene	100-42-5	2000	8300	10000	Not Detected U
Tetrachloroethene	127-18-4	5800	13000	17000	Not Detected U
Tetrahydrofuran	109-99-9	2600	5800	7200	Not Detected U
Toluene	108-88-3	1700	7400	9200	4100000
Total Xylene	1330-20-7	NA	D	21000	660000
Trichloroethene	79-01-6	3900	10000	13000	Not Detected U
Vinyl Chloride	75-01-4	2200	5000	6300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	1/22/20 08:40 PM
Lab ID:	2001312A-08A	Dilution Factor:	490
Date/Time Collected:	1/13/20 10:53 AM	Instrument/Filename:	msd14.i / 14012228
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	136
4-Bromofluorobenzene	460-00-4	90-111	95
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	1/22/20 12:39 PM
Lab ID:	2001312A-09A	Dilution Factor:	177
Date/Time Collected:	1/13/20 11:07 AM	Instrument/File Name:	msd14.i / 14012210
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1000	2900	3600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	11000	20000	26000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	830	3500	4400	14000
1,2-Dibromoethane (EDB)	106-93-4	1200	5400	6800	9800
1,2-Dichlorobenzene	95-50-1	1300	4200	5300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	720	3500	4400	6500
1,3-Butadiene	106-99-0	610	1600	2000	Not Detected U
1,4-Dioxane	123-91-1	3500	9600	13000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2500	7800	10000	440000
2-Hexanone	591-78-6	5400	11000	14000	Not Detected U
2-Propanol	67-63-0	1100	6500	8700	46000
4-Methyl-2-pentanone	108-10-1	1800	2900	3600	Not Detected U
Acetone	67-64-1	1200	6300	8400	3400000
Benzene	71-43-2	400	2300	2800	2400000
Bromodichloromethane	75-27-4	590	4700	5900	Not Detected U
Bromoform	75-25-2	1300	7300	9100	Not Detected U
Carbon Disulfide	75-15-0	1700	8300	11000	1800 J
Carbon Tetrachloride	56-23-5	1300	4400	5600	Not Detected U
Chloroethane	75-00-3	2700	7000	9300	Not Detected U
Chloroform	67-66-3	740	3400	4300	Not Detected U
Chloromethane	74-87-3	1500	5500	7300	Not Detected U
Cyclohexane	110-82-7	680	2400	3000	6600000 J
Dibromochloromethane	124-48-1	1600	6000	7500	Not Detected U
Ethanol	64-17-5	1500	5000	6700	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	1/22/20 12:39 PM
Lab ID:	2001312A-09A	Dilution Factor:	177
Date/Time Collected:	1/13/20 11:07 AM	Instrument/Filename:	msd14.i / 14012210
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	13000	Not Detected
Ethyl Benzene	100-41-4	770	3100	3800	220000
Freon 11	75-69-4	740	4000	5000	Not Detected U
Freon 113	76-13-1	1200	5400	6800	Not Detected U
Freon 12	75-71-8	970	3500	4400	Not Detected U
Heptane	142-82-5	1200	2900	3600	5200000
Hexane	110-54-3	770	2500	3100	10000000 J
m,p-Xylene	108-38-3	720	3100	3800	520000
Methylene Chloride	75-09-2	1900	9200	12000	Not Detected U
Naphthalene	91-20-3	1400	1800	18000	Not Detected U
o-Xylene	95-47-6	1000	3100	3800	120000
Propylene	115-07-1	1000	4600	6100	24000
Styrene	100-42-5	720	3000	3800	Not Detected U
Tetrachloroethene	127-18-4	2100	4800	6000	Not Detected U
Tetrahydrofuran	109-99-9	920	2100	2600	Not Detected U
Toluene	108-88-3	600	2700	3300	3700000
Total Xylene	1330-20-7	NA	D	7700	650000
Trichloroethene	79-01-6	1400	3800	4800	Not Detected U
Vinyl Chloride	75-01-4	780	1800	2300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	1/22/20 12:39 PM
Lab ID:	2001312A-09A	Dilution Factor:	177
Date/Time Collected:	1/13/20 11:07 AM	Instrument/Filename:	msd14.i / 14012210
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	147 Q
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	1/22/20 09:06 PM
Lab ID:	2001312A-10A	Dilution Factor:	542
Date/Time Collected:	1/13/20 11:14 AM	Instrument/Filename:	msd14.i / 14012229
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	3000	8800	11000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	32000	60000	80000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2500	11000	13000	22000
1,2-Dibromoethane (EDB)	106-93-4	3700	17000	21000	12000 J
1,2-Dichlorobenzene	95-50-1	3900	13000	16000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2200	11000	13000	8900 J
1,3-Butadiene	106-99-0	1900	4800	6000	Not Detected U
1,4-Dioxane	123-91-1	11000	29000	39000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7800	24000	32000	480000
2-Hexanone	591-78-6	17000	33000	44000	Not Detected U
2-Propanol	67-63-0	3400	20000	27000	50000
4-Methyl-2-pentanone	108-10-1	5400	8900	11000	Not Detected U
Acetone	67-64-1	3800	19000	26000	3800000
Benzene	71-43-2	1200	6900	8600	2500000
Bromodichloromethane	75-27-4	1800	14000	18000	Not Detected U
Bromoform	75-25-2	3900	22000	28000	Not Detected U
Carbon Disulfide	75-15-0	5100	25000	34000	Not Detected U
Carbon Tetrachloride	56-23-5	4000	14000	17000	Not Detected U
Chloroethane	75-00-3	8200	21000	29000	Not Detected U
Chloroform	67-66-3	2300	10000	13000	Not Detected U
Chloromethane	74-87-3	4700	17000	22000	Not Detected U
Cyclohexane	110-82-7	2100	7500	9300	6800000
Dibromochloromethane	124-48-1	4800	18000	23000	Not Detected U
Ethanol	64-17-5	4500	15000	20000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	1/22/20 09:06 PM
Lab ID:	2001312A-10A	Dilution Factor:	542
Date/Time Collected:	1/13/20 11:14 AM	Instrument/File Name:	msd14.i / 14012229
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	39000	Not Detected
Ethyl Benzene	100-41-4	2400	9400	12000	270000
Freon 11	75-69-4	2200	12000	15000	Not Detected U
Freon 113	76-13-1	3700	17000	21000	Not Detected U
Freon 12	75-71-8	3000	11000	13000	Not Detected U
Heptane	142-82-5	3800	8900	11000	5300000
Hexane	110-54-3	2300	7600	9600	10000000
m,p-Xylene	108-38-3	2200	9400	12000	690000
Methylene Chloride	75-09-2	5800	28000	38000	Not Detected U
Naphthalene	91-20-3	4400	5700	57000	Not Detected U
o-Xylene	95-47-6	3200	9400	12000	170000
Propylene	115-07-1	3200	14000	19000	24000
Styrene	100-42-5	2200	9200	12000	Not Detected U
Tetrachloroethene	127-18-4	6500	15000	18000	Not Detected U
Tetrahydrofuran	109-99-9	2800	6400	8000	Not Detected U
Toluene	108-88-3	1800	8200	10000	4000000
Total Xylene	1330-20-7	NA	D	24000	870000
Trichloroethene	79-01-6	4300	12000	14000	Not Detected U
Vinyl Chloride	75-01-4	2400	5500	6900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	1/22/20 09:06 PM
Lab ID:	2001312A-10A	Dilution Factor:	542
Date/Time Collected:	1/13/20 11:14 AM	Instrument/Filename:	msd14.i / 14012229
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	137
4-Bromofluorobenzene	460-00-4	90-111	94
Toluene-d8	2037-26-5	85-116	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	1/23/20 07:31 AM
Lab ID:	2001312A-11A	Dilution Factor:	19.6
Date/Time Collected:	1/13/20 11:27 AM	Instrument/File Name:	msd14.i / 14012238
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	110	320	400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1200	2200	2900	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	92	380	480	78000
1,2-Dibromoethane (EDB)	106-93-4	130	600	750	300 J
1,2-Dichlorobenzene	95-50-1	140	470	590	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	80	380	480	24000
1,3-Butadiene	106-99-0	68	170	220	Not Detected U
1,4-Dioxane	123-91-1	390	1000	1400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	280	870	1200	950 J
2-Hexanone	591-78-6	600	1200	1600	Not Detected U
2-Propanol	67-63-0	120	720	960	1700
4-Methyl-2-pentanone	108-10-1	200	320	400	Not Detected U
Acetone	67-64-1	140	700	930	21000
Benzene	71-43-2	44	250	310	31000
Bromodichloromethane	75-27-4	66	520	660	Not Detected U
Bromoform	75-25-2	140	810	1000	Not Detected U
Carbon Disulfide	75-15-0	180	920	1200	Not Detected U
Carbon Tetrachloride	56-23-5	150	490	620	Not Detected U
Chloroethane	75-00-3	300	780	1000	Not Detected U
Chloroform	67-66-3	82	380	480	Not Detected U
Chloromethane	74-87-3	170	610	810	Not Detected U
Cyclohexane	110-82-7	75	270	340	100000
Dibromochloromethane	124-48-1	170	670	830	Not Detected U
Ethanol	64-17-5	160	550	740	560 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	1/23/20 07:31 AM
Lab ID:	2001312A-11A	Dilution Factor:	19.6
Date/Time Collected:	1/13/20 11:27 AM	Instrument/File Name:	msd14.i / 14012238
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	1400	Not Detected
Ethyl Benzene	100-41-4	85	340	420	38000
Freon 11	75-69-4	81	440	550	Not Detected U
Freon 113	76-13-1	130	600	750	Not Detected U
Freon 12	75-71-8	110	390	480	Not Detected U
Heptane	142-82-5	140	320	400	140000
Hexane	110-54-3	85	280	340	73000
m,p-Xylene	108-38-3	80	340	420	120000
Methylene Chloride	75-09-2	210	1000	1400	Not Detected U
Naphthalene	91-20-3	160	200	2000	1200 J
o-Xylene	95-47-6	110	340	420	48000
Propylene	115-07-1	120	500	670	Not Detected U
Styrene	100-42-5	79	330	420	Not Detected U
Tetrachloroethene	127-18-4	230	530	660	Not Detected U
Tetrahydrofuran	109-99-9	100	230	290	Not Detected U
Toluene	108-88-3	66	300	370	140000
Total Xylene	1330-20-7	NA	D	850	160000
Trichloroethene	79-01-6	160	420	530	Not Detected U
Vinyl Chloride	75-01-4	87	200	250	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	1/23/20 07:31 AM
Lab ID:	2001312A-11A	Dilution Factor:	19.6
Date/Time Collected:	1/13/20 11:27 AM	Instrument/Filename:	msd14.i / 14012238
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	119
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	1/23/20 06:41 AM
Lab ID:	2001312A-12A	Dilution Factor:	103
Date/Time Collected:	1/13/20 11:39 AM	Instrument/Filename:	msd14.i / 14012236
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	580	1700	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6200	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	480	2000	2500	41000
1,2-Dibromoethane (EDB)	106-93-4	700	3200	4000	5400
1,2-Dichlorobenzene	95-50-1	750	2500	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	420	2000	2500	17000
1,3-Butadiene	106-99-0	360	910	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5600	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1500	4600	6100	140000
2-Hexanone	591-78-6	3200	6300	8400	Not Detected U
2-Propanol	67-63-0	640	3800	5100	110000
4-Methyl-2-pentanone	108-10-1	1000	1700	2100	Not Detected U
Acetone	67-64-1	710	3700	4900	4400000 J
Benzene	71-43-2	230	1300	1600	1600000
Bromodichloromethane	75-27-4	340	2800	3400	Not Detected U
Bromoform	75-25-2	730	4200	5300	Not Detected U
Carbon Disulfide	75-15-0	980	4800	6400	Not Detected U
Carbon Tetrachloride	56-23-5	770	2600	3200	Not Detected U
Chloroethane	75-00-3	1600	4100	5400	Not Detected U
Chloroform	67-66-3	430	2000	2500	Not Detected U
Chloromethane	74-87-3	890	3200	4200	Not Detected U
Cyclohexane	110-82-7	390	1400	1800	4600000 J
Dibromochloromethane	124-48-1	900	3500	4400	Not Detected U
Ethanol	64-17-5	850	2900	3900	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	1/23/20 06:41 AM
Lab ID:	2001312A-12A	Dilution Factor:	103
Date/Time Collected:	1/13/20 11:39 AM	Instrument/Filename:	msd14.i / 14012236
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	450	1800	2200	230000
Freon 11	75-69-4	430	2300	2900	Not Detected U
Freon 113	76-13-1	700	3200	3900	Not Detected U
Freon 12	75-71-8	560	2000	2500	Not Detected U
Heptane	142-82-5	710	1700	2100	4100000
Hexane	110-54-3	450	1400	1800	6600000 J
m,p-Xylene	108-38-3	420	1800	2200	520000
Methylene Chloride	75-09-2	1100	5400	7200	Not Detected U
Naphthalene	91-20-3	830	1100	11000	Not Detected U
o-Xylene	95-47-6	600	1800	2200	150000
Propylene	115-07-1	610	2600	3500	Not Detected U
Styrene	100-42-5	420	1800	2200	Not Detected U
Tetrachloroethene	127-18-4	1200	2800	3500	Not Detected U
Tetrahydrofuran	109-99-9	540	1200	1500	Not Detected U
Toluene	108-88-3	350	1600	1900	2700000
Total Xylene	1330-20-7	NA	D	4500	670000
Trichloroethene	79-01-6	820	2200	2800	Not Detected U
Vinyl Chloride	75-01-4	460	1000	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	1/23/20 06:41 AM
Lab ID:	2001312A-12A	Dilution Factor:	103
Date/Time Collected:	1/13/20 11:39 AM	Instrument/Filename:	msd14.i / 14012236
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	152 Q
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	1/23/20 07:58 AM
Lab ID:	2001312A-13A	Dilution Factor:	99.6
Date/Time Collected:	1/13/20 11:52 AM	Instrument/Filename:	msd14.i / 14012239
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	560	1600	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6000	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	460	2000	2400	34000
1,2-Dibromoethane (EDB)	106-93-4	670	3100	3800	8400
1,2-Dichlorobenzene	95-50-1	720	2400	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	410	2000	2400	13000
1,3-Butadiene	106-99-0	340	880	1100	Not Detected U
1,4-Dioxane	123-91-1	2000	5400	7200	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1400	4400	5900	180000
2-Hexanone	591-78-6	3000	6100	8200	Not Detected U
2-Propanol	67-63-0	620	3700	4900	110000
4-Methyl-2-pentanone	108-10-1	990	1600	2000	Not Detected U
Acetone	67-64-1	690	3500	4700	2000000
Benzene	71-43-2	220	1300	1600	330000
Bromodichloromethane	75-27-4	330	2700	3300	Not Detected U
Bromoform	75-25-2	710	4100	5100	Not Detected U
Carbon Disulfide	75-15-0	940	4600	6200	Not Detected U
Carbon Tetrachloride	56-23-5	740	2500	3100	Not Detected U
Chloroethane	75-00-3	1500	3900	5200	Not Detected U
Chloroform	67-66-3	420	1900	2400	Not Detected U
Chloromethane	74-87-3	860	3100	4100	Not Detected U
Cyclohexane	110-82-7	380	1400	1700	1500000
Dibromochloromethane	124-48-1	870	3400	4200	Not Detected U
Ethanol	64-17-5	820	2800	3800	1600 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	1/23/20 07:58 AM
Lab ID:	2001312A-13A	Dilution Factor:	99.6
Date/Time Collected:	1/13/20 11:52 AM	Instrument/Filename:	msd14.i / 14012239
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7200	Not Detected
Ethyl Benzene	100-41-4	430	1700	2200	150000
Freon 11	75-69-4	410	2200	2800	Not Detected U
Freon 113	76-13-1	680	3000	3800	Not Detected U
Freon 12	75-71-8	550	2000	2500	Not Detected U
Heptane	142-82-5	690	1600	2000	3000000
Hexane	110-54-3	430	1400	1800	570000
m,p-Xylene	108-38-3	410	1700	2200	350000
Methylene Chloride	75-09-2	1100	5200	6900	Not Detected U
Naphthalene	91-20-3	800	1000	10000	Not Detected U
o-Xylene	95-47-6	580	1700	2200	91000
Propylene	115-07-1	590	2600	3400	Not Detected U
Styrene	100-42-5	400	1700	2100	Not Detected U
Tetrachloroethene	127-18-4	1200	2700	3400	Not Detected U
Tetrahydrofuran	109-99-9	520	1200	1500	Not Detected U
Toluene	108-88-3	340	1500	1900	2600000
Total Xylene	1330-20-7	NA	D	4300	440000
Trichloroethene	79-01-6	790	2100	2700	Not Detected U
Vinyl Chloride	75-01-4	440	1000	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	1/23/20 07:58 AM
Lab ID:	2001312A-13A	Dilution Factor:	99.6
Date/Time Collected:	1/13/20 11:52 AM	Instrument/Filename:	msd14.i / 14012239
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	162 Q
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	1/23/20 01:22 PM
Lab ID:	2001312A-14A	Dilution Factor:	185
Date/Time Collected:	1/13/20 12:06 PM	Instrument/Filename:	msd14.i / 14012310
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1000	3000	3700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	11000	20000	27000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	860	3600	4500	70000
1,2-Dibromoethane (EDB)	106-93-4	1200	5700	7100	16000
1,2-Dichlorobenzene	95-50-1	1300	4400	5600	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	750	3600	4500	29000
1,3-Butadiene	106-99-0	640	1600	2000	Not Detected U
1,4-Dioxane	123-91-1	3700	10000	13000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2600	8200	11000	250000
2-Hexanone	591-78-6	5700	11000	15000	Not Detected U
2-Propanol	67-63-0	1200	6800	9100	160000
4-Methyl-2-pentanone	108-10-1	1800	3000	3800	Not Detected U
Acetone	67-64-1	1300	6600	8800	3000000
Benzene	71-43-2	410	2400	3000	260000
Bromodichloromethane	75-27-4	620	5000	6200	Not Detected U
Bromoform	75-25-2	1300	7600	9600	Not Detected U
Carbon Disulfide	75-15-0	1800	8600	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1400	4600	5800	Not Detected U
Chloroethane	75-00-3	2800	7300	9800	Not Detected U
Chloroform	67-66-3	780	3600	4500	Not Detected U
Chloromethane	74-87-3	1600	5700	7600	Not Detected U
Cyclohexane	110-82-7	710	2500	3200	1400000
Dibromochloromethane	124-48-1	1600	6300	7900	Not Detected U
Ethanol	64-17-5	1500	5200	7000	13000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	1/23/20 01:22 PM
Lab ID:	2001312A-14A	Dilution Factor:	185
Date/Time Collected:	1/13/20 12:06 PM	Instrument/Filename:	msd14.i / 14012310
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	13000	Not Detected
Ethyl Benzene	100-41-4	800	3200	4000	310000
Freon 11	75-69-4	770	4200	5200	Not Detected U
Freon 113	76-13-1	1300	5700	7100	Not Detected U
Freon 12	75-71-8	1000	3600	4600	Not Detected U
Heptane	142-82-5	1300	3000	3800	6600000
Hexane	110-54-3	800	2600	3300	250000
m,p-Xylene	108-38-3	760	3200	4000	780000
Methylene Chloride	75-09-2	2000	9600	13000	Not Detected U
Naphthalene	91-20-3	1500	1900	19000	Not Detected U
o-Xylene	95-47-6	1100	3200	4000	210000
Propylene	115-07-1	1100	4800	6400	Not Detected U
Styrene	100-42-5	750	3200	3900	Not Detected U
Tetrachloroethene	127-18-4	2200	5000	6300	Not Detected U
Tetrahydrofuran	109-99-9	960	2200	2700	Not Detected U
Toluene	108-88-3	630	2800	3500	5600000
Total Xylene	1330-20-7	NA	D	8000	990000
Trichloroethene	79-01-6	1500	4000	5000	Not Detected U
Vinyl Chloride	75-01-4	820	1900	2400	Not Detected U

U = The analyte was not detected above the MDL.

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	1/23/20 01:22 PM
Lab ID:	2001312A-14A	Dilution Factor:	185
Date/Time Collected:	1/13/20 12:06 PM	Instrument/Filename:	msd14.i / 14012310
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	144 Q
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/22/20 10:50 AM
Lab ID:	2001312A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012206c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	20	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	13	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	27	34	Not Detected U
Bromoform	75-25-2	7.1	41	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	25	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	20	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	14	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	34	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/22/20 10:50 AM
Lab ID:	2001312A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012206c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	17	22	Not Detected U
Freon 11	75-69-4	4.2	22	28	Not Detected U
Freon 113	76-13-1	6.8	31	38	Not Detected U
Freon 12	75-71-8	5.5	20	25	Not Detected U
Heptane	142-82-5	6.9	16	20	Not Detected U
Hexane	110-54-3	4.3	14	18	Not Detected U
m,p-Xylene	108-38-3	4.1	17	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	17	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	17	21	Not Detected U
Tetrachloroethene	127-18-4	12	27	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	12	15	Not Detected U
Toluene	108-88-3	3.4	15	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	8.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	10	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/22/20 10:50 AM
Lab ID:	2001312A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012206c
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/23/20 11:18 AM
Lab ID:	2001312A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012306a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	5.6	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	60	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	4.7	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	7.3	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	4.1	20	24	Not Detected U
1,3-Butadiene	106-99-0	3.5	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	20	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	14	44	59	Not Detected U
2-Hexanone	591-78-6	31	61	82	Not Detected U
2-Propanol	67-63-0	6.3	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	6.9	36	48	Not Detected U
Benzene	71-43-2	2.2	13	16	Not Detected U
Bromodichloromethane	75-27-4	3.4	27	34	Not Detected U
Bromoform	75-25-2	7.1	41	52	Not Detected U
Carbon Disulfide	75-15-0	9.5	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.5	25	31	Not Detected U
Chloroethane	75-00-3	15	40	53	Not Detected U
Chloroform	67-66-3	4.2	20	24	Not Detected U
Chloromethane	74-87-3	8.7	31	41	Not Detected U
Cyclohexane	110-82-7	3.8	14	17	Not Detected U
Dibromochloromethane	124-48-1	8.8	34	42	Not Detected U
Ethanol	64-17-5	8.2	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/23/20 11:18 AM
Lab ID:	2001312A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012306a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.3	17	22	Not Detected U
Freon 11	75-69-4	4.2	22	28	Not Detected U
Freon 113	76-13-1	6.8	31	38	Not Detected U
Freon 12	75-71-8	5.5	20	25	Not Detected U
Heptane	142-82-5	6.9	16	20	Not Detected U
Hexane	110-54-3	4.3	14	18	Not Detected U
m,p-Xylene	108-38-3	4.1	17	22	Not Detected U
Methylene Chloride	75-09-2	11	52	69	Not Detected U
Naphthalene	91-20-3	8.1	10	100	Not Detected U
o-Xylene	95-47-6	5.9	17	22	Not Detected U
Propylene	115-07-1	5.9	26	34	Not Detected U
Styrene	100-42-5	4.0	17	21	Not Detected U
Tetrachloroethene	127-18-4	12	27	34	Not Detected U
Tetrahydrofuran	109-99-9	5.2	12	15	Not Detected U
Toluene	108-88-3	3.4	15	19	5.6 J
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	8.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.4	10	13	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/23/20 11:18 AM
Lab ID:	2001312A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012306a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	112
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/22/20 09:04 AM
Lab ID:	2001312A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14012202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	105
1,2,4-Trichlorobenzene	120-82-1	88
1,2,4-Trimethylbenzene	95-63-6	89
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	96
1,3,5-Trimethylbenzene	108-67-8	98
1,3-Butadiene	106-99-0	106
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	95
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	108
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	111
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	95
Bromoform	75-25-2	92
Carbon Disulfide	75-15-0	97
Carbon Tetrachloride	56-23-5	107
Chloroethane	75-00-3	98
Chloroform	67-66-3	104
Chloromethane	74-87-3	108
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	108

EPA METHOD TO-15 GC/MS
KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/22/20 09:04 AM
Lab ID:	2001312A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012202a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	91
Ethyl Benzene	100-41-4	93
Freon 11	75-69-4	116
Freon 113	76-13-1	107
Freon 12	75-71-8	99
Heptane	142-82-5	89
Hexane	110-54-3	103
m,p-Xylene	108-38-3	93
Methylene Chloride	75-09-2	110
Naphthalene	91-20-3	80
o-Xylene	95-47-6	92
Propylene	115-07-1	102
Styrene	100-42-5	96
Tetrachloroethene	127-18-4	95
Tetrahydrofuran	109-99-9	99
Toluene	108-88-3	92
Total Xylene	1330-20-7	92
Trichloroethene	79-01-6	95
Vinyl Chloride	75-01-4	95

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	112

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/22/20 09:04 AM
Lab ID:	2001312A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012202a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/23/20 09:33 AM
Lab ID:	2001312A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14012302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	102
1,2,4-Trichlorobenzene	120-82-1	90
1,2,4-Trimethylbenzene	95-63-6	87
1,2-Dibromoethane (EDB)	106-93-4	92
1,2-Dichlorobenzene	95-50-1	92
1,3,5-Trimethylbenzene	108-67-8	96
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	94
2-Butanone (Methyl Ethyl Ketone)	78-93-3	94
2-Hexanone	591-78-6	93
2-Propanol	67-63-0	100
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	103
Benzene	71-43-2	93
Bromodichloromethane	75-27-4	95
Bromoform	75-25-2	92
Carbon Disulfide	75-15-0	94
Carbon Tetrachloride	56-23-5	105
Chloroethane	75-00-3	92
Chloroform	67-66-3	99
Chloromethane	74-87-3	102
Cyclohexane	110-82-7	96
Dibromochloromethane	124-48-1	95
Ethanol	64-17-5	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/23/20 09:33 AM
Lab ID:	2001312A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	116
Ethyl Benzene	100-41-4	94
Freon 11	75-69-4	111
Freon 113	76-13-1	102
Freon 12	75-71-8	97
Heptane	142-82-5	92
Hexane	110-54-3	100
m,p-Xylene	108-38-3	95
Methylene Chloride	75-09-2	102
Naphthalene	91-20-3	83
o-Xylene	95-47-6	93
Propylene	115-07-1	95
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	94
Tetrahydrofuran	109-99-9	93
Toluene	108-88-3	95
Total Xylene	1330-20-7	94
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	93

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/23/20 09:33 AM
Lab ID:	2001312A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012302a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	99
Toluene-d8	2037-26-5	85-116	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/23/20 08:20 AM
Lab ID:	2001312A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012240
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	105
1,2,4-Trichlorobenzene	120-82-1	94
1,2,4-Trimethylbenzene	95-63-6	92
1,2-Dibromoethane (EDB)	106-93-4	94
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	104
1,4-Dioxane	123-91-1	93
2-Butanone (Methyl Ethyl Ketone)	78-93-3	95
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	106
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	118
Benzene	71-43-2	95
Bromodichloromethane	75-27-4	96
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	95
Carbon Tetrachloride	56-23-5	106
Chloroethane	75-00-3	94
Chloroform	67-66-3	102
Chloromethane	74-87-3	104
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/23/20 08:20 AM
Lab ID:	2001312A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012240
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	114
Freon 113	76-13-1	104
Freon 12	75-71-8	98
Heptane	142-82-5	95
Hexane	110-54-3	105
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	107
Naphthalene	91-20-3	89
o-Xylene	95-47-6	96
Propylene	115-07-1	93
Styrene	100-42-5	98
Tetrachloroethene	127-18-4	97
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	101
Total Xylene	1330-20-7	97
Trichloroethene	79-01-6	98
Vinyl Chloride	75-01-4	90

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/23/20 08:20 AM
Lab ID:	2001312A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012240
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/24/20 09:05 AM
Lab ID:	2001312A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14012341
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	105
1,2,4-Trichlorobenzene	120-82-1	106
1,2,4-Trimethylbenzene	95-63-6	90
1,2-Dibromoethane (EDB)	106-93-4	93
1,2-Dichlorobenzene	95-50-1	96
1,3,5-Trimethylbenzene	108-67-8	98
1,3-Butadiene	106-99-0	105
1,4-Dioxane	123-91-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	91
2-Hexanone	591-78-6	88
2-Propanol	67-63-0	102
4-Methyl-2-pentanone	108-10-1	82
Acetone	67-64-1	104
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	94
Bromoform	75-25-2	92
Carbon Disulfide	75-15-0	97
Carbon Tetrachloride	56-23-5	110
Chloroethane	75-00-3	93
Chloroform	67-66-3	104
Chloromethane	74-87-3	106
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/24/20 09:05 AM
Lab ID:	2001312A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012341
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	92
Freon 11	75-69-4	114
Freon 113	76-13-1	106
Freon 12	75-71-8	102
Heptane	142-82-5	91
Hexane	110-54-3	105
m,p-Xylene	108-38-3	95
Methylene Chloride	75-09-2	110
Naphthalene	91-20-3	99
o-Xylene	95-47-6	93
Propylene	115-07-1	97
Styrene	100-42-5	96
Tetrachloroethene	127-18-4	95
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	95
Total Xylene	1330-20-7	94
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	95

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	111

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	1/24/20 09:05 AM
Lab ID:	2001312A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012341
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/22/20 09:28 AM
Lab ID:	2001312A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14012203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	105
1,2,4-Trichlorobenzene	120-82-1	92
1,2,4-Trimethylbenzene	95-63-6	94
1,2-Dibromoethane (EDB)	106-93-4	100
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	109
1,4-Dioxane	123-91-1	98
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	100
2-Propanol	67-63-0	108
4-Methyl-2-pentanone	108-10-1	92
Acetone	67-64-1	113
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	101
Bromoform	75-25-2	102
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	112
Chloroethane	75-00-3	98
Chloroform	67-66-3	105
Chloromethane	74-87-3	112
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	101
Ethanol	64-17-5	113

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/22/20 09:28 AM
Lab ID:	2001312A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012203a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	120
Freon 113	76-13-1	108
Freon 12	75-71-8	106
Heptane	142-82-5	95
Hexane	110-54-3	110
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	115
Naphthalene	91-20-3	97
o-Xylene	95-47-6	101
Propylene	115-07-1	101
Styrene	100-42-5	102
Tetrachloroethene	127-18-4	101
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	96
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	109

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/22/20 09:28 AM
Lab ID:	2001312A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012203a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	99
Toluene-d8	2037-26-5	85-116	97

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/22/20 09:52 AM
Lab ID:	2001312A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	108
1,2,4-Trichlorobenzene	120-82-1	93
1,2,4-Trimethylbenzene	95-63-6	96
1,2-Dibromoethane (EDB)	106-93-4	103
1,2-Dichlorobenzene	95-50-1	99
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	107
1,4-Dioxane	123-91-1	104
2-Butanone (Methyl Ethyl Ketone)	78-93-3	101
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	112
4-Methyl-2-pentanone	108-10-1	90
Acetone	67-64-1	108
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	102
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	112
Chloroethane	75-00-3	100
Chloroform	67-66-3	105
Chloromethane	74-87-3	111
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	102
Ethanol	64-17-5	108

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/22/20 09:52 AM
Lab ID:	2001312A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012204a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	119
Freon 113	76-13-1	106
Freon 12	75-71-8	108
Heptane	142-82-5	98
Hexane	110-54-3	109
m,p-Xylene	108-38-3	101
Methylene Chloride	75-09-2	112
Naphthalene	91-20-3	100
o-Xylene	95-47-6	100
Propylene	115-07-1	100
Styrene	100-42-5	106
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	104
Toluene	108-88-3	100
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	108

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/22/20 09:52 AM
Lab ID:	2001312A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012204a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	100
Toluene-d8	2037-26-5	85-116	97

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/23/20 10:02 AM
Lab ID:	2001312A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14012303c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	108
1,2,4-Trichlorobenzene	120-82-1	75
1,2,4-Trimethylbenzene	95-63-6	90
1,2-Dibromoethane (EDB)	106-93-4	99
1,2-Dichlorobenzene	95-50-1	92
1,3,5-Trimethylbenzene	108-67-8	100
1,3-Butadiene	106-99-0	104
1,4-Dioxane	123-91-1	94
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	99
2-Propanol	67-63-0	110
4-Methyl-2-pentanone	108-10-1	87
Acetone	67-64-1	113
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	101
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	110
Chloroethane	75-00-3	99
Chloroform	67-66-3	106
Chloromethane	74-87-3	108
Cyclohexane	110-82-7	103
Dibromochloromethane	124-48-1	100
Ethanol	64-17-5	111

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/23/20 10:02 AM
Lab ID:	2001312A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012303c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	120
Freon 113	76-13-1	108
Freon 12	75-71-8	103
Heptane	142-82-5	97
Hexane	110-54-3	111
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	112
Naphthalene	91-20-3	78
o-Xylene	95-47-6	98
Propylene	115-07-1	100
Styrene	100-42-5	99
Tetrachloroethene	127-18-4	97
Tetrahydrofuran	109-99-9	101
Toluene	108-88-3	96
Total Xylene	1330-20-7	99
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	110

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/23/20 10:02 AM
Lab ID:	2001312A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012303c
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	97

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/23/20 10:28 AM
Lab ID:	2001312A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14012304c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	107
1,2,4-Trichlorobenzene	120-82-1	95
1,2,4-Trimethylbenzene	95-63-6	95
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	101
1,3,5-Trimethylbenzene	108-67-8	106
1,3-Butadiene	106-99-0	104
1,4-Dioxane	123-91-1	98
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	101
2-Propanol	67-63-0	111
4-Methyl-2-pentanone	108-10-1	92
Acetone	67-64-1	111
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	102
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	113
Chloroethane	75-00-3	102
Chloroform	67-66-3	108
Chloromethane	74-87-3	111
Cyclohexane	110-82-7	104
Dibromochloromethane	124-48-1	103
Ethanol	64-17-5	106

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/23/20 10:28 AM
Lab ID:	2001312A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012304c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	102
Freon 11	75-69-4	121
Freon 113	76-13-1	108
Freon 12	75-71-8	103
Heptane	142-82-5	98
Hexane	110-54-3	110
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	112
Naphthalene	91-20-3	95
o-Xylene	95-47-6	101
Propylene	115-07-1	97
Styrene	100-42-5	105
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	104
Toluene	108-88-3	99
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	108

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/23/20 10:28 AM
Lab ID:	2001312A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14012304c
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	101
Toluene-d8	2037-26-5	85-116	98

* % Recovery is calculated using unrounded analytical results.

1/29/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2001312B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 1/16/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2001312B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	01/16/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	01/29/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-3	10.5 "Hg	5 psi
02A	KAFB-106V1-113	Modified TO-3	10.5 "Hg	5 psi
03A	KAFB-106V1-160	Modified TO-3	14.0 "Hg	5 psi
03AA	KAFB-106V1-160 Lab Duplicate	Modified TO-3	14.0 "Hg	5 psi
04A	KAFB-106V1-160-DUP	Modified TO-3	13.0 "Hg	5 psi
05A	KAFB-106V1-217	Modified TO-3	11.5 "Hg	5 psi
06A	KAFB-106V1-252	Modified TO-3	9.5 "Hg	5 psi
07A	KAFB-106V1-263	Modified TO-3	10.0 "Hg	5 psi
08A	KAFB-106V2-102	Modified TO-3	9.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified TO-3	11.0 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified TO-3	11.5 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-3	9.5 "Hg	5 psi
12A	KAFB-106V2-217	Modified TO-3	10.5 "Hg	5 psi
13A	KAFB-106V2-252	Modified TO-3	9.4 "Hg	5.4 psi
14A	KAFB-106V2-270	Modified TO-3	8 "Hg	5.3 psi
15A	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 01/29/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 2001312B

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on January 16, 2020. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	TO-3	ATL Modifications
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V2-270 did not match the information on the canister with regard to canister barcode. The sample labeled 6L2716A on the COC is labeled as 9275 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound

hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

TPH (Gasoline Range) and Fluorobenzene (FID) were manually integrated in samples KAFB-106V2-102 and KAFB-106V2-270.

TPH (Gasoline Range) was manually integrated in Lab Blank.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	1/22/20 09:44 PM
Lab ID:	2001312B-01A	Dilution Factor:	4120
Date/Time Collected:	1/13/20 09:03 AM	Instrument/Filename:	gcd.i / d012309
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	240000	340000	420000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	127

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	1/23/20 07:16 AM
Lab ID:	2001312B-02A	Dilution Factor:	4120
Date/Time Collected:	1/13/20 09:18 AM	Instrument/Filename:	gcd.i / d012312
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	240000	340000	420000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	133

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	1/22/20 10:20 PM
Lab ID:	2001312B-03A	Dilution Factor:	3580
Date/Time Collected:	1/13/20 09:30 AM	Instrument/Filename:	gcd.i / d012310
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	210000	290000	370000	92000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	124

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160 Lab Duplicate	Date/Time Analyzed:	1/22/20 10:56 PM
Lab ID:	2001312B-03AA	Dilution Factor:	3580
Date/Time Collected:	1/13/20 09:30 AM	Instrument/Filename:	gcd.i / d012311
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	210000	290000	370000	90000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	120

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	1/23/20 02:17 PM
Lab ID:	2001312B-04A	Dilution Factor:	1890
Date/Time Collected:	1/13/20 09:37 AM	Instrument/Filename:	gcd.i / d012322
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	150000	190000	100000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	123

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	1/23/20 08:00 AM
Lab ID:	2001312B-05A	Dilution Factor:	4340
Date/Time Collected:	1/13/20 09:52 AM	Instrument/Filename:	gcd.i / d012313
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	250000	360000	440000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	132

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	1/23/20 08:46 AM
Lab ID:	2001312B-06A	Dilution Factor:	3920
Date/Time Collected:	1/13/20 10:07 AM	Instrument/Filename:	gcd.i / d012314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	320000	400000	100000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	130

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	1/23/20 09:27 AM
Lab ID:	2001312B-07A	Dilution Factor:	4020
Date/Time Collected:	1/13/20 10:22 AM	Instrument/Filename:	gcd.i / d012315
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	240000	330000	410000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	128

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	1/23/20 10:08 AM
Lab ID:	2001312B-08A	Dilution Factor:	3920
Date/Time Collected:	1/13/20 10:53 AM	Instrument/Filename:	gcd.i / d012316
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	230000	320000	400000	200000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	129

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	1/22/20 09:05 PM
Lab ID:	2001312B-09A	Dilution Factor:	4240
Date/Time Collected:	1/13/20 11:07 AM	Instrument/Filename:	gcd.i / d012308
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	250000	350000	430000	240000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	127

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	1/23/20 10:51 AM
Lab ID:	2001312B-10A	Dilution Factor:	4340
Date/Time Collected:	1/13/20 11:14 AM	Instrument/Filename:	gcd.i / d012317
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	250000	360000	440000	220000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	127

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	1/23/20 02:49 PM
Lab ID:	2001312B-11A	Dilution Factor:	157
Date/Time Collected:	1/13/20 11:27 AM	Instrument/Filename:	gcd.i / d012323
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	9200	13000	16000	14000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	116

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	1/23/20 12:39 PM
Lab ID:	2001312B-12A	Dilution Factor:	4120
Date/Time Collected:	1/13/20 11:39 AM	Instrument/Filename:	gcd.i / d012319
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	240000	340000	420000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	121

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	1/23/20 01:12 PM
Lab ID:	2001312B-13A	Dilution Factor:	2840
Date/Time Collected:	1/13/20 11:52 AM	Instrument/Filename:	gcd.i / d012320
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	170000	230000	290000	66000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	130

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	1/23/20 01:44 PM
Lab ID:	2001312B-14A	Dilution Factor:	2640
Date/Time Collected:	1/13/20 12:06 PM	Instrument/Filename:	gcd.i / d012321
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	150000	220000	270000	75000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	141

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/22/20 06:11 PM
Lab ID:	2001312B-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d012304a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58	82	100	Not Detected U

U = The analyte was not detected above the MDL.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	101

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/22/20 04:33 PM
Lab ID:	2001312B-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d012302a
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		118

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	127

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/22/20 05:24 PM
Lab ID:	2001312B-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d012303a
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		119

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	63-171	127

* % Recovery is calculated using unrounded analytical results.

1/29/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2001312C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 1/16/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2001312C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	01/16/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	01/29/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified ASTM D-1945	10.5 "Hg	5 psi
02A	KAFB-106V1-113	Modified ASTM D-1945	10.5 "Hg	5 psi
03A	KAFB-106V1-160	Modified ASTM D-1945	14.0 "Hg	5 psi
03AA	KAFB-106V1-160 Lab Duplicate	Modified ASTM D-1945	14.0 "Hg	5 psi
04A	KAFB-106V1-160-DUP	Modified ASTM D-1945	13.0 "Hg	5 psi
05A	KAFB-106V1-217	Modified ASTM D-1945	11.5 "Hg	5 psi
06A	KAFB-106V1-252	Modified ASTM D-1945	9.5 "Hg	5 psi
07A	KAFB-106V1-263	Modified ASTM D-1945	10.0 "Hg	5 psi
08A	KAFB-106V2-102	Modified ASTM D-1945	9.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified ASTM D-1945	11.0 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified ASTM D-1945	11.5 "Hg	5 psi
11A	KAFB-106V2-160	Modified ASTM D-1945	9.5 "Hg	5 psi
12A	KAFB-106V2-217	Modified ASTM D-1945	10.5 "Hg	5 psi
13A	KAFB-106V2-252	Modified ASTM D-1945	9.4 "Hg	5.4 psi
14A	KAFB-106V2-270	Modified ASTM D-1945	8 "Hg	5.3 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 01/29/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

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LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 2001312C

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on January 16, 2020. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

The Chain of Custody (COC) information for sample KAFB-106V2-270 did not match the information on the canister with regard to canister barcode. The sample labeled 6L2716A on the COC is labeled as 9275 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the sample.

Analytical Notes

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Methane was manually integrated in samples KAFB-106V1-102, KAFB-106V1-113, KAFB-106V1-217, KAFB-106V1-263, KAFB-106V2-102, KAFB-106V2-117, KAFB-106V2-117-DUP, KAFB-106V2-217 and KAFB-106V2-270.

Ethane was manually integrated in samples KAFB-106V1-102, KAFB-106V1-113, KAFB-106V1-217, KAFB-106V1-263, KAFB-106V2-102, KAFB-106V2-117, KAFB-106V2-117-DUP and KAFB-106V2-270.

Pentane was manually integrated in samples KAFB-106V1-160 Lab Duplicate and KAFB-106V1-217.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	1/24/20 09:00 AM
Lab ID:	2001312C-01A	Dilution Factor:	2.06
Date/Time Collected:	1/13/20 09:03 AM	Instrument/Filename:	gc10.i / 10012411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.00081 J
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	0.71
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.0010
Nitrogen	7727-37-9	0.14	0.14	0.21	79
Oxygen	7782-44-7	0.038	0.038	0.21	19
Pentane	109-66-0	0.000070	0.00018	0.0021	0.091
Propane	74-98-6	0.000047	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	1/24/20 09:26 AM
Lab ID:	2001312C-02A	Dilution Factor:	2.06
Date/Time Collected:	1/13/20 09:18 AM	Instrument/Filename:	gc10.i / 10012412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.0014 J
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	1.3
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	0.00019 J
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.00097
Nitrogen	7727-37-9	0.14	0.14	0.21	78
Oxygen	7782-44-7	0.038	0.038	0.21	19
Pentane	109-66-0	0.000070	0.00018	0.0021	0.12
Propane	74-98-6	0.000047	0.00018	0.0021	0.000085 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	1/24/20 10:17 AM
Lab ID:	2001312C-03A	Dilution Factor:	2.51
Date/Time Collected:	1/13/20 09:30 AM	Instrument/Filename:	gc10.i / 10012414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000048	0.00022	0.0025	Not Detected U
Carbon Dioxide	124-38-9	0.0027	0.012	0.025	0.52
Carbon Monoxide	630-08-0	0.0033	0.012	0.025	Not Detected U
Ethane	74-84-0	0.000048	0.00022	0.0025	Not Detected U
Hydrogen	1333-74-0	0.0022	0.016	0.025	Not Detected U
Methane	74-82-8	0.000070	0.00012	0.00025	Not Detected U
Nitrogen	7727-37-9	0.17	0.17	0.25	78
Oxygen	7782-44-7	0.046	0.046	0.25	20
Pentane	109-66-0	0.000085	0.00022	0.0025	0.022
Propane	74-98-6	0.000058	0.00022	0.0025	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-160 Lab Duplicate	Date/Time Analyzed:	1/24/20 10:43 AM
Lab ID:	2001312C-03AA	Dilution Factor:	2.51
Date/Time Collected:	1/13/20 09:30 AM	Instrument/Filename:	gc10.i / 10012415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000048	0.00022	0.0025	Not Detected U
Carbon Dioxide	124-38-9	0.0027	0.012	0.025	0.52
Carbon Monoxide	630-08-0	0.0033	0.012	0.025	Not Detected U
Ethane	74-84-0	0.000048	0.00022	0.0025	Not Detected U
Hydrogen	1333-74-0	0.0022	0.016	0.025	Not Detected U
Methane	74-82-8	0.000070	0.00012	0.00025	Not Detected U
Nitrogen	7727-37-9	0.17	0.17	0.25	78
Oxygen	7782-44-7	0.046	0.046	0.25	20
Pentane	109-66-0	0.000085	0.00022	0.0025	0.023
Propane	74-98-6	0.000058	0.00022	0.0025	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	1/24/20 11:51 AM
Lab ID:	2001312C-04A	Dilution Factor:	2.36
Date/Time Collected:	1/13/20 09:37 AM	Instrument/Filename:	gc10.i / 10012417
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000045	0.00020	0.0024	Not Detected U
Carbon Dioxide	124-38-9	0.0025	0.011	0.024	0.51
Carbon Monoxide	630-08-0	0.0031	0.011	0.024	Not Detected U
Ethane	74-84-0	0.000045	0.00020	0.0024	Not Detected U
Hydrogen	1333-74-0	0.0020	0.015	0.024	Not Detected U
Methane	74-82-8	0.000066	0.00012	0.00024	Not Detected U
Nitrogen	7727-37-9	0.16	0.16	0.24	80
Oxygen	7782-44-7	0.044	0.044	0.24	19
Pentane	109-66-0	0.000080	0.00020	0.0024	0.023
Propane	74-98-6	0.000054	0.00020	0.0024	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	1/24/20 12:42 PM
Lab ID:	2001312C-05A	Dilution Factor:	2.17
Date/Time Collected:	1/13/20 09:52 AM	Instrument/Filename:	gc10.i / 10012418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000041	0.00019	0.0022	0.00049 J
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	1.3
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000041	0.00019	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0019	0.013	0.022	Not Detected U
Methane	74-82-8	0.000061	0.00011	0.00022	0.00025
Nitrogen	7727-37-9	0.15	0.15	0.22	79
Oxygen	7782-44-7	0.040	0.040	0.22	18
Pentane	109-66-0	0.000074	0.00019	0.0022	0.033
Propane	74-98-6	0.000050	0.00019	0.0022	0.000068 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	1/24/20 01:45 PM
Lab ID:	2001312C-06A	Dilution Factor:	1.96
Date/Time Collected:	1/13/20 10:07 AM	Instrument/Filename:	gc10.i / 10012420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	0.41
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000098	0.00020	0.00034
Nitrogen	7727-37-9	0.13	0.13	0.20	78
Oxygen	7782-44-7	0.036	0.036	0.20	20
Pentane	109-66-0	0.000067	0.00017	0.0020	0.0017 J
Propane	74-98-6	0.000045	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	1/24/20 03:44 PM
Lab ID:	2001312C-07A	Dilution Factor:	2.01
Date/Time Collected:	1/13/20 10:22 AM	Instrument/Filename:	gc10.i / 10012424
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.00053 J
Carbon Dioxide	124-38-9	0.0022	0.0096	0.020	0.34
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00020 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	0.00028
Nitrogen	7727-37-9	0.14	0.14	0.20	79
Oxygen	7782-44-7	0.037	0.037	0.20	20
Pentane	109-66-0	0.000068	0.00017	0.0020	0.0058
Propane	74-98-6	0.000046	0.00017	0.0020	0.00030 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	1/24/20 04:30 PM
Lab ID:	2001312C-08A	Dilution Factor:	1.96
Date/Time Collected:	1/13/20 10:53 AM	Instrument/Filename:	gc10.i / 10012426
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0020	0.0022
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	1.5
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0020	0.00018 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000098	0.00020	0.0012
Nitrogen	7727-37-9	0.13	0.13	0.20	78
Oxygen	7782-44-7	0.036	0.036	0.20	19
Pentane	109-66-0	0.000067	0.00017	0.0020	0.094
Propane	74-98-6	0.000045	0.00017	0.0020	0.00021 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	1/24/20 05:15 PM
Lab ID:	2001312C-09A	Dilution Factor:	2.12
Date/Time Collected:	1/13/20 11:07 AM	Instrument/Filename:	gc10.i / 10012428
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000040	0.00018	0.0021	0.0078
Carbon Dioxide	124-38-9	0.0023	0.010	0.021	6.8
Carbon Monoxide	630-08-0	0.0028	0.010	0.021	Not Detected U
Ethane	74-84-0	0.000040	0.00018	0.0021	0.0013 J
Hydrogen	1333-74-0	0.0018	0.013	0.021	0.0030 J
Methane	74-82-8	0.000059	0.00011	0.00021	0.0048
Nitrogen	7727-37-9	0.14	0.14	0.21	77
Oxygen	7782-44-7	0.039	0.039	0.21	14
Pentane	109-66-0	0.000072	0.00018	0.0021	0.23
Propane	74-98-6	0.000049	0.00018	0.0021	0.0014 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	1/24/20 05:59 PM
Lab ID:	2001312C-10A	Dilution Factor:	2.17
Date/Time Collected:	1/13/20 11:14 AM	Instrument/Filename:	gc10.i / 10012430
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000041	0.00019	0.0022	0.0080
Carbon Dioxide	124-38-9	0.0023	0.010	0.022	6.4
Carbon Monoxide	630-08-0	0.0029	0.010	0.022	Not Detected U
Ethane	74-84-0	0.000041	0.00019	0.0022	0.0012 J
Hydrogen	1333-74-0	0.0019	0.013	0.022	0.0042 J
Methane	74-82-8	0.000061	0.00011	0.00022	0.0046
Nitrogen	7727-37-9	0.15	0.15	0.22	77
Oxygen	7782-44-7	0.040	0.040	0.22	14
Pentane	109-66-0	0.000074	0.00019	0.0022	0.24
Propane	74-98-6	0.000050	0.00019	0.0022	0.0013 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	1/24/20 08:28 AM
Lab ID:	2001312C-11A	Dilution Factor:	1.96
Date/Time Collected:	1/13/20 11:27 AM	Instrument/Filename:	gc10.i / 10012410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0021	0.0094	0.020	0.51
Carbon Monoxide	630-08-0	0.0026	0.0094	0.020	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000098	0.00020	Not Detected U
Nitrogen	7727-37-9	0.13	0.13	0.20	79
Oxygen	7782-44-7	0.036	0.036	0.20	20
Pentane	109-66-0	0.000067	0.00017	0.0020	0.00024 J
Propane	74-98-6	0.000045	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	1/24/20 06:44 PM
Lab ID:	2001312C-12A	Dilution Factor:	2.06
Date/Time Collected:	1/13/20 11:39 AM	Instrument/Filename:	gc10.i / 10012432
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.00045 J
Carbon Dioxide	124-38-9	0.0022	0.0099	0.021	1.2
Carbon Monoxide	630-08-0	0.0027	0.0099	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.00011 J
Nitrogen	7727-37-9	0.14	0.14	0.21	79
Oxygen	7782-44-7	0.038	0.038	0.21	18
Pentane	109-66-0	0.000070	0.00018	0.0021	0.054
Propane	74-98-6	0.000047	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	1/24/20 07:29 PM
Lab ID:	2001312C-13A	Dilution Factor:	1.99
Date/Time Collected:	1/13/20 11:52 AM	Instrument/Filename:	gc10.i / 10012434
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0021	0.0096	0.020	0.21
Carbon Monoxide	630-08-0	0.0026	0.0096	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.13	0.13	0.20	79
Oxygen	7782-44-7	0.037	0.037	0.20	20
Pentane	109-66-0	0.000068	0.00017	0.0020	Not Detected U
Propane	74-98-6	0.000046	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	1/24/20 08:13 PM
Lab ID:	2001312C-14A	Dilution Factor:	1.85
Date/Time Collected:	1/13/20 12:06 PM	Instrument/Filename:	gc10.i / 10012436
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000035	0.00016	0.0018	0.000074 J
Carbon Dioxide	124-38-9	0.0020	0.0089	0.018	0.45
Carbon Monoxide	630-08-0	0.0024	0.0089	0.018	Not Detected U
Ethane	74-84-0	0.000035	0.00016	0.0018	Not Detected U
Hydrogen	1333-74-0	0.0016	0.011	0.018	Not Detected U
Methane	74-82-8	0.000052	0.000092	0.00018	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.18	79
Oxygen	7782-44-7	0.034	0.034	0.18	20
Pentane	109-66-0	0.000063	0.00016	0.0018	0.00050 J
Propane	74-98-6	0.000042	0.00016	0.0018	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/24/20 01:01 AM
Lab ID:	2001312C-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10012409
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000019	0.000086	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.0011	0.0048	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0013	0.0048	0.010	Not Detected U
Ethane	74-84-0	0.000019	0.000086	0.0010	Not Detected U
Methane	74-82-8	0.000028	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.068	0.068	0.10	Not Detected U
Oxygen	7782-44-7	0.018	0.018	0.10	Not Detected U
Pentane	109-66-0	0.000034	0.000086	0.0010	Not Detected U
Propane	74-98-6	0.000023	0.000086	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	1/23/20 11:55 PM
Lab ID:	2001312C-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10012407c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.00086	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/23/20 09:57 PM
Lab ID:	2001312C-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10012402
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	105
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	93
Ethane	74-84-0	105
Methane	74-82-8	108
Nitrogen	7727-37-9	100
Oxygen	7782-44-7	97
Pentane	109-66-0	107
Propane	74-98-6	104

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/23/20 10:19 PM
Lab ID:	2001312C-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10012403
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	105
Carbon Dioxide	124-38-9	98
Carbon Monoxide	630-08-0	93
Ethane	74-84-0	105
Methane	74-82-8	108
Nitrogen	7727-37-9	100
Oxygen	7782-44-7	97
Pentane	109-66-0	107
Propane	74-98-6	104

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	1/23/20 11:05 PM
Lab ID:	2001312C-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10012405c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	101

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	1/23/20 11:28 PM
Lab ID:	2001312C-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10012406c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

4/22/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2004180A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/9/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2004180A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/09/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/22/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-15 (5&20 ppbv	9.8 "Hg	4.9 psi
02A	KAFB-106V1-113	Modified TO-15 (5&20 ppbv	10.4 "Hg	5.1 psi
03A	KAFB-106V1-160	Modified TO-15 (5&20 ppbv	9.2 "Hg	4.5 psi
04A	KAFB-106V1-160-DUP	Modified TO-15 (5&20 ppbv	9.4 "Hg	4.9 psi
05A	KAFB-106V1-217	Modified TO-15 (5&20 ppbv	9.8 "Hg	4.4 psi
06A	KAFB-106V1-252	Modified TO-15 (5&20 ppbv	9.6 "Hg	5.1 psi
06AA	KAFB-106V1-252 Lab Duplicate	Modified TO-15 (5&20 ppbv	9.6 "Hg	5.1 psi
07A	KAFB-106V1-263	Modified TO-15 (5&20 ppbv	12.4 "Hg	4.6 psi
08A	KAFB-106V2-102	Modified TO-15 (5&20 ppbv	11.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
12A	KAFB-106V2-217	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
13A	KAFB-106V2-252	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
14A	KAFB-106V2-270	Modified TO-15 (5&20 ppbv	13.0 "Hg	5 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/22/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 2004180A**

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on April 09, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

The Chain of Custody (COC) information for samples KAFB-106V1-217, KAFB-106V1-252, KAFB-106V2-160 and KAFB-106V2-217 did not match the information on the canister with regard to canister barcode. The samples labeled 6L2733A, 6L2652S, 6L2548A and 6L2537S on the COC are labeled as 9245, 9218, 9258 and 9263 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study are not maintained for Total Xylenes and non-standard compounds.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Samples were analyzed in one analytical batch on MSD-14 on 4/20/20. The initial continuing calibration verification (CCV) for the batch is reported as lab fractions 16A and the ending CCV is reported as lab fraction 16B.

Dilution was performed on samples KAFB-106V1-102, KAFB-106V1-113, KAFB-106V1-160, KAFB-106V1-160-DUP, KAFB-106V1-217, KAFB-106V1-252, KAFB-106V1-252 Lab Duplicate, KAFB-106V1-263, KAFB-106V2-102, KAFB-106V2-117, KAFB-106V2-117-DUP, KAFB-106V2-217, KAFB-106V2-252 and KAFB-106V2-270 due to the presence of high level target species.

Dilution was performed on sample KAFB-106V2-160 due to matrix interference.

The recovery of surrogate 1,2-Dichloroethane-d4 in samples KAFB-106V1-160-DUP, KAFB-106V1-217, KAFB-106V1-263, KAFB-106V2-102, KAFB-106V2-117-DUP and KAFB-106V2-217 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is

flagged.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	4/20/20 08:02 PM
Lab ID:	2004180A-01A	Dilution Factor:	396
Date/Time Collected:	4/6/20 08:25 AM	Instrument/Filename:	msd14.i / 14042024
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1600	4800	8000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	44000	59000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	5800	9700	61000
1,2-Dibromoethane (EDB)	106-93-4	2700	9100	15000	4500 J
1,2-Dichlorobenzene	95-50-1	2500	7100	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1300	5800	9700	25000
1,3-Butadiene	106-99-0	1800	2600	4400	Not Detected U
1,4-Dioxane	123-91-1	8600	21000	28000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6800	18000	23000	520000
2-Hexanone	591-78-6	7600	24000	32000	Not Detected U
2-Propanol	67-63-0	5400	14000	19000	140000
4-Methyl-2-pentanone	108-10-1	4100	4900	8100	Not Detected U
Acetone	67-64-1	7000	14000	19000	4500000
Benzene	71-43-2	950	3800	6300	2300000
Bromodichloromethane	75-27-4	2500	8000	13000	Not Detected U
Bromoform	75-25-2	4200	12000	20000	Not Detected U
Carbon Disulfide	75-15-0	6200	18000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	7500	12000	Not Detected U
Chloroethane	75-00-3	7800	16000	21000	Not Detected U
Chloroform	67-66-3	1600	5800	9700	Not Detected U
Chloromethane	74-87-3	5200	12000	16000	Not Detected U
Cyclohexane	110-82-7	1400	4100	6800	5500000
Dibromochloromethane	124-48-1	2900	10000	17000	Not Detected U
Ethanol	64-17-5	7200	11000	15000	61000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	4/20/20 08:02 PM
Lab ID:	2004180A-01A	Dilution Factor:	396
Date/Time Collected:	4/6/20 08:25 AM	Instrument/File Name:	msd14.i / 14042024
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	28000	Not Detected U
Ethyl Benzene	100-41-4	1600	5200	8600	160000
Freon 11	75-69-4	1500	6700	11000	Not Detected U
Freon 113	76-13-1	3600	9100	15000	Not Detected U
Freon 12	75-71-8	1200	5900	9800	Not Detected U
Heptane	142-82-5	2900	4900	8100	2800000
Hexane	110-54-3	1600	4200	7000	9700000
m,p-Xylene	108-38-3	1800	5200	8600	270000
Methylene Chloride	75-09-2	11000	21000	28000	Not Detected U
Naphthalene	91-20-3	1600	3100	42000	Not Detected U
o-Xylene	95-47-6	1400	5200	8600	82000
Propylene	115-07-1	3900	10000	14000	Not Detected U
Styrene	100-42-5	1200	5100	8400	Not Detected U
Tetrachloroethene	127-18-4	4100	8000	13000	Not Detected U
Tetrahydrofuran	109-99-9	1700	3500	5800	Not Detected U
Toluene	108-88-3	1400	4500	7500	1900000
Total Xylene	1330-20-7	NA	D	17000	350000
Trichloroethene	79-01-6	2000	6400	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3000	5100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	4/20/20 08:02 PM
Lab ID:	2004180A-01A	Dilution Factor:	396
Date/Time Collected:	4/6/20 08:25 AM	Instrument/Filename:	msd14.i / 14042024
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	136
4-Bromofluorobenzene	460-00-4	90-111	95
Toluene-d8	2037-26-5	85-116	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	4/20/20 08:27 PM
Lab ID:	2004180A-02A	Dilution Factor:	412
Date/Time Collected:	4/6/20 08:40 AM	Instrument/Filename:	msd14.i / 14042025
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1700	5000	8300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	46000	61000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1100	6100	10000	56000
1,2-Dibromoethane (EDB)	106-93-4	2800	9500	16000	5800 J
1,2-Dichlorobenzene	95-50-1	2600	7400	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1400	6100	10000	22000
1,3-Butadiene	106-99-0	1900	2700	4600	Not Detected U
1,4-Dioxane	123-91-1	9000	22000	30000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7100	18000	24000	510000
2-Hexanone	591-78-6	7900	25000	34000	Not Detected U
2-Propanol	67-63-0	5600	15000	20000	150000
4-Methyl-2-pentanone	108-10-1	4300	5100	8400	Not Detected U
Acetone	67-64-1	7300	15000	20000	3800000
Benzene	71-43-2	990	3900	6600	2300000
Bromodichloromethane	75-27-4	2600	8300	14000	Not Detected U
Bromoform	75-25-2	4400	13000	21000	Not Detected U
Carbon Disulfide	75-15-0	6400	19000	26000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	7800	13000	Not Detected U
Chloroethane	75-00-3	8100	16000	22000	Not Detected U
Chloroform	67-66-3	1600	6000	10000	Not Detected U
Chloromethane	74-87-3	5400	13000	17000	Not Detected U
Cyclohexane	110-82-7	1500	4200	7100	5600000
Dibromochloromethane	124-48-1	3000	10000	18000	Not Detected U
Ethanol	64-17-5	7500	12000	16000	100000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	4/20/20 08:27 PM
Lab ID:	2004180A-02A	Dilution Factor:	412
Date/Time Collected:	4/6/20 08:40 AM	Instrument/File Name:	msd14.i / 14042025
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	30000	Not Detected U
Ethyl Benzene	100-41-4	1700	5400	8900	190000
Freon 11	75-69-4	1600	6900	12000	Not Detected U
Freon 113	76-13-1	3700	9500	16000	Not Detected U
Freon 12	75-71-8	1300	6100	10000	Not Detected U
Heptane	142-82-5	3000	5100	8400	3200000
Hexane	110-54-3	1600	4400	7300	9400000
m,p-Xylene	108-38-3	1800	5400	8900	310000
Methylene Chloride	75-09-2	11000	21000	29000	Not Detected U
Naphthalene	91-20-3	1700	3200	43000	Not Detected U
o-Xylene	95-47-6	1400	5400	8900	91000
Propylene	115-07-1	4100	11000	14000	Not Detected U
Styrene	100-42-5	1200	5300	8800	Not Detected U
Tetrachloroethene	127-18-4	4200	8400	14000	Not Detected U
Tetrahydrofuran	109-99-9	1700	3600	6100	Not Detected U
Toluene	108-88-3	1400	4600	7800	2300000
Total Xylene	1330-20-7	NA	D	18000	400000
Trichloroethene	79-01-6	2000	6600	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	3200	5300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	4/20/20 08:27 PM
Lab ID:	2004180A-02A	Dilution Factor:	412
Date/Time Collected:	4/6/20 08:40 AM	Instrument/Filename:	msd14.i / 14042025
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	138
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	4/20/20 05:41 PM
Lab ID:	2004180A-03A	Dilution Factor:	157
Date/Time Collected:	4/6/20 08:52 AM	Instrument/File name:	msd14.i / 14042017
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	650	1900	3200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	4800	17000	23000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	410	2300	3800	91000
1,2-Dibromoethane (EDB)	106-93-4	1100	3600	6000	1600 J
1,2-Dichlorobenzene	95-50-1	1000	2800	4700	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	520	2300	3800	32000
1,3-Butadiene	106-99-0	720	1000	1700	Not Detected U
1,4-Dioxane	123-91-1	3400	8500	11000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2700	6900	9200	79000
2-Hexanone	591-78-6	3000	9600	13000	Not Detected U
2-Propanol	67-63-0	2100	5800	7700	290000
4-Methyl-2-pentanone	108-10-1	1600	1900	3200	Not Detected U
Acetone	67-64-1	2800	5600	7400	2600000
Benzene	71-43-2	380	1500	2500	850000
Bromodichloromethane	75-27-4	980	3200	5200	Not Detected U
Bromoform	75-25-2	1700	4900	8100	Not Detected U
Carbon Disulfide	75-15-0	2400	7300	9800	Not Detected U
Carbon Tetrachloride	56-23-5	1200	3000	4900	Not Detected U
Chloroethane	75-00-3	3100	6200	8300	Not Detected U
Chloroform	67-66-3	620	2300	3800	Not Detected U
Chloromethane	74-87-3	2000	4900	6500	Not Detected U
Cyclohexane	110-82-7	580	1600	2700	2700000
Dibromochloromethane	124-48-1	1200	4000	6700	Not Detected U
Ethanol	64-17-5	2900	4400	5900	66000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	4/20/20 05:41 PM
Lab ID:	2004180A-03A	Dilution Factor:	157
Date/Time Collected:	4/6/20 08:52 AM	Instrument/File Name:	msd14.i / 14042017
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	11000	Not Detected U
Ethyl Benzene	100-41-4	650	2000	3400	280000
Freon 11	75-69-4	600	2600	4400	Not Detected U
Freon 113	76-13-1	1400	3600	6000	Not Detected U
Freon 12	75-71-8	490	2300	3900	Not Detected U
Heptane	142-82-5	1100	1900	3200	2800000
Hexane	110-54-3	620	1600	2800	2400000
m,p-Xylene	108-38-3	700	2000	3400	600000
Methylene Chloride	75-09-2	4200	8200	11000	Not Detected U
Naphthalene	91-20-3	630	1200	16000	Not Detected U
o-Xylene	95-47-6	550	2000	3400	180000
Propylene	115-07-1	1600	4000	5400	Not Detected U
Styrene	100-42-5	460	2000	3300	Not Detected U
Tetrachloroethene	127-18-4	1600	3200	5300	Not Detected U
Tetrahydrofuran	109-99-9	670	1400	2300	Not Detected U
Toluene	108-88-3	550	1800	3000	2100000
Total Xylene	1330-20-7	NA	D	6800	780000
Trichloroethene	79-01-6	780	2500	4200	Not Detected U
Vinyl Chloride	75-01-4	710	1200	2000	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	4/20/20 05:41 PM
Lab ID:	2004180A-03A	Dilution Factor:	157
Date/Time Collected:	4/6/20 08:52 AM	Instrument/Filename:	msd14.i / 14042017
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	142
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	4/20/20 06:01 PM
Lab ID:	2004180A-04A	Dilution Factor:	162
Date/Time Collected:	4/6/20 09:01 AM	Instrument/File name:	msd14.i / 14042018
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	680	2000	3300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	4900	18000	24000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	420	2400	4000	75000
1,2-Dibromoethane (EDB)	106-93-4	1100	3700	6200	1600 J
1,2-Dichlorobenzene	95-50-1	1000	2900	4900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	530	2400	4000	28000
1,3-Butadiene	106-99-0	740	1100	1800	Not Detected U
1,4-Dioxane	123-91-1	3500	8800	12000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2800	7200	9600	66000
2-Hexanone	591-78-6	3100	10000	13000	Not Detected U
2-Propanol	67-63-0	2200	6000	8000	200000
4-Methyl-2-pentanone	108-10-1	1700	2000	3300	Not Detected U
Acetone	67-64-1	2900	5800	7700	2400000
Benzene	71-43-2	390	1600	2600	760000
Bromodichloromethane	75-27-4	1000	3200	5400	Not Detected U
Bromoform	75-25-2	1700	5000	8400	Not Detected U
Carbon Disulfide	75-15-0	2500	7600	10000	Not Detected U
Carbon Tetrachloride	56-23-5	1300	3000	5100	Not Detected U
Chloroethane	75-00-3	3200	6400	8500	Not Detected U
Chloroform	67-66-3	640	2400	4000	Not Detected U
Chloromethane	74-87-3	2100	5000	6700	Not Detected U
Cyclohexane	110-82-7	600	1700	2800	2400000
Dibromochloromethane	124-48-1	1200	4100	6900	Not Detected U
Ethanol	64-17-5	3000	4600	6100	55000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	4/20/20 06:01 PM
Lab ID:	2004180A-04A	Dilution Factor:	162
Date/Time Collected:	4/6/20 09:01 AM	Instrument/Filename:	msd14.i / 14042018
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	12000	Not Detected U
Ethyl Benzene	100-41-4	670	2100	3500	280000
Freon 11	75-69-4	620	2700	4600	Not Detected U
Freon 113	76-13-1	1500	3700	6200	Not Detected U
Freon 12	75-71-8	500	2400	4000	Not Detected U
Heptane	142-82-5	1200	2000	3300	2500000
Hexane	110-54-3	640	1700	2800	2100000
m,p-Xylene	108-38-3	720	2100	3500	590000
Methylene Chloride	75-09-2	4400	8400	11000	Not Detected U
Naphthalene	91-20-3	650	1300	17000	Not Detected U
o-Xylene	95-47-6	570	2100	3500	170000
Propylene	115-07-1	1600	4200	5600	Not Detected U
Styrene	100-42-5	480	2100	3400	Not Detected U
Tetrachloroethene	127-18-4	1700	3300	5500	Not Detected U
Tetrahydrofuran	109-99-9	690	1400	2400	Not Detected U
Toluene	108-88-3	570	1800	3000	1900000
Total Xylene	1330-20-7	NA	D	7000	780000
Trichloroethene	79-01-6	810	2600	4400	Not Detected U
Vinyl Chloride	75-01-4	730	1200	2100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	4/20/20 06:01 PM
Lab ID:	2004180A-04A	Dilution Factor:	162
Date/Time Collected:	4/6/20 09:01 AM	Instrument/Filename:	msd14.i / 14042018
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	147 Q
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	4/20/20 06:40 PM
Lab ID:	2004180A-05A	Dilution Factor:	193
Date/Time Collected:	4/6/20 09:18 AM	Instrument/File Name:	msd14.i / 14042020
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	800	2300	3900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5800	21000	29000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	500	2800	4700	130000
1,2-Dibromoethane (EDB)	106-93-4	1300	4400	7400	3900 J
1,2-Dichlorobenzene	95-50-1	1200	3500	5800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	640	2800	4700	54000
1,3-Butadiene	106-99-0	880	1300	2100	Not Detected U
1,4-Dioxane	123-91-1	4200	10000	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3300	8500	11000	290000
2-Hexanone	591-78-6	3700	12000	16000	Not Detected U
2-Propanol	67-63-0	2600	7100	9500	31000
4-Methyl-2-pentanone	108-10-1	2000	2400	4000	Not Detected U
Acetone	67-64-1	3400	6900	9200	4200000
Benzene	71-43-2	460	1800	3100	1600000
Bromodichloromethane	75-27-4	1200	3900	6500	Not Detected U
Bromoform	75-25-2	2100	6000	10000	Not Detected U
Carbon Disulfide	75-15-0	3000	9000	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1500	3600	6100	Not Detected U
Chloroethane	75-00-3	3800	7600	10000	Not Detected U
Chloroform	67-66-3	760	2800	4700	Not Detected U
Chloromethane	74-87-3	2500	6000	8000	Not Detected U
Cyclohexane	110-82-7	710	2000	3300	5300000
Dibromochloromethane	124-48-1	1400	4900	8200	Not Detected U
Ethanol	64-17-5	3500	5400	7300	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	4/20/20 06:40 PM
Lab ID:	2004180A-05A	Dilution Factor:	193
Date/Time Collected:	4/6/20 09:18 AM	Instrument/Filename:	msd14.i / 14042020
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected U
Ethyl Benzene	100-41-4	800	2500	4200	370000
Freon 11	75-69-4	740	3200	5400	Not Detected U
Freon 113	76-13-1	1700	4400	7400	Not Detected U
Freon 12	75-71-8	600	2900	4800	Not Detected U
Heptane	142-82-5	1400	2400	4000	6000000
Hexane	110-54-3	770	2000	3400	5900000
m,p-Xylene	108-38-3	850	2500	4200	1100000
Methylene Chloride	75-09-2	5200	10000	13000	Not Detected U
Naphthalene	91-20-3	780	1500	20000	940 J
o-Xylene	95-47-6	680	2500	4200	320000
Propylene	115-07-1	1900	5000	6600	2200 J
Styrene	100-42-5	570	2500	4100	Not Detected U
Tetrachloroethene	127-18-4	2000	3900	6500	Not Detected U
Tetrahydrofuran	109-99-9	820	1700	2800	Not Detected U
Toluene	108-88-3	680	2200	3600	4100000
Total Xylene	1330-20-7	NA	D	8400	1400000
Trichloroethene	79-01-6	960	3100	5200	Not Detected U
Vinyl Chloride	75-01-4	870	1500	2500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	4/20/20 06:40 PM
Lab ID:	2004180A-05A	Dilution Factor:	193
Date/Time Collected:	4/6/20 09:18 AM	Instrument/Filename:	msd14.i / 14042020
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	150 Q
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	4/20/20 03:58 PM
Lab ID:	2004180A-06A	Dilution Factor:	248
Date/Time Collected:	4/6/20 09:35 AM	Instrument/File Name:	msd14.i / 14042012
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1000	3000	5000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	7500	28000	37000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	650	3600	6100	77000
1,2-Dibromoethane (EDB)	106-93-4	1700	5700	9500	18000
1,2-Dichlorobenzene	95-50-1	1600	4500	7400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	820	3600	6100	32000
1,3-Butadiene	106-99-0	1100	1600	2700	Not Detected U
1,4-Dioxane	123-91-1	5400	13000	18000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4300	11000	15000	290000
2-Hexanone	591-78-6	4800	15000	20000	Not Detected U
2-Propanol	67-63-0	3400	9100	12000	23000
4-Methyl-2-pentanone	108-10-1	2600	3000	5100	Not Detected U
Acetone	67-64-1	4400	8800	12000	1300000
Benzene	71-43-2	590	2400	4000	680000
Bromodichloromethane	75-27-4	1500	5000	8300	Not Detected U
Bromoform	75-25-2	2700	7700	13000	Not Detected U
Carbon Disulfide	75-15-0	3900	12000	15000	Not Detected U
Carbon Tetrachloride	56-23-5	2000	4700	7800	Not Detected U
Chloroethane	75-00-3	4900	9800	13000	Not Detected U
Chloroform	67-66-3	980	3600	6000	Not Detected U
Chloromethane	74-87-3	3200	7700	10000	Not Detected U
Cyclohexane	110-82-7	910	2600	4300	3000000
Dibromochloromethane	124-48-1	1800	6300	10000	Not Detected U
Ethanol	64-17-5	4500	7000	9300	12000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	4/20/20 03:58 PM
Lab ID:	2004180A-06A	Dilution Factor:	248
Date/Time Collected:	4/6/20 09:35 AM	Instrument/File Name:	msd14.i / 14042012
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	18000	Not Detected U
Ethyl Benzene	100-41-4	1000	3200	5400	380000
Freon 11	75-69-4	950	4200	7000	Not Detected U
Freon 113	76-13-1	2200	5700	9500	Not Detected U
Freon 12	75-71-8	770	3700	6100	Not Detected U
Heptane	142-82-5	1800	3000	5100	7300000
Hexane	110-54-3	990	2600	4400	1000000
m,p-Xylene	108-38-3	1100	3200	5400	1200000
Methylene Chloride	75-09-2	6600	13000	17000	Not Detected U
Naphthalene	91-20-3	1000	2000	26000	1200 J
o-Xylene	95-47-6	870	3200	5400	290000
Propylene	115-07-1	2400	6400	8500	Not Detected U
Styrene	100-42-5	730	3200	5300	Not Detected U
Tetrachloroethene	127-18-4	2600	5000	8400	Not Detected U
Tetrahydrofuran	109-99-9	1000	2200	3600	Not Detected U
Toluene	108-88-3	870	2800	4700	5600000
Total Xylene	1330-20-7	NA	D	11000	1500000
Trichloroethene	79-01-6	1200	4000	6700	Not Detected U
Vinyl Chloride	75-01-4	1100	1900	3200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	4/20/20 03:58 PM
Lab ID:	2004180A-06A	Dilution Factor:	248
Date/Time Collected:	4/6/20 09:35 AM	Instrument/Filename:	msd14.i / 14042012
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	140
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252 Lab Duplicate	Date/Time Analyzed:	4/20/20 04:18 PM
Lab ID:	2004180A-06AA	Dilution Factor:	248
Date/Time Collected:	4/6/20 09:35 AM	Instrument/File Name:	msd14.i / 14042013
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1000	3000	5000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	7500	28000	37000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	650	3600	6100	81000
1,2-Dibromoethane (EDB)	106-93-4	1700	5700	9500	17000
1,2-Dichlorobenzene	95-50-1	1600	4500	7400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	820	3600	6100	33000
1,3-Butadiene	106-99-0	1100	1600	2700	Not Detected U
1,4-Dioxane	123-91-1	5400	13000	18000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4300	11000	15000	280000
2-Hexanone	591-78-6	4800	15000	20000	28000
2-Propanol	67-63-0	3400	9100	12000	22000
4-Methyl-2-pentanone	108-10-1	2600	3000	5100	Not Detected U
Acetone	67-64-1	4400	8800	12000	1200000
Benzene	71-43-2	590	2400	4000	650000
Bromodichloromethane	75-27-4	1500	5000	8300	Not Detected U
Bromoform	75-25-2	2700	7700	13000	Not Detected U
Carbon Disulfide	75-15-0	3900	12000	15000	Not Detected U
Carbon Tetrachloride	56-23-5	2000	4700	7800	Not Detected U
Chloroethane	75-00-3	4900	9800	13000	Not Detected U
Chloroform	67-66-3	980	3600	6000	Not Detected U
Chloromethane	74-87-3	3200	7700	10000	Not Detected U
Cyclohexane	110-82-7	910	2600	4300	2800000
Dibromochloromethane	124-48-1	1800	6300	10000	Not Detected U
Ethanol	64-17-5	4500	7000	9300	10000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252 Lab Duplicate	Date/Time Analyzed:	4/20/20 04:18 PM
Lab ID:	2004180A-06AA	Dilution Factor:	248
Date/Time Collected:	4/6/20 09:35 AM	Instrument/File Name:	msd14.i / 14042013
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	18000	Not Detected U
Ethyl Benzene	100-41-4	1000	3200	5400	390000
Freon 11	75-69-4	950	4200	7000	Not Detected U
Freon 113	76-13-1	2200	5700	9500	Not Detected U
Freon 12	75-71-8	770	3700	6100	Not Detected U
Heptane	142-82-5	1800	3000	5100	6900000
Hexane	110-54-3	990	2600	4400	940000
m,p-Xylene	108-38-3	1100	3200	5400	1200000
Methylene Chloride	75-09-2	6600	13000	17000	Not Detected U
Naphthalene	91-20-3	1000	2000	26000	1300 J
o-Xylene	95-47-6	870	3200	5400	300000
Propylene	115-07-1	2400	6400	8500	Not Detected U
Styrene	100-42-5	730	3200	5300	Not Detected U
Tetrachloroethene	127-18-4	2600	5000	8400	Not Detected U
Tetrahydrofuran	109-99-9	1000	2200	3600	Not Detected U
Toluene	108-88-3	870	2800	4700	5300000
Total Xylene	1330-20-7	NA	D	11000	1500000
Trichloroethene	79-01-6	1200	4000	6700	Not Detected U
Vinyl Chloride	75-01-4	1100	1900	3200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252 Lab Duplicate	Date/Time Analyzed:	4/20/20 04:18 PM
Lab ID:	2004180A-06AA	Dilution Factor:	248
Date/Time Collected:	4/6/20 09:35 AM	Instrument/Filename:	msd14.i / 14042013
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	138
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	4/20/20 04:38 PM
Lab ID:	2004180A-07A	Dilution Factor:	280
Date/Time Collected:	4/6/20 09:49 AM	Instrument/File Name:	msd14.i / 14042014
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	3400	5700	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	8500	31000	42000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	730	4100	6900	76000
1,2-Dibromoethane (EDB)	106-93-4	1900	6400	11000	24000
1,2-Dichlorobenzene	95-50-1	1800	5000	8400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	920	4100	6900	30000
1,3-Butadiene	106-99-0	1300	1800	3100	Not Detected U
1,4-Dioxane	123-91-1	6100	15000	20000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4800	12000	16000	420000
2-Hexanone	591-78-6	5400	17000	23000	Not Detected U
2-Propanol	67-63-0	3800	10000	14000	31000
4-Methyl-2-pentanone	108-10-1	2900	3400	5700	Not Detected U
Acetone	67-64-1	4900	10000	13000	2000000
Benzene	71-43-2	670	2700	4500	960000
Bromodichloromethane	75-27-4	1700	5600	9400	Not Detected U
Bromoform	75-25-2	3000	8700	14000	Not Detected U
Carbon Disulfide	75-15-0	4400	13000	17000	Not Detected U
Carbon Tetrachloride	56-23-5	2200	5300	8800	Not Detected U
Chloroethane	75-00-3	5500	11000	15000	Not Detected U
Chloroform	67-66-3	1100	4100	6800	Not Detected U
Chloromethane	74-87-3	3700	8700	12000	Not Detected U
Cyclohexane	110-82-7	1000	2900	4800	4000000
Dibromochloromethane	124-48-1	2000	7200	12000	Not Detected U
Ethanol	64-17-5	5100	7900	10000	7800 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	4/20/20 04:38 PM
Lab ID:	2004180A-07A	Dilution Factor:	280
Date/Time Collected:	4/6/20 09:49 AM	Instrument/Filename:	msd14.i / 14042014
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	20000	Not Detected U
Ethyl Benzene	100-41-4	1200	3600	6100	460000
Freon 11	75-69-4	1100	4700	7900	Not Detected U
Freon 113	76-13-1	2500	6400	11000	Not Detected U
Freon 12	75-71-8	870	4200	6900	Not Detected U
Heptane	142-82-5	2000	3400	5700	9000000
Hexane	110-54-3	1100	3000	4900	1800000
m,p-Xylene	108-38-3	1200	3600	6100	1200000
Methylene Chloride	75-09-2	7500	14000	19000	Not Detected U
Naphthalene	91-20-3	1100	2200	29000	Not Detected U
o-Xylene	95-47-6	980	3600	6100	310000
Propylene	115-07-1	2800	7200	9600	5300 J
Styrene	100-42-5	820	3600	6000	Not Detected U
Tetrachloroethene	127-18-4	2900	5700	9500	Not Detected U
Tetrahydrofuran	109-99-9	1200	2500	4100	Not Detected U
Toluene	108-88-3	980	3200	5300	7000000
Total Xylene	1330-20-7	NA	D	12000	1600000
Trichloroethene	79-01-6	1400	4500	7500	Not Detected U
Vinyl Chloride	75-01-4	1200	2100	3600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	4/20/20 04:38 PM
Lab ID:	2004180A-07A	Dilution Factor:	280
Date/Time Collected:	4/6/20 09:49 AM	Instrument/Filename:	msd14.i / 14042014
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	145 Q
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	4/20/20 07:00 PM
Lab ID:	2004180A-08A	Dilution Factor:	362
Date/Time Collected:	4/6/20 10:16 AM	Instrument/File Name:	msd14.i / 14042021
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1500	4400	7300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	11000	40000	54000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	940	5300	8900	94000
1,2-Dibromoethane (EDB)	106-93-4	2400	8300	14000	29000
1,2-Dichlorobenzene	95-50-1	2300	6500	11000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1200	5300	8900	39000
1,3-Butadiene	106-99-0	1600	2400	4000	Not Detected U
1,4-Dioxane	123-91-1	7900	20000	26000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6300	16000	21000	1000000
2-Hexanone	591-78-6	7000	22000	30000	Not Detected U
2-Propanol	67-63-0	4900	13000	18000	410000
4-Methyl-2-pentanone	108-10-1	3800	4400	7400	Not Detected U
Acetone	67-64-1	6400	13000	17000	7300000
Benzene	71-43-2	870	3500	5800	2900000
Bromodichloromethane	75-27-4	2200	7300	12000	Not Detected U
Bromoform	75-25-2	3900	11000	19000	Not Detected U
Carbon Disulfide	75-15-0	5700	17000	22000	Not Detected U
Carbon Tetrachloride	56-23-5	2800	6800	11000	Not Detected U
Chloroethane	75-00-3	7100	14000	19000	Not Detected U
Chloroform	67-66-3	1400	5300	8800	Not Detected U
Chloromethane	74-87-3	4700	11000	15000	Not Detected U
Cyclohexane	110-82-7	1300	3700	6200	9000000
Dibromochloromethane	124-48-1	2600	9200	15000	Not Detected U
Ethanol	64-17-5	6600	10000	14000	67000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	4/20/20 07:00 PM
Lab ID:	2004180A-08A	Dilution Factor:	362
Date/Time Collected:	4/6/20 10:16 AM	Instrument/Filename:	msd14.i / 14042021
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	26000	Not Detected U
Ethyl Benzene	100-41-4	1500	4700	7800	450000
Freon 11	75-69-4	1400	6100	10000	Not Detected U
Freon 113	76-13-1	3300	8300	14000	Not Detected U
Freon 12	75-71-8	1100	5400	9000	Not Detected U
Heptane	142-82-5	2600	4400	7400	9200000
Hexane	110-54-3	1400	3800	6400	11000000
m,p-Xylene	108-38-3	1600	4700	7800	1100000
Methylene Chloride	75-09-2	9700	19000	25000	Not Detected U
Naphthalene	91-20-3	1400	2800	38000	Not Detected U
o-Xylene	95-47-6	1300	4700	7800	300000
Propylene	115-07-1	3600	9300	12000	5600 J
Styrene	100-42-5	1100	4600	7700	9500
Tetrachloroethene	127-18-4	3700	7400	12000	Not Detected U
Tetrahydrofuran	109-99-9	1500	3200	5300	Not Detected U
Toluene	108-88-3	1300	4100	6800	7000000
Total Xylene	1330-20-7	NA	D	16000	1400000
Trichloroethene	79-01-6	1800	5800	9700	Not Detected U
Vinyl Chloride	75-01-4	1600	2800	4600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	4/20/20 07:00 PM
Lab ID:	2004180A-08A	Dilution Factor:	362
Date/Time Collected:	4/6/20 10:16 AM	Instrument/Filename:	msd14.i / 14042021
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	171 Q
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	4/20/20 07:20 PM
Lab ID:	2004180A-09A	Dilution Factor:	687
Date/Time Collected:	4/6/20 10:29 AM	Instrument/File Name:	msd14.i / 14042022
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2900	8300	14000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	21000	76000	100000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1800	10000	17000	110000
1,2-Dibromoethane (EDB)	106-93-4	4600	16000	26000	23000 J
1,2-Dichlorobenzene	95-50-1	4400	12000	21000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2300	10000	17000	57000
1,3-Butadiene	106-99-0	3100	4600	7600	Not Detected U
1,4-Dioxane	123-91-1	15000	37000	50000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	12000	30000	40000	560000
2-Hexanone	591-78-6	13000	42000	56000	Not Detected U
2-Propanol	67-63-0	9300	25000	34000	57000
4-Methyl-2-pentanone	108-10-1	7100	8400	14000	18000
Acetone	67-64-1	12000	24000	33000	5000000
Benzene	71-43-2	1600	6600	11000	4900000
Bromodichloromethane	75-27-4	4300	14000	23000	Not Detected U
Bromoform	75-25-2	7400	21000	36000	Not Detected U
Carbon Disulfide	75-15-0	11000	32000	43000	Not Detected U
Carbon Tetrachloride	56-23-5	5400	13000	22000	Not Detected U
Chloroethane	75-00-3	14000	27000	36000	Not Detected U
Chloroform	67-66-3	2700	10000	17000	Not Detected U
Chloromethane	74-87-3	9000	21000	28000	Not Detected U
Cyclohexane	110-82-7	2500	7100	12000	14000000
Dibromochloromethane	124-48-1	5000	18000	29000	Not Detected U
Ethanol	64-17-5	12000	19000	26000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	4/20/20 07:20 PM
Lab ID:	2004180A-09A	Dilution Factor:	687
Date/Time Collected:	4/6/20 10:29 AM	Instrument/Filename:	msd14.i / 14042022
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	50000	Not Detected U
Ethyl Benzene	100-41-4	2800	8900	15000	640000
Freon 11	75-69-4	2600	12000	19000	Not Detected U
Freon 113	76-13-1	6200	16000	26000	Not Detected U
Freon 12	75-71-8	2100	10000	17000	Not Detected U
Heptane	142-82-5	5000	8400	14000	12000000
Hexane	110-54-3	2700	7300	12000	20000000
m,p-Xylene	108-38-3	3000	8900	15000	1800000
Methylene Chloride	75-09-2	18000	36000	48000	Not Detected U
Naphthalene	91-20-3	2800	5400	72000	Not Detected U
o-Xylene	95-47-6	2400	8900	15000	470000
Propylene	115-07-1	6800	18000	24000	26000
Styrene	100-42-5	2000	8800	15000	Not Detected U
Tetrachloroethene	127-18-4	7100	14000	23000	Not Detected U
Tetrahydrofuran	109-99-9	2900	6100	10000	Not Detected U
Toluene	108-88-3	2400	7800	13000	8800000
Total Xylene	1330-20-7	NA	D	30000	2200000
Trichloroethene	79-01-6	3400	11000	18000	Not Detected U
Vinyl Chloride	75-01-4	3100	5300	8800	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	4/20/20 07:20 PM
Lab ID:	2004180A-09A	Dilution Factor:	687
Date/Time Collected:	4/6/20 10:29 AM	Instrument/Filename:	msd14.i / 14042022
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	140
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	4/20/20 07:43 PM
Lab ID:	2004180A-10A	Dilution Factor:	502
Date/Time Collected:	4/6/20 10:37 AM	Instrument/File Name:	msd14.i / 14042023
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2100	6100	10000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	15000	56000	74000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1300	7400	12000	120000
1,2-Dibromoethane (EDB)	106-93-4	3400	12000	19000	22000
1,2-Dichlorobenzene	95-50-1	3200	9000	15000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1600	7400	12000	58000
1,3-Butadiene	106-99-0	2300	3300	5600	Not Detected U
1,4-Dioxane	123-91-1	11000	27000	36000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	8700	22000	30000	540000
2-Hexanone	591-78-6	9700	31000	41000	Not Detected U
2-Propanol	67-63-0	6800	18000	25000	59000
4-Methyl-2-pentanone	108-10-1	5200	6200	10000	Not Detected U
Acetone	67-64-1	8900	18000	24000	4600000
Benzene	71-43-2	1200	4800	8000	4400000
Bromodichloromethane	75-27-4	3100	10000	17000	Not Detected U
Bromoform	75-25-2	5400	16000	26000	Not Detected U
Carbon Disulfide	75-15-0	7900	23000	31000	Not Detected U
Carbon Tetrachloride	56-23-5	3900	9500	16000	Not Detected U
Chloroethane	75-00-3	9900	20000	26000	Not Detected U
Chloroform	67-66-3	2000	7400	12000	Not Detected U
Chloromethane	74-87-3	6600	16000	21000	Not Detected U
Cyclohexane	110-82-7	1800	5200	8600	13000000
Dibromochloromethane	124-48-1	3700	13000	21000	Not Detected U
Ethanol	64-17-5	9200	14000	19000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	4/20/20 07:43 PM
Lab ID:	2004180A-10A	Dilution Factor:	502
Date/Time Collected:	4/6/20 10:37 AM	Instrument/Filename:	msd14.i / 14042023
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	36000	Not Detected U
Ethyl Benzene	100-41-4	2100	6500	11000	630000
Freon 11	75-69-4	1900	8500	14000	Not Detected U
Freon 113	76-13-1	4500	12000	19000	Not Detected U
Freon 12	75-71-8	1600	7400	12000	Not Detected U
Heptane	142-82-5	3600	6200	10000	11000000
Hexane	110-54-3	2000	5300	8800	18000000
m,p-Xylene	108-38-3	2200	6500	11000	1700000
Methylene Chloride	75-09-2	13000	26000	35000	Not Detected U
Naphthalene	91-20-3	2000	3900	53000	Not Detected U
o-Xylene	95-47-6	1800	6500	11000	470000
Propylene	115-07-1	5000	13000	17000	22000
Styrene	100-42-5	1500	6400	11000	Not Detected U
Tetrachloroethene	127-18-4	5200	10000	17000	Not Detected U
Tetrahydrofuran	109-99-9	2100	4400	7400	Not Detected U
Toluene	108-88-3	1800	5700	9400	8200000
Total Xylene	1330-20-7	NA	D	22000	2200000
Trichloroethene	79-01-6	2500	8100	13000	Not Detected U
Vinyl Chloride	75-01-4	2200	3800	6400	Not Detected U

U = The analyte was not detected above the MDL.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	4/20/20 07:43 PM
Lab ID:	2004180A-10A	Dilution Factor:	502
Date/Time Collected:	4/6/20 10:37 AM	Instrument/Filename:	msd14.i / 14042023
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	168 Q
4-Bromofluorobenzene	460-00-4	90-111	94
Toluene-d8	2037-26-5	85-116	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	4/20/20 09:34 PM
Lab ID:	2004180A-11A	Dilution Factor:	26.5
Date/Time Collected:	4/6/20 10:49 AM	Instrument/File Name:	msd14.i / 14042028
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	110	320	540	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	800	3000	3900	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	69	390	650	150000
1,2-Dibromoethane (EDB)	106-93-4	180	610	1000	270 J
1,2-Dichlorobenzene	95-50-1	170	480	800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	87	390	650	42000
1,3-Butadiene	106-99-0	120	180	290	Not Detected U
1,4-Dioxane	123-91-1	580	1400	1900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	460	1200	1600	1400 J
2-Hexanone	591-78-6	510	1600	2200	Not Detected U
2-Propanol	67-63-0	360	980	1300	2900
4-Methyl-2-pentanone	108-10-1	270	320	540	Not Detected U
Acetone	67-64-1	470	940	1200	34000
Benzene	71-43-2	63	250	420	8000
Bromodichloromethane	75-27-4	160	530	890	Not Detected U
Bromoform	75-25-2	280	820	1400	Not Detected U
Carbon Disulfide	75-15-0	420	1200	1600	Not Detected U
Carbon Tetrachloride	56-23-5	210	500	830	Not Detected U
Chloroethane	75-00-3	520	1000	1400	Not Detected U
Chloroform	67-66-3	100	390	650	Not Detected U
Chloromethane	74-87-3	350	820	1100	Not Detected U
Cyclohexane	110-82-7	98	270	460	32000
Dibromochloromethane	124-48-1	190	680	1100	Not Detected U
Ethanol	64-17-5	480	750	1000	1000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	4/20/20 09:34 PM
Lab ID:	2004180A-11A	Dilution Factor:	26.5
Date/Time Collected:	4/6/20 10:49 AM	Instrument/File Name:	msd14.i / 14042028
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	1900	Not Detected U
Ethyl Benzene	100-41-4	110	340	580	63000
Freon 11	75-69-4	100	450	740	Not Detected U
Freon 113	76-13-1	240	610	1000	Not Detected U
Freon 12	75-71-8	82	390	660	Not Detected U
Heptane	142-82-5	190	320	540	100000
Hexane	110-54-3	100	280	470	17000
m,p-Xylene	108-38-3	120	340	580	190000
Methylene Chloride	75-09-2	710	1400	1800	Not Detected U
Naphthalene	91-20-3	110	210	2800	5300
o-Xylene	95-47-6	93	340	580	72000
Propylene	115-07-1	260	680	910	Not Detected U
Styrene	100-42-5	78	340	560	Not Detected U
Tetrachloroethene	127-18-4	270	540	900	Not Detected U
Tetrahydrofuran	109-99-9	110	230	390	Not Detected U
Toluene	108-88-3	93	300	500	120000
Total Xylene	1330-20-7	NA	D	1200	260000
Trichloroethene	79-01-6	130	430	710	Not Detected U
Vinyl Chloride	75-01-4	120	200	340	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	4/20/20 09:34 PM
Lab ID:	2004180A-11A	Dilution Factor:	26.5
Date/Time Collected:	4/6/20 10:49 AM	Instrument/Filename:	msd14.i / 14042028
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	122
4-Bromofluorobenzene	460-00-4	90-111	100
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	4/20/20 04:59 PM
Lab ID:	2004180A-12A	Dilution Factor:	279
Date/Time Collected:	4/6/20 11:02 AM	Instrument/File Name:	msd14.i / 14042015
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1200	3400	5600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	8500	31000	41000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	730	4100	6800	130000
1,2-Dibromoethane (EDB)	106-93-4	1900	6400	11000	7500 J
1,2-Dichlorobenzene	95-50-1	1800	5000	8400	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	920	4100	6800	53000
1,3-Butadiene	106-99-0	1300	1800	3100	Not Detected U
1,4-Dioxane	123-91-1	6100	15000	20000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4800	12000	16000	100000
2-Hexanone	591-78-6	5400	17000	23000	Not Detected U
2-Propanol	67-63-0	3800	10000	14000	64000
4-Methyl-2-pentanone	108-10-1	2900	3400	5700	Not Detected U
Acetone	67-64-1	4900	9900	13000	6400000
Benzene	71-43-2	670	2700	4400	2500000
Bromodichloromethane	75-27-4	1700	5600	9300	Not Detected U
Bromoform	75-25-2	3000	8600	14000	Not Detected U
Carbon Disulfide	75-15-0	4400	13000	17000	Not Detected U
Carbon Tetrachloride	56-23-5	2200	5300	8800	Not Detected U
Chloroethane	75-00-3	5500	11000	15000	Not Detected U
Chloroform	67-66-3	1100	4100	6800	Not Detected U
Chloromethane	74-87-3	3600	8600	12000	Not Detected U
Cyclohexane	110-82-7	1000	2900	4800	7600000
Dibromochloromethane	124-48-1	2000	7100	12000	Not Detected U
Ethanol	64-17-5	5100	7900	10000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	4/20/20 04:59 PM
Lab ID:	2004180A-12A	Dilution Factor:	279
Date/Time Collected:	4/6/20 11:02 AM	Instrument/Filename:	msd14.i / 14042015
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	20000	Not Detected U
Ethyl Benzene	100-41-4	1200	3600	6000	430000
Freon 11	75-69-4	1100	4700	7800	Not Detected U
Freon 113	76-13-1	2500	6400	11000	Not Detected U
Freon 12	75-71-8	870	4100	6900	Not Detected U
Heptane	142-82-5	2000	3400	5700	7000000
Hexane	110-54-3	1100	2900	4900	10000000
m,p-Xylene	108-38-3	1200	3600	6000	1000000
Methylene Chloride	75-09-2	7500	14000	19000	Not Detected U
Naphthalene	91-20-3	1100	2200	29000	Not Detected U
o-Xylene	95-47-6	980	3600	6000	300000
Propylene	115-07-1	2800	7200	9600	Not Detected U
Styrene	100-42-5	820	3600	5900	Not Detected U
Tetrachloroethene	127-18-4	2900	5700	9500	Not Detected U
Tetrahydrofuran	109-99-9	1200	2500	4100	Not Detected U
Toluene	108-88-3	980	3200	5200	4800000
Total Xylene	1330-20-7	NA	D	12000	1300000
Trichloroethene	79-01-6	1400	4500	7500	Not Detected U
Vinyl Chloride	75-01-4	1200	2100	3600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	4/20/20 04:59 PM
Lab ID:	2004180A-12A	Dilution Factor:	279
Date/Time Collected:	4/6/20 11:02 AM	Instrument/Filename:	msd14.i / 14042015
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	167 Q
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	4/20/20 05:20 PM
Lab ID:	2004180A-13A	Dilution Factor:	177
Date/Time Collected:	4/6/20 11:13 AM	Instrument/File Name:	msd14.i / 14042016
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	740	2100	3600	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	5400	20000	26000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	460	2600	4400	120000
1,2-Dibromoethane (EDB)	106-93-4	1200	4100	6800	14000
1,2-Dichlorobenzene	95-50-1	1100	3200	5300	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	580	2600	4400	40000
1,3-Butadiene	106-99-0	810	1200	2000	Not Detected U
1,4-Dioxane	123-91-1	3800	9600	13000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3100	7800	10000	89000
2-Hexanone	591-78-6	3400	11000	14000	Not Detected U
2-Propanol	67-63-0	2400	6500	8700	110000
4-Methyl-2-pentanone	108-10-1	1800	2200	3600	Not Detected U
Acetone	67-64-1	3100	6300	8400	1300000
Benzene	71-43-2	420	1700	2800	110000
Bromodichloromethane	75-27-4	1100	3600	5900	Not Detected U
Bromoform	75-25-2	1900	5500	9100	Not Detected U
Carbon Disulfide	75-15-0	2800	8300	11000	Not Detected U
Carbon Tetrachloride	56-23-5	1400	3300	5600	Not Detected U
Chloroethane	75-00-3	3500	7000	9300	Not Detected U
Chloroform	67-66-3	700	2600	4300	Not Detected U
Chloromethane	74-87-3	2300	5500	7300	Not Detected U
Cyclohexane	110-82-7	650	1800	3000	560000
Dibromochloromethane	124-48-1	1300	4500	7500	Not Detected U
Ethanol	64-17-5	3200	5000	6700	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	4/20/20 05:20 PM
Lab ID:	2004180A-13A	Dilution Factor:	177
Date/Time Collected:	4/6/20 11:13 AM	Instrument/File Name:	msd14.i / 14042016
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	13000	Not Detected U
Ethyl Benzene	100-41-4	730	2300	3800	310000
Freon 11	75-69-4	680	3000	5000	Not Detected U
Freon 113	76-13-1	1600	4100	6800	Not Detected U
Freon 12	75-71-8	550	2600	4400	Not Detected U
Heptane	142-82-5	1300	2200	3600	3200000
Hexane	110-54-3	700	1900	3100	150000
m,p-Xylene	108-38-3	780	2300	3800	740000
Methylene Chloride	75-09-2	4800	9200	12000	Not Detected U
Naphthalene	91-20-3	710	1400	18000	1200 J
o-Xylene	95-47-6	620	2300	3800	200000
Propylene	115-07-1	1700	4600	6100	Not Detected U
Styrene	100-42-5	520	2300	3800	Not Detected U
Tetrachloroethene	127-18-4	1800	3600	6000	Not Detected U
Tetrahydrofuran	109-99-9	750	1600	2600	Not Detected U
Toluene	108-88-3	620	2000	3300	4200000
Total Xylene	1330-20-7	NA	D	7700	940000
Trichloroethene	79-01-6	880	2800	4800	Not Detected U
Vinyl Chloride	75-01-4	800	1400	2300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	4/20/20 05:20 PM
Lab ID:	2004180A-13A	Dilution Factor:	177
Date/Time Collected:	4/6/20 11:13 AM	Instrument/Filename:	msd14.i / 14042016
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	138
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	4/20/20 09:56 PM
Lab ID:	2004180A-14A	Dilution Factor:	118
Date/Time Collected:	4/6/20 11:24 AM	Instrument/File Name:	msd14.i / 14042029
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	490	1400	2400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3600	13000	18000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	310	1700	2900	110000
1,2-Dibromoethane (EDB)	106-93-4	800	2700	4500	17000
1,2-Dichlorobenzene	95-50-1	760	2100	3500	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	390	1700	2900	40000
1,3-Butadiene	106-99-0	540	780	1300	Not Detected U
1,4-Dioxane	123-91-1	2600	6400	8500	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	2000	5200	7000	57000
2-Hexanone	591-78-6	2300	7200	9700	Not Detected U
2-Propanol	67-63-0	1600	4400	5800	100000
4-Methyl-2-pentanone	108-10-1	1200	1400	2400	Not Detected U
Acetone	67-64-1	2100	4200	5600	840000
Benzene	71-43-2	280	1100	1900	52000
Bromodichloromethane	75-27-4	740	2400	4000	Not Detected U
Bromoform	75-25-2	1300	3600	6100	Not Detected U
Carbon Disulfide	75-15-0	1800	5500	7300	Not Detected U
Carbon Tetrachloride	56-23-5	930	2200	3700	Not Detected U
Chloroethane	75-00-3	2300	4700	6200	Not Detected U
Chloroform	67-66-3	470	1700	2900	Not Detected U
Chloromethane	74-87-3	1500	3600	4900	Not Detected U
Cyclohexane	110-82-7	430	1200	2000	270000
Dibromochloromethane	124-48-1	860	3000	5000	Not Detected U
Ethanol	64-17-5	2200	3300	4400	9300

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	4/20/20 09:56 PM
Lab ID:	2004180A-14A	Dilution Factor:	118
Date/Time Collected:	4/6/20 11:24 AM	Instrument/File Name:	msd14.i / 14042029
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	8500	Not Detected U
Ethyl Benzene	100-41-4	490	1500	2600	320000
Freon 11	75-69-4	450	2000	3300	Not Detected U
Freon 113	76-13-1	1100	2700	4500	Not Detected U
Freon 12	75-71-8	370	1800	2900	Not Detected U
Heptane	142-82-5	860	1400	2400	2200000
Hexane	110-54-3	470	1200	2100	67000
m,p-Xylene	108-38-3	520	1500	2600	840000
Methylene Chloride	75-09-2	3200	6100	8200	Not Detected U
Naphthalene	91-20-3	480	930	12000	2900 J
o-Xylene	95-47-6	420	1500	2600	220000
Propylene	115-07-1	1200	3000	4100	2000 J
Styrene	100-42-5	350	1500	2500	Not Detected U
Tetrachloroethene	127-18-4	1200	2400	4000	Not Detected U
Tetrahydrofuran	109-99-9	500	1000	1700	Not Detected U
Toluene	108-88-3	410	1300	2200	4700000
Total Xylene	1330-20-7	NA	D	5100	1000000
Trichloroethene	79-01-6	590	1900	3200	Not Detected U
Vinyl Chloride	75-01-4	530	900	1500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	4/20/20 09:56 PM
Lab ID:	2004180A-14A	Dilution Factor:	118
Date/Time Collected:	4/6/20 11:24 AM	Instrument/Filename:	msd14.i / 14042029
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	134
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/20/20 02:35 PM
Lab ID:	2004180A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042009a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4.2	12	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2.6	15	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	23	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	6.4	18	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3.3	15	24	Not Detected U
1,3-Butadiene	106-99-0	4.6	6.6	11	Not Detected U
1,4-Dioxane	123-91-1	22	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	17	44	59	Not Detected U
2-Hexanone	591-78-6	19	61	82	Not Detected U
2-Propanol	67-63-0	14	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	12	20	Not Detected U
Acetone	67-64-1	18	36	48	Not Detected U
Benzene	71-43-2	2.4	9.6	16	Not Detected U
Bromodichloromethane	75-27-4	6.2	20	34	Not Detected U
Bromoform	75-25-2	11	31	52	Not Detected U
Carbon Disulfide	75-15-0	16	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.9	19	31	Not Detected U
Chloroethane	75-00-3	20	40	53	Not Detected U
Chloroform	67-66-3	4.0	15	24	Not Detected U
Chloromethane	74-87-3	13	31	41	Not Detected U
Cyclohexane	110-82-7	3.7	10	17	Not Detected U
Dibromochloromethane	124-48-1	7.3	26	42	Not Detected U
Ethanol	64-17-5	18	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/20/20 02:35 PM
Lab ID:	2004180A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042009a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected U
Ethyl Benzene	100-41-4	4.1	13	22	Not Detected U
Freon 11	75-69-4	3.8	17	28	Not Detected U
Freon 113	76-13-1	9.0	23	38	Not Detected U
Freon 12	75-71-8	3.1	15	25	Not Detected U
Heptane	142-82-5	7.2	12	20	Not Detected U
Hexane	110-54-3	4.0	10	18	Not Detected U
m,p-Xylene	108-38-3	4.4	13	22	Not Detected U
Methylene Chloride	75-09-2	27	52	69	Not Detected U
Naphthalene	91-20-3	4.0	7.9	100	Not Detected U
o-Xylene	95-47-6	3.5	13	22	Not Detected U
Propylene	115-07-1	9.9	26	34	Not Detected U
Styrene	100-42-5	2.9	13	21	Not Detected U
Tetrachloroethene	127-18-4	10	20	34	Not Detected U
Tetrahydrofuran	109-99-9	4.2	8.8	15	Not Detected U
Toluene	108-88-3	3.5	11	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	5.0	16	27	Not Detected U
Vinyl Chloride	75-01-4	4.5	7.7	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/20/20 02:35 PM
Lab ID:	2004180A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042009a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/20/20 09:31 AM
Lab ID:	2004180A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042003a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	108
1,2,4-Trichlorobenzene	120-82-1	79
1,2,4-Trimethylbenzene	95-63-6	93
1,2-Dibromoethane (EDB)	106-93-4	105
1,2-Dichlorobenzene	95-50-1	100
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	104
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	93
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	99
4-Methyl-2-pentanone	108-10-1	85
Acetone	67-64-1	104
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	103
Carbon Disulfide	75-15-0	100
Carbon Tetrachloride	56-23-5	113
Chloroethane	75-00-3	96
Chloroform	67-66-3	106
Chloromethane	74-87-3	102
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	104
Ethanol	64-17-5	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/20/20 09:31 AM
Lab ID:	2004180A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042003a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	90
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	120
Freon 113	76-13-1	109
Freon 12	75-71-8	107
Heptane	142-82-5	94
Hexane	110-54-3	99
m,p-Xylene	108-38-3	101
Methylene Chloride	75-09-2	110
Naphthalene	91-20-3	76
o-Xylene	95-47-6	99
Propylene	115-07-1	91
Styrene	100-42-5	104
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	92
Toluene	108-88-3	101
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	97

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	111

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/20/20 09:31 AM
Lab ID:	2004180A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042003a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	98
Toluene-d8	2037-26-5	85-116	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/20/20 10:37 PM
Lab ID:	2004180A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042031
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	115
1,2,4-Trichlorobenzene	120-82-1	74
1,2,4-Trimethylbenzene	95-63-6	94
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	96
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	112
1,4-Dioxane	123-91-1	101
2-Butanone (Methyl Ethyl Ketone)	78-93-3	101
2-Hexanone	591-78-6	95
2-Propanol	67-63-0	101
4-Methyl-2-pentanone	108-10-1	86
Acetone	67-64-1	115
Benzene	71-43-2	103
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	106
Carbon Tetrachloride	56-23-5	118
Chloroethane	75-00-3	96
Chloroform	67-66-3	114
Chloromethane	74-87-3	109
Cyclohexane	110-82-7	109
Dibromochloromethane	124-48-1	105
Ethanol	64-17-5	112

EPA METHOD TO-15 GC/MS
KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/20/20 10:37 PM
Lab ID:	2004180A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042031
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	126
Freon 113	76-13-1	116
Freon 12	75-71-8	114
Heptane	142-82-5	95
Hexane	110-54-3	110
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	115
Naphthalene	91-20-3	71
o-Xylene	95-47-6	98
Propylene	115-07-1	97
Styrene	100-42-5	104
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	101
Toluene	108-88-3	102
Total Xylene	1330-20-7	99
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	115

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	4/20/20 10:37 PM
Lab ID:	2004180A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042031
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	100
Toluene-d8	2037-26-5	85-116	95

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/20/20 10:36 AM
Lab ID:	2004180A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042005a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	108
1,2,4-Trichlorobenzene	120-82-1	94
1,2,4-Trimethylbenzene	95-63-6	93
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	103
1,4-Dioxane	123-91-1	98
2-Butanone (Methyl Ethyl Ketone)	78-93-3	101
2-Hexanone	591-78-6	92
2-Propanol	67-63-0	100
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	109
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	103
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	115
Chloroethane	75-00-3	100
Chloroform	67-66-3	107
Chloromethane	74-87-3	109
Cyclohexane	110-82-7	102
Dibromochloromethane	124-48-1	104
Ethanol	64-17-5	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/20/20 10:36 AM
Lab ID:	2004180A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042005a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	124
Freon 113	76-13-1	115
Freon 12	75-71-8	110
Heptane	142-82-5	94
Hexane	110-54-3	105
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	112
Naphthalene	91-20-3	98
o-Xylene	95-47-6	97
Propylene	115-07-1	89
Styrene	100-42-5	103
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	99
Toluene	108-88-3	98
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	114

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/20/20 10:36 AM
Lab ID:	2004180A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042005a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	96
Toluene-d8	2037-26-5	85-116	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/20/20 11:09 AM
Lab ID:	2004180A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042006a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	108
1,2,4-Trichlorobenzene	120-82-1	86
1,2,4-Trimethylbenzene	95-63-6	92
1,2-Dibromoethane (EDB)	106-93-4	101
1,2-Dichlorobenzene	95-50-1	100
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	100
1,4-Dioxane	123-91-1	101
2-Butanone (Methyl Ethyl Ketone)	78-93-3	96
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	98
4-Methyl-2-pentanone	108-10-1	86
Acetone	67-64-1	102
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	104
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	113
Chloroethane	75-00-3	104
Chloroform	67-66-3	109
Chloromethane	74-87-3	103
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	100
Ethanol	64-17-5	103

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/20/20 11:09 AM
Lab ID:	2004180A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042006a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	121
Freon 113	76-13-1	109
Freon 12	75-71-8	114
Heptane	142-82-5	94
Hexane	110-54-3	105
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	111
Naphthalene	91-20-3	90
o-Xylene	95-47-6	95
Propylene	115-07-1	90
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	101
Tetrahydrofuran	109-99-9	96
Toluene	108-88-3	97
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	65-142	111

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/20/20 11:09 AM
Lab ID:	2004180A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14042006a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	90-111	97
Toluene-d8	2037-26-5	85-116	96

* % Recovery is calculated using unrounded analytical results.

4/22/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2004180B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/9/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2004180B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/09/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/22/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-3	9.8 "Hg	4.9 psi
02A	KAFB-106V1-113	Modified TO-3	10.4 "Hg	5.1 psi
02AA	KAFB-106V1-113 Lab Duplicate	Modified TO-3	10.4 "Hg	5.1 psi
03A	KAFB-106V1-160	Modified TO-3	9.2 "Hg	4.5 psi
04A	KAFB-106V1-160-DUP	Modified TO-3	9.4 "Hg	4.9 psi
05A	KAFB-106V1-217	Modified TO-3	9.8 "Hg	4.4 psi
06A	KAFB-106V1-252	Modified TO-3	9.6 "Hg	5.1 psi
07A	KAFB-106V1-263	Modified TO-3	12.4 "Hg	4.6 psi
08A	KAFB-106V2-102	Modified TO-3	11.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified TO-3	10.5 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified TO-3	10.0 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-3	11.0 "Hg	5 psi
12A	KAFB-106V2-217	Modified TO-3	12.0 "Hg	5 psi
13A	KAFB-106V2-252	Modified TO-3	11.0 "Hg	5 psi
14A	KAFB-106V2-270	Modified TO-3	13.0 "Hg	5 psi
15A	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/22/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
DoD QSM 5.0 TO-3
EA Engineering
Workorder# 2004180B**

The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m³. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the listed modifications.

<i>Requirement</i>	<i>TO-3 DoD QSM 5.0</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system
DoD QSM 5.0 Module 4 (1.7.1.1.j, 1.5.2.1.b, 1.5.2.2.c) Surrogates	Quantification of surrogates requires a multi-point calibration and determination of DL and LOQ.	Quantification achieved using a multipoint calibration at a single concentration, analogous to internal standards. DLs and LOQs are not established.
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch \leq 20 samples.

Receiving Notes

The Chain of Custody (COC) information for samples KAFB-106V1-217, KAFB-106V1-252, KAFB-106V2-160 and KAFB-106V2-217 did not match the information on the canister with regard to canister barcode. The samples labeled 6L2733A, 6L2652S, 6L2548A and 6L2537S on the COC are labeled as 9245, 9218, 9258 and 9263 on the canister. The client was notified of the discrepancy and

the information on the canister was used to process and report the samples.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Manual integration was performed on Fluorobenzene (FID) in sample KAFB-106V2-117.

Manual integrations were performed on Fluorobenzene (FID) and TPH (Gasoline Range) in samples KAFB-106V1-252, KAFB-106V1-263 and KAFB-106V2-252 .

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	4/13/20 11:07 AM
Lab ID:	2004180B-01A	Dilution Factor:	1980
Date/Time Collected:	4/6/20 08:25 AM	Instrument/Filename:	gcd.i / d041306
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	57000	97000	200000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	129

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	4/13/20 11:46 AM
Lab ID:	2004180B-02A	Dilution Factor:	1650
Date/Time Collected:	4/6/20 08:40 AM	Instrument/Filename:	gcd.i / d041307
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	47000	81000	170000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	133

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID: KAFB-106V1-113 Lab Duplicate
Lab ID: 2004180B-02AA
Date/Time Collected: 4/6/20 08:40 AM
Media: 6 Liter Summa Canister (100% SIM certifie

Date/Time Analyzed: 4/13/20 12:21 PM
Dilution Factor: 2060
Instrument/Filename: gcd.i / d041308

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	59000	100000	210000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	130

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	4/13/20 01:06 PM
Lab ID:	2004180B-03A	Dilution Factor:	1880
Date/Time Collected:	4/6/20 08:52 AM	Instrument/Filename:	gcd.i / d041309
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	54000	92000	190000	77000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	116

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	4/13/20 01:42 PM
Lab ID:	2004180B-04A	Dilution Factor:	1210
Date/Time Collected:	4/6/20 09:01 AM	Instrument/Filename:	gcd.i / d041310
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	35000	59000	120000	78000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	115

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	4/13/20 02:18 PM
Lab ID:	2004180B-05A	Dilution Factor:	2410
Date/Time Collected:	4/6/20 09:18 AM	Instrument/Filename:	gcd.i / d041311
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	69000	120000	250000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	120

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	4/13/20 03:04 PM
Lab ID:	2004180B-06A	Dilution Factor:	2480
Date/Time Collected:	4/6/20 09:35 AM	Instrument/Filename:	gcd.i / d041312
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	71000	120000	250000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	110

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	4/13/20 03:40 PM
Lab ID:	2004180B-07A	Dilution Factor:	2800
Date/Time Collected:	4/6/20 09:49 AM	Instrument/Filename:	gcd.i / d041313
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	80000	140000	290000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	116

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	4/13/20 04:14 PM
Lab ID:	2004180B-08A	Dilution Factor:	3620
Date/Time Collected:	4/6/20 10:16 AM	Instrument/Filename:	gcd.i / d041314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	100000	180000	370000	200000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	121

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	4/13/20 04:47 PM
Lab ID:	2004180B-09A	Dilution Factor:	3430
Date/Time Collected:	4/6/20 10:29 AM	Instrument/Filename:	gcd.i / d041315
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	99000	170000	350000	230000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	112

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	4/13/20 05:20 PM
Lab ID:	2004180B-10A	Dilution Factor:	3350
Date/Time Collected:	4/6/20 10:37 AM	Instrument/Filename:	gcd.i / d041316
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	96000	160000	340000	230000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	116

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	4/13/20 05:52 PM
Lab ID:	2004180B-11A	Dilution Factor:	265
Date/Time Collected:	4/6/20 10:49 AM	Instrument/Filename:	gcd.i / d041317
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	7600	13000	27000	6900000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	103

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	4/13/20 08:54 PM
Lab ID:	2004180B-12A	Dilution Factor:	2230
Date/Time Collected:	4/6/20 11:02 AM	Instrument/Filename:	gcd.i / d041322
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	64000	110000	230000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	108

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	4/13/20 07:37 PM
Lab ID:	2004180B-13A	Dilution Factor:	848
Date/Time Collected:	4/6/20 11:13 AM	Instrument/Filename:	gcd.i / d041320
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	24000	42000	87000	52000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	115

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	4/13/20 08:12 PM
Lab ID:	2004180B-14A	Dilution Factor:	944
Date/Time Collected:	4/6/20 11:24 AM	Instrument/Filename:	gcd.i / d041321
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	27000	46000	96000	55000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	114

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/13/20 09:34 AM
Lab ID:	2004180B-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041304
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	29	49	100	45 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	91

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/13/20 08:07 AM
Lab ID:	2004180B-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041302
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		90

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	113

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/13/20 08:51 AM
Lab ID:	2004180B-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d041303
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		96

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	61-172	114

* % Recovery is calculated using unrounded analytical results.

4/22/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2004180C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 4/9/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2004180C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	04/09/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	04/22/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified ASTM D-1945	9.8 "Hg	4.9 psi
01AA	KAFB-106V1-102 Lab Duplicate	Modified ASTM D-1945	9.8 "Hg	4.9 psi
02A	KAFB-106V1-113	Modified ASTM D-1945	10.4 "Hg	5.1 psi
03A	KAFB-106V1-160	Modified ASTM D-1945	9.2 "Hg	4.5 psi
04A	KAFB-106V1-160-DUP	Modified ASTM D-1945	9.4 "Hg	4.9 psi
05A	KAFB-106V1-217	Modified ASTM D-1945	9.8 "Hg	4.4 psi
06A	KAFB-106V1-252	Modified ASTM D-1945	9.6 "Hg	5.1 psi
07A	KAFB-106V1-263	Modified ASTM D-1945	12.4 "Hg	4.6 psi
08A	KAFB-106V2-102	Modified ASTM D-1945	11.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified ASTM D-1945	10.5 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified ASTM D-1945	10.0 "Hg	5 psi
11A	KAFB-106V2-160	Modified ASTM D-1945	11.0 "Hg	5 psi
12A	KAFB-106V2-217	Modified ASTM D-1945	12.0 "Hg	5 psi
13A	KAFB-106V2-252	Modified ASTM D-1945	11.0 "Hg	5 psi
14A	KAFB-106V2-270	Modified ASTM D-1945	13.0 "Hg	5 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 04/22/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 2004180C

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on April 09, 2020. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

The Chain of Custody (COC) information for samples KAFB-106V1-217, KAFB-106V1-252, KAFB-106V2-160 and KAFB-106V2-217 did not match the information on the canister with regard to canister barcode. The samples labeled 6L2733A, 6L2652S, 6L2548A and 6L2537S on the COC are labeled as 9245, 9218, 9258 and 9263 on the canister. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Methane and Ethane were manually integrated in samples KAFB-106V1-102, KAFB-106V1-102 Lab Duplicate, KAFB-106V1-113, KAFB-106V1-263, KAFB-106V2-102, KAFB-106V2-117 and KAFB-106V2-117-DUP.

Methane was manually integrated in sample KAFB-106V1-252.

Propane was manually integrated in sample KAFB-106V2-102.

Pentane was manually integrated in sample KAFB-106V1-263.

The recoveries for Carbon Monoxide and Carbon Dioxide in the LCS and LCSD exceeded In-house generated control limits.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	4/20/20 11:36 AM
Lab ID:	2004180C-01A	Dilution Factor:	1.98
Date/Time Collected:	4/6/20 08:25 AM	Instrument/Filename:	gc10.i / 10042011
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.00042 J
Carbon Dioxide	124-38-9	0.0017	0.0075	0.020	0.88
Carbon Monoxide	630-08-0	0.0021	0.0075	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00023 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000099	0.00020	0.0019
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000067	0.00017	0.0020	0.056
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	4/20/20 12:00 PM
Lab ID:	2004180C-01AA	Dilution Factor:	1.98
Date/Time Collected:	4/6/20 08:25 AM	Instrument/File Name:	gc10.i / 10042012
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.00040 J
Carbon Dioxide	124-38-9	0.0017	0.0075	0.020	0.88
Carbon Monoxide	630-08-0	0.0021	0.0075	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00022 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000099	0.00020	0.0018
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000067	0.00017	0.0020	0.062
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	4/20/20 01:18 PM
Lab ID:	2004180C-02A	Dilution Factor:	2.06
Date/Time Collected:	4/6/20 08:40 AM	Instrument/Filename:	gc10.i / 10042014
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.00083 J
Carbon Dioxide	124-38-9	0.0017	0.0078	0.021	1.5
Carbon Monoxide	630-08-0	0.0022	0.0078	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	0.00031 J
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.0013
Nitrogen	7727-37-9	0.11	0.11	0.21	78
Oxygen	7782-44-7	0.011	0.011	0.21	19
Pentane	109-66-0	0.000070	0.00018	0.0021	0.074
Propane	74-98-6	0.000052	0.00018	0.0021	0.000080 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	4/20/20 02:05 PM
Lab ID:	2004180C-03A	Dilution Factor:	1.88
Date/Time Collected:	4/6/20 08:52 AM	Instrument/Filename:	gc10.i / 10042016
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000036	0.00016	0.0019	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0071	0.019	0.53
Carbon Monoxide	630-08-0	0.0020	0.0071	0.019	Not Detected U
Ethane	74-84-0	0.000036	0.00016	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0016	0.012	0.019	Not Detected U
Methane	74-82-8	0.000053	0.000094	0.00019	Not Detected U
Nitrogen	7727-37-9	0.10	0.10	0.19	79
Oxygen	7782-44-7	0.010	0.010	0.19	20
Pentane	109-66-0	0.000064	0.00016	0.0019	0.0020
Propane	74-98-6	0.000047	0.00016	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	4/20/20 02:51 PM
Lab ID:	2004180C-04A	Dilution Factor:	1.94
Date/Time Collected:	4/6/20 09:01 AM	Instrument/Filename:	gc10.i / 10042018
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0019	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0074	0.019	0.55
Carbon Monoxide	630-08-0	0.0021	0.0074	0.019	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.019	Not Detected U
Methane	74-82-8	0.000054	0.000097	0.00019	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.19	79
Oxygen	7782-44-7	0.011	0.011	0.19	20
Pentane	109-66-0	0.000066	0.00017	0.0019	0.0020
Propane	74-98-6	0.000048	0.00017	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	4/20/20 03:58 PM
Lab ID:	2004180C-05A	Dilution Factor:	1.93
Date/Time Collected:	4/6/20 09:18 AM	Instrument/Filename:	gc10.i / 10042020
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00016	0.0019	0.00018 J
Carbon Dioxide	124-38-9	0.0016	0.0073	0.019	1.4
Carbon Monoxide	630-08-0	0.0020	0.0073	0.019	Not Detected U
Ethane	74-84-0	0.000037	0.00016	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.019	Not Detected U
Methane	74-82-8	0.000054	0.000096	0.00019	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.19	78
Oxygen	7782-44-7	0.011	0.011	0.19	19
Pentane	109-66-0	0.000066	0.00016	0.0019	0.024
Propane	74-98-6	0.000048	0.00016	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	4/20/20 05:05 PM
Lab ID:	2004180C-06A	Dilution Factor:	1.98
Date/Time Collected:	4/6/20 09:35 AM	Instrument/Filename:	gc10.i / 10042022
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0017	0.0075	0.020	0.38
Carbon Monoxide	630-08-0	0.0021	0.0075	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000099	0.00020	0.00031
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	20
Pentane	109-66-0	0.000067	0.00017	0.0020	Not Detected U
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	4/20/20 05:51 PM
Lab ID:	2004180C-07A	Dilution Factor:	2.24
Date/Time Collected:	4/6/20 09:49 AM	Instrument/Filename:	gc10.i / 10042024
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000042	0.00019	0.0022	0.00029 J
Carbon Dioxide	124-38-9	0.0019	0.0085	0.022	0.31
Carbon Monoxide	630-08-0	0.0024	0.0085	0.022	Not Detected U
Ethane	74-84-0	0.000042	0.00019	0.0022	0.00015 J
Hydrogen	1333-74-0	0.0019	0.014	0.022	Not Detected U
Methane	74-82-8	0.000063	0.00011	0.00022	0.00031
Nitrogen	7727-37-9	0.12	0.12	0.22	78
Oxygen	7782-44-7	0.012	0.012	0.22	20
Pentane	109-66-0	0.000076	0.00019	0.0022	0.00056 J
Propane	74-98-6	0.000056	0.00019	0.0022	0.00022 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	4/20/20 06:40 PM
Lab ID:	2004180C-08A	Dilution Factor:	2.17
Date/Time Collected:	4/6/20 10:16 AM	Instrument/Filename:	gc10.i / 10042026
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000041	0.00019	0.0022	0.0012 J
Carbon Dioxide	124-38-9	0.0018	0.0082	0.022	1.3
Carbon Monoxide	630-08-0	0.0023	0.0082	0.022	Not Detected U
Ethane	74-84-0	0.000041	0.00019	0.0022	0.00014 J
Hydrogen	1333-74-0	0.0019	0.013	0.022	Not Detected U
Methane	74-82-8	0.000061	0.00011	0.00022	0.0011
Nitrogen	7727-37-9	0.12	0.12	0.22	77
Oxygen	7782-44-7	0.012	0.012	0.22	19
Pentane	109-66-0	0.000074	0.00019	0.0022	0.097
Propane	74-98-6	0.000054	0.00019	0.0022	0.00015 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	4/20/20 07:24 PM
Lab ID:	2004180C-09A	Dilution Factor:	2.06
Date/Time Collected:	4/6/20 10:29 AM	Instrument/File Name:	gc10.i / 10042028
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.0071
Carbon Dioxide	124-38-9	0.0017	0.0078	0.021	5.2
Carbon Monoxide	630-08-0	0.0022	0.0078	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	0.00065 J
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.0024
Nitrogen	7727-37-9	0.11	0.11	0.21	76
Oxygen	7782-44-7	0.011	0.011	0.21	16
Pentane	109-66-0	0.000070	0.00018	0.0021	0.26
Propane	74-98-6	0.000052	0.00018	0.0021	0.00096 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	4/20/20 08:27 PM
Lab ID:	2004180C-10A	Dilution Factor:	2.01
Date/Time Collected:	4/6/20 10:37 AM	Instrument/File Name:	gc10.i / 10042030
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.0061
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	4.7
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00057 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	0.0020
Nitrogen	7727-37-9	0.11	0.11	0.20	76
Oxygen	7782-44-7	0.011	0.011	0.20	16
Pentane	109-66-0	0.000068	0.00017	0.0020	0.23
Propane	74-98-6	0.000050	0.00017	0.0020	0.00080 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	4/20/20 09:11 PM
Lab ID:	2004180C-11A	Dilution Factor:	2.12
Date/Time Collected:	4/6/20 10:49 AM	Instrument/Filename:	gc10.i / 10042032
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000040	0.00018	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0018	0.0080	0.021	0.38
Carbon Monoxide	630-08-0	0.0022	0.0080	0.021	Not Detected U
Ethane	74-84-0	0.000040	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000059	0.00011	0.00021	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.21	80
Oxygen	7782-44-7	0.012	0.012	0.21	20
Pentane	109-66-0	0.000072	0.00018	0.0021	Not Detected U
Propane	74-98-6	0.000053	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	4/20/20 09:55 PM
Lab ID:	2004180C-12A	Dilution Factor:	2.23
Date/Time Collected:	4/6/20 11:02 AM	Instrument/Filename:	gc10.i / 10042034
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000042	0.00019	0.0022	0.00015 J
Carbon Dioxide	124-38-9	0.0019	0.0085	0.022	1.4
Carbon Monoxide	630-08-0	0.0024	0.0085	0.022	Not Detected U
Ethane	74-84-0	0.000042	0.00019	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0019	0.014	0.022	Not Detected U
Methane	74-82-8	0.000062	0.00011	0.00022	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.22	78
Oxygen	7782-44-7	0.012	0.012	0.22	19
Pentane	109-66-0	0.000076	0.00019	0.0022	0.036
Propane	74-98-6	0.000056	0.00019	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	4/20/20 11:02 PM
Lab ID:	2004180C-13A	Dilution Factor:	2.12
Date/Time Collected:	4/6/20 11:13 AM	Instrument/Filename:	gc10.i / 10042037
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000040	0.00018	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0018	0.0080	0.021	0.31
Carbon Monoxide	630-08-0	0.0022	0.0080	0.021	Not Detected U
Ethane	74-84-0	0.000040	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000059	0.00011	0.00021	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.21	79
Oxygen	7782-44-7	0.012	0.012	0.21	20
Pentane	109-66-0	0.000072	0.00018	0.0021	Not Detected U
Propane	74-98-6	0.000053	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	4/20/20 10:40 PM
Lab ID:	2004180C-14A	Dilution Factor:	2.36
Date/Time Collected:	4/6/20 11:24 AM	Instrument/Filename:	gc10.i / 10042036
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000045	0.00020	0.0024	0.00064 J
Carbon Dioxide	124-38-9	0.0020	0.0090	0.024	0.60
Carbon Monoxide	630-08-0	0.0025	0.0090	0.024	Not Detected U
Ethane	74-84-0	0.000045	0.00020	0.0024	Not Detected U
Hydrogen	1333-74-0	0.0020	0.015	0.024	Not Detected U
Methane	74-82-8	0.000066	0.00012	0.00024	Not Detected U
Nitrogen	7727-37-9	0.13	0.13	0.24	79
Oxygen	7782-44-7	0.013	0.013	0.24	20
Pentane	109-66-0	0.000080	0.00020	0.0024	0.0022 J
Propane	74-98-6	0.000059	0.00020	0.0024	0.00013 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/20/20 10:01 AM
Lab ID:	2004180C-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10042008a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000019	0.000086	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.00084	0.0038	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0011	0.0038	0.010	Not Detected U
Ethane	74-84-0	0.000019	0.000086	0.0010	Not Detected U
Methane	74-82-8	0.000028	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.055	0.055	0.10	Not Detected U
Oxygen	7782-44-7	0.0055	0.0055	0.10	Not Detected U
Pentane	109-66-0	0.000034	0.000086	0.0010	Not Detected U
Propane	74-98-6	0.000025	0.000086	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	4/20/20 09:38 AM
Lab ID:	2004180C-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10042007c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.00086	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/20/20 08:47 AM
Lab ID:	2004180C-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10042005a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	104
Carbon Dioxide	124-38-9	104 Q
Carbon Monoxide	630-08-0	97 Q
Ethane	74-84-0	104
Methane	74-82-8	107
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	100
Pentane	109-66-0	105
Propane	74-98-6	103

Q = Exceeds Quality Control limits.

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/20/20 09:10 AM
Lab ID:	2004180C-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10042006a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	103
Carbon Dioxide	124-38-9	104 Q
Carbon Monoxide	630-08-0	98 Q
Ethane	74-84-0	102
Methane	74-82-8	106
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	99
Pentane	109-66-0	104
Propane	74-98-6	102

Q = Exceeds Quality Control limits.

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	4/20/20 07:27 AM
Lab ID:	2004180C-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10042002c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	105

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	4/20/20 07:49 AM
Lab ID:	2004180C-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10042003c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	100

* % Recovery is calculated using unrounded analytical results.

7/22/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2007140AR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/3/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2007140AR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/03/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/17/2020		
DATE REISSUED:	04/02/2001		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-15 (5&20 ppbv	10.2 "Hg	4.9 psi
01AA	KAFB-106V1-102 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.2 "Hg	4.9 psi
02A	KAFB-106V1-113	Modified TO-15 (5&20 ppbv	10.8 "Hg	4.9 psi
03A	KAFB-106V1-160	Modified TO-15 (5&20 ppbv	9.4 "Hg	5.2 psi
03AA	KAFB-106V1-160 Lab Duplicate	Modified TO-15 (5&20 ppbv	9.4 "Hg	5.2 psi
04A	KAFB-106V1-160-DUP	Modified TO-15 (5&20 ppbv	10.4 "Hg	4.9 psi
05A	KAFB-106V1-217	Modified TO-15 (5&20 ppbv	10 "Hg	4.7 psi
06A	KAFB-106V1-252	Modified TO-15 (5&20 ppbv	9.4 "Hg	4.8 psi
07A	KAFB-106V1-263	Modified TO-15 (5&20 ppbv	10.6 "Hg	5 psi
08A	KAFB-106V2-102	Modified TO-15 (5&20 ppbv	9.6 "Hg	4.9 psi
09A	KAFB-106V2-117	Modified TO-15 (5&20 ppbv	10.2 "Hg	4.6 psi
10A	KAFB-106V2-117-DUP	Modified TO-15 (5&20 ppbv	10.2 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-15 (5&20 ppbv	10.2 "Hg	4.8 psi
11AA	KAFB-106V2-160 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.2 "Hg	4.8 psi
12A	KAFB-106V2-217	Modified TO-15 (5&20 ppbv	10.6 "Hg	4.6 psi
13A	KAFB-106V2-252	Modified TO-15 (5&20 ppbv	11.4 "Hg	5 psi
14A	KAFB-106V2-270	Modified TO-15 (5&20 ppbv	10.2 "Hg	5.1 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15C	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16C	CCV	Modified TO-15 (5&20 ppbv	NA	NA

Continued on next page

WORK ORDER #: 2007140AR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/03/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/17/2020		
DATE REISSUED:	04/02/2001		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
16D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16E	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16F	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
17B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
17C	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17CC	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/22/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 2007140AR1

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on July 03, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

The Work Order was reissued on July 22, 2020 to revise sample identifications due to laboratory transcription error.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds. Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study is not maintained for Total Xylenes and non-standard compounds.

1,2,4-Trichlorobenzene did not meet project requirement acceptance criteria of <30% RSD in the initial calibration.

Samples were analyzed in three analytical batches on MSD-14 on 7/10/20, 7/13/20 and 7/14/20. The initial continuing calibration verifications (CCV) for the batches are reported as lab fractions 16A, 16C and 16E and the ending CCVs are reported as lab fractions 16B, 16D, 16F.

Dilution was performed on all samples due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	7/14/20 10:12 AM
Lab ID:	2007140AR1-01A	Dilution Factor:	404
Date/Time Collected:	6/30/20 08:17 AM	Instrument/Filename:	msd14.i / 14071407
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1700	6500	8200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	45000	60000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	7900	9900	91000
1,2-Dibromoethane (EDB)	106-93-4	2700	12000	16000	4900 J
1,2-Dichlorobenzene	95-50-1	2600	9700	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1300	7900	9900	29000
1,3-Butadiene	106-99-0	1800	3600	4500	Not Detected U
1,4-Dioxane	123-91-1	8800	22000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7000	18000	24000	660000
2-Hexanone	591-78-6	7800	25000	33000	Not Detected U
2-Propanol	67-63-0	5500	15000	20000	190000
4-Methyl-2-pentanone	108-10-1	4200	6600	8300	Not Detected U
Acetone	67-64-1	7100	14000	19000	5000000
Benzene	71-43-2	970	5200	6400	2500000
Bromodichloromethane	75-27-4	2500	11000	14000	Not Detected U
Bromoform	75-25-2	4300	17000	21000	Not Detected U
Carbon Disulfide	75-15-0	6300	19000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	10000	13000	Not Detected U
Chloroethane	75-00-3	8000	19000	21000	Not Detected U
Chloroform	67-66-3	1600	7900	9900	Not Detected U
Chloromethane	74-87-3	5300	12000	17000	Not Detected U
Cyclohexane	110-82-7	1500	5600	7000	6200000
Dibromochloromethane	124-48-1	3000	14000	17000	Not Detected U
Ethanol	64-17-5	7400	11000	15000	98000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	7/14/20 10:12 AM
Lab ID:	2007140AR1-01A	Dilution Factor:	404
Date/Time Collected:	6/30/20 08:17 AM	Instrument/Filename:	msd14.i / 14071407
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	7000	8800	190000
Freon 11	75-69-4	1500	9100	11000	Not Detected U
Freon 113	76-13-1	3600	12000	15000	Not Detected U
Freon 12	75-71-8	1200	8000	10000	Not Detected U
Heptane	142-82-5	2900	6600	8300	3400000
Hexane	110-54-3	1600	5700	7100	10000000
m,p-Xylene	108-38-3	1800	7000	8800	320000
Methylene Chloride	75-09-2	11000	21000	28000	Not Detected U
Naphthalene	91-20-3	1600	4200	42000	Not Detected U
o-Xylene	95-47-6	1400	7000	8800	99000
Propylene	115-07-1	4000	10000	14000	Not Detected U
Styrene	100-42-5	1200	6900	8600	Not Detected U
Tetrachloroethene	127-18-4	4200	11000	14000	Not Detected U
Tetrahydrofuran	109-99-9	1700	4800	6000	Not Detected U
Toluene	108-88-3	1400	6100	7600	2000000
Total Xylene	1330-20-7	NA	D	18000	420000
Trichloroethene	79-01-6	2000	8700	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	4100	5200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	7/14/20 10:12 AM
Lab ID:	2007140AR1-01A	Dilution Factor:	404
Date/Time Collected:	6/30/20 08:17 AM	Instrument/Filename:	msd14.i / 14071407
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	99
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	7/14/20 10:33 AM
Lab ID:	2007140AR1-01AA	Dilution Factor:	404
Date/Time Collected:	6/30/20 08:17 AM	Instrument/File Name:	msd14.i / 14071408
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1700	6500	8200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	45000	60000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	7900	9900	93000
1,2-Dibromoethane (EDB)	106-93-4	2700	12000	16000	5200 J
1,2-Dichlorobenzene	95-50-1	2600	9700	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1300	7900	9900	30000
1,3-Butadiene	106-99-0	1800	3600	4500	Not Detected U
1,4-Dioxane	123-91-1	8800	22000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7000	18000	24000	680000
2-Hexanone	591-78-6	7800	25000	33000	Not Detected U
2-Propanol	67-63-0	5500	15000	20000	200000
4-Methyl-2-pentanone	108-10-1	4200	6600	8300	Not Detected U
Acetone	67-64-1	7100	14000	19000	5200000
Benzene	71-43-2	970	5200	6400	2400000
Bromodichloromethane	75-27-4	2500	11000	14000	Not Detected U
Bromoform	75-25-2	4300	17000	21000	Not Detected U
Carbon Disulfide	75-15-0	6300	19000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	10000	13000	Not Detected U
Chloroethane	75-00-3	8000	19000	21000	Not Detected U
Chloroform	67-66-3	1600	7900	9900	Not Detected U
Chloromethane	74-87-3	5300	12000	17000	Not Detected U
Cyclohexane	110-82-7	1500	5600	7000	6300000
Dibromochloromethane	124-48-1	3000	14000	17000	Not Detected U
Ethanol	64-17-5	7400	11000	15000	100000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	7/14/20 10:33 AM
Lab ID:	2007140AR1-01AA	Dilution Factor:	404
Date/Time Collected:	6/30/20 08:17 AM	Instrument/File Name:	msd14.i / 14071408
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	7000	8800	200000
Freon 11	75-69-4	1500	9100	11000	Not Detected U
Freon 113	76-13-1	3600	12000	15000	Not Detected U
Freon 12	75-71-8	1200	8000	10000	Not Detected U
Heptane	142-82-5	2900	6600	8300	3300000
Hexane	110-54-3	1600	5700	7100	10000000
m,p-Xylene	108-38-3	1800	7000	8800	340000
Methylene Chloride	75-09-2	11000	21000	28000	Not Detected U
Naphthalene	91-20-3	1600	4200	42000	Not Detected U
o-Xylene	95-47-6	1400	7000	8800	100000
Propylene	115-07-1	4000	10000	14000	Not Detected U
Styrene	100-42-5	1200	6900	8600	Not Detected U
Tetrachloroethene	127-18-4	4200	11000	14000	Not Detected U
Tetrahydrofuran	109-99-9	1700	4800	6000	Not Detected U
Toluene	108-88-3	1400	6100	7600	2000000
Total Xylene	1330-20-7	NA	D	18000	430000
Trichloroethene	79-01-6	2000	8700	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	4100	5200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102 Lab Duplicate	Date/Time Analyzed:	7/14/20 10:33 AM
Lab ID:	2007140AR1-01AA	Dilution Factor:	404
Date/Time Collected:	6/30/20 08:17 AM	Instrument/Filename:	msd14.i / 14071408
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	102
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	7/14/20 10:58 AM
Lab ID:	2007140AR1-02A	Dilution Factor:	520
Date/Time Collected:	6/30/20 08:34 AM	Instrument/Filename:	msd14.i / 14071409
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2200	8400	10000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	16000	58000	77000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1400	10000	13000	100000
1,2-Dibromoethane (EDB)	106-93-4	3500	16000	20000	8100 J
1,2-Dichlorobenzene	95-50-1	3300	12000	16000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1700	10000	13000	32000
1,3-Butadiene	106-99-0	2400	4600	5800	Not Detected U
1,4-Dioxane	123-91-1	11000	28000	37000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	9000	23000	31000	720000
2-Hexanone	591-78-6	10000	32000	43000	Not Detected U
2-Propanol	67-63-0	7000	19000	26000	180000
4-Methyl-2-pentanone	108-10-1	5400	8500	11000	Not Detected U
Acetone	67-64-1	9200	18000	25000	4600000
Benzene	71-43-2	1200	6600	8300	2600000
Bromodichloromethane	75-27-4	3200	14000	17000	Not Detected U
Bromoform	75-25-2	5600	22000	27000	Not Detected U
Carbon Disulfide	75-15-0	8100	24000	32000	Not Detected U
Carbon Tetrachloride	56-23-5	4100	13000	16000	Not Detected U
Chloroethane	75-00-3	10000	25000	27000	Not Detected U
Chloroform	67-66-3	2000	10000	13000	Not Detected U
Chloromethane	74-87-3	6800	16000	21000	Not Detected U
Cyclohexane	110-82-7	1900	7200	8900	7100000
Dibromochloromethane	124-48-1	3800	18000	22000	Not Detected U
Ethanol	64-17-5	9500	15000	20000	94000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	7/14/20 10:58 AM
Lab ID:	2007140AR1-02A	Dilution Factor:	520
Date/Time Collected:	6/30/20 08:34 AM	Instrument/File Name:	msd14.i / 14071409
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	37000	Not Detected
Ethyl Benzene	100-41-4	2100	9000	11000	240000
Freon 11	75-69-4	2000	12000	15000	Not Detected U
Freon 113	76-13-1	4700	16000	20000	Not Detected U
Freon 12	75-71-8	1600	10000	13000	Not Detected U
Heptane	142-82-5	3800	8500	11000	4200000
Hexane	110-54-3	2100	7300	9200	11000000
m,p-Xylene	108-38-3	2300	9000	11000	390000
Methylene Chloride	75-09-2	14000	27000	36000	Not Detected U
Naphthalene	91-20-3	2100	5400	54000	Not Detected U
o-Xylene	95-47-6	1800	9000	11000	120000
Propylene	115-07-1	5100	13000	18000	Not Detected U
Styrene	100-42-5	1500	8800	11000	Not Detected U
Tetrachloroethene	127-18-4	5400	14000	18000	Not Detected U
Tetrahydrofuran	109-99-9	2200	6100	7700	Not Detected U
Toluene	108-88-3	1800	7800	9800	2700000
Total Xylene	1330-20-7	NA	D	22000	510000
Trichloroethene	79-01-6	2600	11000	14000	Not Detected U
Vinyl Chloride	75-01-4	2300	5300	6600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	7/14/20 10:58 AM
Lab ID:	2007140AR1-02A	Dilution Factor:	520
Date/Time Collected:	6/30/20 08:34 AM	Instrument/Filename:	msd14.i / 14071409
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	100
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	7/13/20 03:07 PM
Lab ID:	2007140AR1-03A	Dilution Factor:	98.5
Date/Time Collected:	6/30/20 08:48 AM	Instrument/Filename:	msd14.i / 14071314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	410	1600	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3000	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	260	1900	2400	210000
1,2-Dibromoethane (EDB)	106-93-4	670	3000	3800	1700 J
1,2-Dichlorobenzene	95-50-1	630	2400	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	320	1900	2400	57000
1,3-Butadiene	106-99-0	450	870	1100	Not Detected U
1,4-Dioxane	123-91-1	2100	5300	7100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1700	4400	5800	66000
2-Hexanone	591-78-6	1900	6000	8100	Not Detected U
2-Propanol	67-63-0	1300	3600	4800	310000
4-Methyl-2-pentanone	108-10-1	1000	1600	2000	Not Detected U
Acetone	67-64-1	1700	3500	4700	2000000
Benzene	71-43-2	240	1200	1600	450000
Bromodichloromethane	75-27-4	610	2600	3300	Not Detected U
Bromoform	75-25-2	1000	4100	5100	Not Detected U
Carbon Disulfide	75-15-0	1500	4600	6100	Not Detected U
Carbon Tetrachloride	56-23-5	770	2500	3100	Not Detected U
Chloroethane	75-00-3	1900	4700	5200	Not Detected U
Chloroform	67-66-3	390	1900	2400	Not Detected U
Chloromethane	74-87-3	1300	3000	4100	Not Detected U
Cyclohexane	110-82-7	360	1400	1700	1700000
Dibromochloromethane	124-48-1	720	3400	4200	Not Detected U
Ethanol	64-17-5	1800	2800	3700	80000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	7/13/20 03:07 PM
Lab ID:	2007140AR1-03A	Dilution Factor:	98.5
Date/Time Collected:	6/30/20 08:48 AM	Instrument/File Name:	msd14.i / 14071314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7100	Not Detected
Ethyl Benzene	100-41-4	410	1700	2100	310000
Freon 11	75-69-4	380	2200	2800	Not Detected U
Freon 113	76-13-1	890	3000	3800	Not Detected U
Freon 12	75-71-8	310	1900	2400	Not Detected U
Heptane	142-82-5	710	1600	2000	2200000
Hexane	110-54-3	390	1400	1700	1000000
m,p-Xylene	108-38-3	440	1700	2100	710000
Methylene Chloride	75-09-2	2600	5100	6800	Not Detected U
Naphthalene	91-20-3	400	1000	10000	18000
o-Xylene	95-47-6	350	1700	2100	230000
Propylene	115-07-1	970	2500	3400	Not Detected U
Styrene	100-42-5	290	1700	2100	Not Detected U
Tetrachloroethene	127-18-4	1000	2700	3300	Not Detected U
Tetrahydrofuran	109-99-9	420	1200	1400	Not Detected U
Toluene	108-88-3	340	1500	1800	1600000
Total Xylene	1330-20-7	NA	D	4300	920000
Trichloroethene	79-01-6	490	2100	2600	Not Detected U
Vinyl Chloride	75-01-4	440	1000	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	7/13/20 03:07 PM
Lab ID:	2007140AR1-03A	Dilution Factor:	98.5
Date/Time Collected:	6/30/20 08:48 AM	Instrument/Filename:	msd14.i / 14071314
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	109
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160 Lab Duplicate	Date/Time Analyzed:	7/13/20 03:29 PM
Lab ID:	2007140AR1-03AA	Dilution Factor:	98.5
Date/Time Collected:	6/30/20 08:48 AM	Instrument/Filename:	msd14.i / 14071315
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	410	1600	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3000	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	260	1900	2400	210000
1,2-Dibromoethane (EDB)	106-93-4	670	3000	3800	1700 J
1,2-Dichlorobenzene	95-50-1	630	2400	3000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	320	1900	2400	56000
1,3-Butadiene	106-99-0	450	870	1100	Not Detected U
1,4-Dioxane	123-91-1	2100	5300	7100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1700	4400	5800	66000
2-Hexanone	591-78-6	1900	6000	8100	Not Detected U
2-Propanol	67-63-0	1300	3600	4800	330000
4-Methyl-2-pentanone	108-10-1	1000	1600	2000	Not Detected U
Acetone	67-64-1	1700	3500	4700	2100000
Benzene	71-43-2	240	1200	1600	450000
Bromodichloromethane	75-27-4	610	2600	3300	Not Detected U
Bromoform	75-25-2	1000	4100	5100	Not Detected U
Carbon Disulfide	75-15-0	1500	4600	6100	Not Detected U
Carbon Tetrachloride	56-23-5	770	2500	3100	Not Detected U
Chloroethane	75-00-3	1900	4700	5200	Not Detected U
Chloroform	67-66-3	390	1900	2400	Not Detected U
Chloromethane	74-87-3	1300	3000	4100	Not Detected U
Cyclohexane	110-82-7	360	1400	1700	1700000
Dibromochloromethane	124-48-1	720	3400	4200	Not Detected U
Ethanol	64-17-5	1800	2800	3700	83000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160 Lab Duplicate	Date/Time Analyzed:	7/13/20 03:29 PM
Lab ID:	2007140AR1-03AA	Dilution Factor:	98.5
Date/Time Collected:	6/30/20 08:48 AM	Instrument/File Name:	msd14.i / 14071315
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7100	Not Detected
Ethyl Benzene	100-41-4	410	1700	2100	300000
Freon 11	75-69-4	380	2200	2800	Not Detected U
Freon 113	76-13-1	890	3000	3800	Not Detected U
Freon 12	75-71-8	310	1900	2400	Not Detected U
Heptane	142-82-5	710	1600	2000	2200000
Hexane	110-54-3	390	1400	1700	1100000
m,p-Xylene	108-38-3	440	1700	2100	690000
Methylene Chloride	75-09-2	2600	5100	6800	Not Detected U
Naphthalene	91-20-3	400	1000	10000	17000
o-Xylene	95-47-6	350	1700	2100	220000
Propylene	115-07-1	970	2500	3400	Not Detected U
Styrene	100-42-5	290	1700	2100	Not Detected U
Tetrachloroethene	127-18-4	1000	2700	3300	Not Detected U
Tetrahydrofuran	109-99-9	420	1200	1400	Not Detected U
Toluene	108-88-3	340	1500	1800	1600000
Total Xylene	1330-20-7	NA	D	4300	920000
Trichloroethene	79-01-6	490	2100	2600	Not Detected U
Vinyl Chloride	75-01-4	440	1000	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160 Lab Duplicate	Date/Time Analyzed:	7/13/20 03:29 PM
Lab ID:	2007140AR1-03AA	Dilution Factor:	98.5
Date/Time Collected:	6/30/20 08:48 AM	Instrument/Filename:	msd14.i / 14071315
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	110
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	7/13/20 03:50 PM
Lab ID:	2007140AR1-04A	Dilution Factor:	102
Date/Time Collected:	6/30/20 08:57 AM	Instrument/Filename:	msd14.i / 14071316
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	420	1600	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3100	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	260	2000	2500	190000
1,2-Dibromoethane (EDB)	106-93-4	690	3100	3900	1400 J
1,2-Dichlorobenzene	95-50-1	660	2400	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	340	2000	2500	52000
1,3-Butadiene	106-99-0	460	900	1100	Not Detected U
1,4-Dioxane	123-91-1	2200	5500	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1800	4500	6000	66000
2-Hexanone	591-78-6	2000	6300	8400	Not Detected U
2-Propanol	67-63-0	1400	3800	5000	320000
4-Methyl-2-pentanone	108-10-1	1000	1700	2100	Not Detected U
Acetone	67-64-1	1800	3600	4800	2000000
Benzene	71-43-2	240	1300	1600	450000
Bromodichloromethane	75-27-4	640	2700	3400	Not Detected U
Bromoform	75-25-2	1100	4200	5300	Not Detected U
Carbon Disulfide	75-15-0	1600	4800	6400	Not Detected U
Carbon Tetrachloride	56-23-5	800	2600	3200	Not Detected U
Chloroethane	75-00-3	2000	4800	5400	Not Detected U
Chloroform	67-66-3	400	2000	2500	Not Detected U
Chloromethane	74-87-3	1300	3200	4200	Not Detected U
Cyclohexane	110-82-7	380	1400	1800	1700000
Dibromochloromethane	124-48-1	750	3500	4300	Not Detected U
Ethanol	64-17-5	1900	2900	3800	86000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	7/13/20 03:50 PM
Lab ID:	2007140AR1-04A	Dilution Factor:	102
Date/Time Collected:	6/30/20 08:57 AM	Instrument/File Name:	msd14.i / 14071316
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	420	1800	2200	300000
Freon 11	75-69-4	390	2300	2900	Not Detected U
Freon 113	76-13-1	920	3100	3900	Not Detected U
Freon 12	75-71-8	320	2000	2500	Not Detected U
Heptane	142-82-5	740	1700	2100	2200000
Hexane	110-54-3	410	1400	1800	1000000
m,p-Xylene	108-38-3	450	1800	2200	680000
Methylene Chloride	75-09-2	2700	5300	7100	Not Detected U
Naphthalene	91-20-3	410	1100	11000	12000
o-Xylene	95-47-6	360	1800	2200	220000
Propylene	115-07-1	1000	2600	3500	Not Detected U
Styrene	100-42-5	300	1700	2200	Not Detected U
Tetrachloroethene	127-18-4	1000	2800	3400	Not Detected U
Tetrahydrofuran	109-99-9	430	1200	1500	Not Detected U
Toluene	108-88-3	360	1500	1900	1600000
Total Xylene	1330-20-7	NA	D	4400	910000
Trichloroethene	79-01-6	510	2200	2700	Not Detected U
Vinyl Chloride	75-01-4	460	1000	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	7/13/20 03:50 PM
Lab ID:	2007140AR1-04A	Dilution Factor:	102
Date/Time Collected:	6/30/20 08:57 AM	Instrument/Filename:	msd14.i / 14071316
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	107
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	7/14/20 11:40 AM
Lab ID:	2007140AR1-05A	Dilution Factor:	198
Date/Time Collected:	6/30/20 09:13 AM	Instrument/File Name:	msd14.i / 14071410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	820	3200	4000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6000	22000	29000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	520	3900	4900	120000
1,2-Dibromoethane (EDB)	106-93-4	1300	6100	7600	4300 J
1,2-Dichlorobenzene	95-50-1	1300	4800	6000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	650	3900	4900	48000
1,3-Butadiene	106-99-0	900	1800	2200	Not Detected U
1,4-Dioxane	123-91-1	4300	11000	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3400	8800	12000	280000
2-Hexanone	591-78-6	3800	12000	16000	Not Detected U
2-Propanol	67-63-0	2700	7300	9700	18000
4-Methyl-2-pentanone	108-10-1	2000	3200	4000	Not Detected U
Acetone	67-64-1	3500	7000	9400	4000000
Benzene	71-43-2	470	2500	3200	1300000
Bromodichloromethane	75-27-4	1200	5300	6600	Not Detected U
Bromoform	75-25-2	2100	8200	10000	Not Detected U
Carbon Disulfide	75-15-0	3100	9200	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	5000	6200	Not Detected U
Chloroethane	75-00-3	3900	9400	10000	Not Detected U
Chloroform	67-66-3	780	3900	4800	Not Detected U
Chloromethane	74-87-3	2600	6100	8200	Not Detected U
Cyclohexane	110-82-7	730	2700	3400	5000000
Dibromochloromethane	124-48-1	1400	6700	8400	Not Detected U
Ethanol	64-17-5	3600	5600	7500	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	7/14/20 11:40 AM
Lab ID:	2007140AR1-05A	Dilution Factor:	198
Date/Time Collected:	6/30/20 09:13 AM	Instrument/File Name:	msd14.i / 14071410
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	820	3400	4300	390000
Freon 11	75-69-4	760	4400	5600	Not Detected U
Freon 113	76-13-1	1800	6100	7600	Not Detected U
Freon 12	75-71-8	620	3900	4900	Not Detected U
Heptane	142-82-5	1400	3200	4000	6700000
Hexane	110-54-3	790	2800	3500	4800000
m,p-Xylene	108-38-3	880	3400	4300	1300000
Methylene Chloride	75-09-2	5300	10000	14000	Not Detected U
Naphthalene	91-20-3	800	2100	21000	2600 J
o-Xylene	95-47-6	700	3400	4300	360000
Propylene	115-07-1	2000	5100	6800	2100 J
Styrene	100-42-5	580	3400	4200	Not Detected U
Tetrachloroethene	127-18-4	2000	5400	6700	Not Detected U
Tetrahydrofuran	109-99-9	840	2300	2900	Not Detected U
Toluene	108-88-3	690	3000	3700	3900000
Total Xylene	1330-20-7	NA	D	8600	1700000
Trichloroethene	79-01-6	990	4200	5300	Not Detected U
Vinyl Chloride	75-01-4	890	2000	2500	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	7/14/20 11:40 AM
Lab ID:	2007140AR1-05A	Dilution Factor:	198
Date/Time Collected:	6/30/20 09:13 AM	Instrument/Filename:	msd14.i / 14071410
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	106
4-Bromofluorobenzene	460-00-4	75-118	95
Toluene-d8	2037-26-5	84-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	7/14/20 12:03 PM
Lab ID:	2007140AR1-06A	Dilution Factor:	241
Date/Time Collected:	6/30/20 09:29 AM	Instrument/File Name:	msd14.i / 14071411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1000	3900	4900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	7300	27000	36000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	630	4700	5900	97000
1,2-Dibromoethane (EDB)	106-93-4	1600	7400	9200	18000
1,2-Dichlorobenzene	95-50-1	1600	5800	7200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	790	4700	5900	40000
1,3-Butadiene	106-99-0	1100	2100	2700	Not Detected U
1,4-Dioxane	123-91-1	5200	13000	17000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4200	11000	14000	260000
2-Hexanone	591-78-6	4600	15000	20000	Not Detected U
2-Propanol	67-63-0	3300	8900	12000	12000
4-Methyl-2-pentanone	108-10-1	2500	3900	4900	Not Detected U
Acetone	67-64-1	4200	8600	11000	1200000
Benzene	71-43-2	580	3100	3800	330000
Bromodichloromethane	75-27-4	1500	6400	8100	Not Detected U
Bromoform	75-25-2	2600	10000	12000	Not Detected U
Carbon Disulfide	75-15-0	3800	11000	15000	Not Detected U
Carbon Tetrachloride	56-23-5	1900	6100	7600	Not Detected U
Chloroethane	75-00-3	4800	11000	13000	Not Detected U
Chloroform	67-66-3	950	4700	5900	Not Detected U
Chloromethane	74-87-3	3200	7500	10000	Not Detected U
Cyclohexane	110-82-7	890	3300	4100	1900000
Dibromochloromethane	124-48-1	1800	8200	10000	Not Detected U
Ethanol	64-17-5	4400	6800	9100	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	7/14/20 12:03 PM
Lab ID:	2007140AR1-06A	Dilution Factor:	241
Date/Time Collected:	6/30/20 09:29 AM	Instrument/File Name:	msd14.i / 14071411
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	17000	Not Detected
Ethyl Benzene	100-41-4	990	4200	5200	420000
Freon 11	75-69-4	920	5400	6800	Not Detected U
Freon 113	76-13-1	2200	7400	9200	Not Detected U
Freon 12	75-71-8	750	4800	6000	Not Detected U
Heptane	142-82-5	1700	4000	4900	8000000
Hexane	110-54-3	960	3400	4200	380000
m,p-Xylene	108-38-3	1100	4200	5200	1400000
Methylene Chloride	75-09-2	6500	12000	17000	Not Detected U
Naphthalene	91-20-3	970	2500	25000	Not Detected U
o-Xylene	95-47-6	850	4200	5200	350000
Propylene	115-07-1	2400	6200	8300	Not Detected U
Styrene	100-42-5	710	4100	5100	Not Detected U
Tetrachloroethene	127-18-4	2500	6500	8200	Not Detected U
Tetrahydrofuran	109-99-9	1000	2800	3600	Not Detected U
Toluene	108-88-3	840	3600	4500	5300000
Total Xylene	1330-20-7	NA	D	10000	1700000
Trichloroethene	79-01-6	1200	5200	6500	Not Detected U
Vinyl Chloride	75-01-4	1100	2500	3100	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	7/14/20 12:03 PM
Lab ID:	2007140AR1-06A	Dilution Factor:	241
Date/Time Collected:	6/30/20 09:29 AM	Instrument/Filename:	msd14.i / 14071411
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	7/14/20 12:25 PM
Lab ID:	2007140AR1-07A	Dilution Factor:	345
Date/Time Collected:	6/30/20 09:41 AM	Instrument/Filename:	msd14.i / 14071412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1400	5600	7000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	10000	38000	51000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	900	6800	8500	120000
1,2-Dibromoethane (EDB)	106-93-4	2300	11000	13000	26000
1,2-Dichlorobenzene	95-50-1	2200	8300	10000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1100	6800	8500	43000
1,3-Butadiene	106-99-0	1600	3000	3800	Not Detected U
1,4-Dioxane	123-91-1	7500	19000	25000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6000	15000	20000	490000
2-Hexanone	591-78-6	6600	21000	28000	Not Detected U
2-Propanol	67-63-0	4700	13000	17000	42000
4-Methyl-2-pentanone	108-10-1	3600	5600	7100	Not Detected U
Acetone	67-64-1	6100	12000	16000	2100000
Benzene	71-43-2	830	4400	5500	570000
Bromodichloromethane	75-27-4	2100	9200	12000	Not Detected U
Bromoform	75-25-2	3700	14000	18000	Not Detected U
Carbon Disulfide	75-15-0	5400	16000	21000	Not Detected U
Carbon Tetrachloride	56-23-5	2700	8700	11000	Not Detected U
Chloroethane	75-00-3	6800	16000	18000	Not Detected U
Chloroform	67-66-3	1400	6700	8400	Not Detected U
Chloromethane	74-87-3	4500	11000	14000	Not Detected U
Cyclohexane	110-82-7	1300	4800	5900	2900000
Dibromochloromethane	124-48-1	2500	12000	15000	Not Detected U
Ethanol	64-17-5	6300	9800	13000	9600 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	7/14/20 12:25 PM
Lab ID:	2007140AR1-07A	Dilution Factor:	345
Date/Time Collected:	6/30/20 09:41 AM	Instrument/File Name:	msd14.i / 14071412
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	25000	Not Detected
Ethyl Benzene	100-41-4	1400	6000	7500	480000
Freon 11	75-69-4	1300	7800	9700	Not Detected U
Freon 113	76-13-1	3100	10000	13000	Not Detected U
Freon 12	75-71-8	1100	6800	8500	Not Detected U
Heptane	142-82-5	2500	5600	7100	10000000
Hexane	110-54-3	1400	4900	6100	800000
m,p-Xylene	108-38-3	1500	6000	7500	1300000
Methylene Chloride	75-09-2	9300	18000	24000	Not Detected U
Naphthalene	91-20-3	1400	3600	36000	4200 J
o-Xylene	95-47-6	1200	6000	7500	340000
Propylene	115-07-1	3400	8900	12000	6600 J
Styrene	100-42-5	1000	5900	7300	Not Detected U
Tetrachloroethene	127-18-4	3600	9400	12000	Not Detected U
Tetrahydrofuran	109-99-9	1500	4100	5100	Not Detected U
Toluene	108-88-3	1200	5200	6500	6500000
Total Xylene	1330-20-7	NA	D	15000	1700000
Trichloroethene	79-01-6	1700	7400	9300	Not Detected U
Vinyl Chloride	75-01-4	1600	3500	4400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	7/14/20 12:25 PM
Lab ID:	2007140AR1-07A	Dilution Factor:	345
Date/Time Collected:	6/30/20 09:41 AM	Instrument/Filename:	msd14.i / 14071412
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	98
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	7/14/20 03:02 PM
Lab ID:	2007140AR1-08A	Dilution Factor:	392
Date/Time Collected:	6/30/20 09:59 AM	Instrument/File Name:	msd14.i / 14071418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1600	6300	7900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	44000	58000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	7700	9600	110000
1,2-Dibromoethane (EDB)	106-93-4	2600	12000	15000	22000
1,2-Dichlorobenzene	95-50-1	2500	9400	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1300	7700	9600	38000
1,3-Butadiene	106-99-0	1800	3500	4300	Not Detected U
1,4-Dioxane	123-91-1	8500	21000	28000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	6800	17000	23000	890000
2-Hexanone	591-78-6	7500	24000	32000	Not Detected U
2-Propanol	67-63-0	5300	14000	19000	340000
4-Methyl-2-pentanone	108-10-1	4100	6400	8000	Not Detected U
Acetone	67-64-1	6900	14000	19000	5700000
Benzene	71-43-2	940	5000	6300	2200000
Bromodichloromethane	75-27-4	2400	10000	13000	Not Detected U
Bromoform	75-25-2	4200	16000	20000	Not Detected U
Carbon Disulfide	75-15-0	6100	18000	24000	Not Detected U
Carbon Tetrachloride	56-23-5	3100	9900	12000	Not Detected U
Chloroethane	75-00-3	7700	19000	21000	Not Detected U
Chloroform	67-66-3	1600	7600	9600	Not Detected U
Chloromethane	74-87-3	5100	12000	16000	Not Detected U
Cyclohexane	110-82-7	1400	5400	6700	7600000
Dibromochloromethane	124-48-1	2900	13000	17000	Not Detected U
Ethanol	64-17-5	7200	11000	15000	52000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	7/14/20 03:02 PM
Lab ID:	2007140AR1-08A	Dilution Factor:	392
Date/Time Collected:	6/30/20 09:59 AM	Instrument/File Name:	msd14.i / 14071418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	28000	Not Detected
Ethyl Benzene	100-41-4	1600	6800	8500	390000
Freon 11	75-69-4	1500	8800	11000	Not Detected U
Freon 113	76-13-1	3500	12000	15000	Not Detected U
Freon 12	75-71-8	1200	7800	9700	Not Detected U
Heptane	142-82-5	2800	6400	8000	8300000
Hexane	110-54-3	1600	5500	6900	9200000
m,p-Xylene	108-38-3	1700	6800	8500	1000000
Methylene Chloride	75-09-2	10000	20000	27000	Not Detected U
Naphthalene	91-20-3	1600	4100	41000	Not Detected U
o-Xylene	95-47-6	1400	6800	8500	270000
Propylene	115-07-1	3900	10000	13000	Not Detected U
Styrene	100-42-5	1200	6700	8300	Not Detected U
Tetrachloroethene	127-18-4	4000	11000	13000	Not Detected U
Tetrahydrofuran	109-99-9	1700	4600	5800	Not Detected U
Toluene	108-88-3	1400	5900	7400	5500000
Total Xylene	1330-20-7	NA	D	17000	1300000
Trichloroethene	79-01-6	2000	8400	10000	Not Detected U
Vinyl Chloride	75-01-4	1800	4000	5000	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	111

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	7/14/20 03:02 PM
Lab ID:	2007140AR1-08A	Dilution Factor:	392
Date/Time Collected:	6/30/20 09:59 AM	Instrument/Filename:	msd14.i / 14071418
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	97
Toluene-d8	2037-26-5	84-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	7/14/20 12:52 PM
Lab ID:	2007140AR1-09A	Dilution Factor:	622
Date/Time Collected:	6/30/20 10:12 AM	Instrument/File Name:	msd14.i / 14071413
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	10000	12000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	19000	69000	92000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1600	12000	15000	78000
1,2-Dibromoethane (EDB)	106-93-4	4200	19000	24000	18000 J
1,2-Dichlorobenzene	95-50-1	4000	15000	19000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2000	12000	15000	39000
1,3-Butadiene	106-99-0	2800	5500	6900	Not Detected U
1,4-Dioxane	123-91-1	14000	34000	45000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	11000	28000	37000	360000
2-Hexanone	591-78-6	12000	38000	51000	Not Detected U
2-Propanol	67-63-0	8400	23000	30000	37000
4-Methyl-2-pentanone	108-10-1	6400	10000	13000	Not Detected U
Acetone	67-64-1	11000	22000	30000	3300000
Benzene	71-43-2	1500	7900	9900	4000000
Bromodichloromethane	75-27-4	3900	17000	21000	Not Detected U
Bromoform	75-25-2	6700	26000	32000	Not Detected U
Carbon Disulfide	75-15-0	9700	29000	39000	Not Detected U
Carbon Tetrachloride	56-23-5	4900	16000	20000	Not Detected U
Chloroethane	75-00-3	12000	30000	33000	Not Detected U
Chloroform	67-66-3	2500	12000	15000	Not Detected U
Chloromethane	74-87-3	8100	19000	26000	Not Detected U
Cyclohexane	110-82-7	2300	8600	11000	12000000
Dibromochloromethane	124-48-1	4600	21000	26000	Not Detected U
Ethanol	64-17-5	11000	18000	23000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	7/14/20 12:52 PM
Lab ID:	2007140AR1-09A	Dilution Factor:	622
Date/Time Collected:	6/30/20 10:12 AM	Instrument/Filename:	msd14.i / 14071413
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	45000	Not Detected
Ethyl Benzene	100-41-4	2600	11000	14000	500000
Freon 11	75-69-4	2400	14000	17000	Not Detected U
Freon 113	76-13-1	5600	19000	24000	Not Detected U
Freon 12	75-71-8	1900	12000	15000	Not Detected U
Heptane	142-82-5	4500	10000	13000	11000000
Hexane	110-54-3	2500	8800	11000	17000000
m,p-Xylene	108-38-3	2800	11000	14000	1300000
Methylene Chloride	75-09-2	17000	32000	43000	Not Detected U
Naphthalene	91-20-3	2500	6500	65000	Not Detected U
o-Xylene	95-47-6	2200	11000	14000	330000
Propylene	115-07-1	6100	16000	21000	20000 J
Styrene	100-42-5	1800	10000	13000	Not Detected U
Tetrachloroethene	127-18-4	6400	17000	21000	Not Detected U
Tetrahydrofuran	109-99-9	2600	7300	9200	Not Detected U
Toluene	108-88-3	2200	9400	12000	7000000
Total Xylene	1330-20-7	NA	D	27000	1600000
Trichloroethene	79-01-6	3100	13000	17000	Not Detected U
Vinyl Chloride	75-01-4	2800	6400	7900	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	7/14/20 12:52 PM
Lab ID:	2007140AR1-09A	Dilution Factor:	622
Date/Time Collected:	6/30/20 10:12 AM	Instrument/Filename:	msd14.i / 14071413
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	111
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	7/14/20 01:15 PM
Lab ID:	2007140AR1-10A	Dilution Factor:	634
Date/Time Collected:	6/30/20 10:20 AM	Instrument/File Name:	msd14.i / 14071414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	2600	10000	13000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	19000	70000	94000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1600	12000	16000	190000
1,2-Dibromoethane (EDB)	106-93-4	4300	19000	24000	20000 J
1,2-Dichlorobenzene	95-50-1	4100	15000	19000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	2100	12000	16000	67000
1,3-Butadiene	106-99-0	2900	5600	7000	Not Detected U
1,4-Dioxane	123-91-1	14000	34000	46000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	11000	28000	37000	480000
2-Hexanone	591-78-6	12000	39000	52000	Not Detected U
2-Propanol	67-63-0	8600	23000	31000	50000
4-Methyl-2-pentanone	108-10-1	6600	10000	13000	Not Detected U
Acetone	67-64-1	11000	22000	30000	3800000
Benzene	71-43-2	1500	8100	10000	4100000
Bromodichloromethane	75-27-4	4000	17000	21000	Not Detected U
Bromoform	75-25-2	6800	26000	33000	Not Detected U
Carbon Disulfide	75-15-0	9900	30000	39000	Not Detected U
Carbon Tetrachloride	56-23-5	5000	16000	20000	Not Detected U
Chloroethane	75-00-3	12000	30000	33000	Not Detected U
Chloroform	67-66-3	2500	12000	15000	Not Detected U
Chloromethane	74-87-3	8300	20000	26000	Not Detected U
Cyclohexane	110-82-7	2300	8700	11000	12000000
Dibromochloromethane	124-48-1	4600	22000	27000	Not Detected U
Ethanol	64-17-5	12000	18000	24000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	7/14/20 01:15 PM
Lab ID:	2007140AR1-10A	Dilution Factor:	634
Date/Time Collected:	6/30/20 10:20 AM	Instrument/File Name:	msd14.i / 14071414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	46000	Not Detected
Ethyl Benzene	100-41-4	2600	11000	14000	610000
Freon 11	75-69-4	2400	14000	18000	Not Detected U
Freon 113	76-13-1	5700	19000	24000	Not Detected U
Freon 12	75-71-8	2000	12000	16000	Not Detected U
Heptane	142-82-5	4600	10000	13000	12000000
Hexane	110-54-3	2500	8900	11000	18000000
m,p-Xylene	108-38-3	2800	11000	14000	1700000
Methylene Chloride	75-09-2	17000	33000	44000	Not Detected U
Naphthalene	91-20-3	2600	6600	66000	Not Detected U
o-Xylene	95-47-6	2200	11000	14000	460000
Propylene	115-07-1	6300	16000	22000	21000 J
Styrene	100-42-5	1900	11000	14000	Not Detected U
Tetrachloroethene	127-18-4	6500	17000	22000	Not Detected U
Tetrahydrofuran	109-99-9	2700	7500	9300	Not Detected U
Toluene	108-88-3	2200	9600	12000	7500000
Total Xylene	1330-20-7	NA	D	28000	2200000
Trichloroethene	79-01-6	3200	14000	17000	Not Detected U
Vinyl Chloride	75-01-4	2800	6500	8100	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	7/14/20 01:15 PM
Lab ID:	2007140AR1-10A	Dilution Factor:	634
Date/Time Collected:	6/30/20 10:20 AM	Instrument/Filename:	msd14.i / 14071414
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	110
4-Bromofluorobenzene	460-00-4	75-118	99
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	7/10/20 07:05 PM
Lab ID:	2007140AR1-11A	Dilution Factor:	50.2
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	msd14.i / 14071025
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	210	810	1000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1500	5600	7400	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	130	990	1200	220000
1,2-Dibromoethane (EDB)	106-93-4	340	1500	1900	Not Detected U
1,2-Dichlorobenzene	95-50-1	320	1200	1500	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	160	990	1200	49000
1,3-Butadiene	106-99-0	230	440	560	Not Detected U
1,4-Dioxane	123-91-1	1100	2700	3600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	870	2200	3000	1100 J
2-Hexanone	591-78-6	970	3100	4100	Not Detected U
2-Propanol	67-63-0	680	1800	2500	2900
4-Methyl-2-pentanone	108-10-1	520	820	1000	Not Detected U
Acetone	67-64-1	890	1800	2400	30000
Benzene	71-43-2	120	640	800	5200
Bromodichloromethane	75-27-4	310	1300	1700	Not Detected U
Bromoform	75-25-2	540	2100	2600	Not Detected U
Carbon Disulfide	75-15-0	790	2300	3100	Not Detected U
Carbon Tetrachloride	56-23-5	390	1300	1600	Not Detected U
Chloroethane	75-00-3	990	2400	2600	Not Detected U
Chloroform	67-66-3	200	980	1200	Not Detected U
Chloromethane	74-87-3	660	1600	2100	Not Detected U
Cyclohexane	110-82-7	180	690	860	16000
Dibromochloromethane	124-48-1	370	1700	2100	Not Detected U
Ethanol	64-17-5	920	1400	1900	1300 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	7/10/20 07:05 PM
Lab ID:	2007140AR1-11A	Dilution Factor:	50.2
Date/Time Collected:	6/30/20 10:41 AM	Instrument/File Name:	msd14.i / 14071025
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	3600	Not Detected
Ethyl Benzene	100-41-4	210	870	1100	62000
Freon 11	75-69-4	190	1100	1400	Not Detected U
Freon 113	76-13-1	450	1500	1900	Not Detected U
Freon 12	75-71-8	160	990	1200	Not Detected U
Heptane	142-82-5	360	820	1000	84000
Hexane	110-54-3	200	710	880	10000
m,p-Xylene	108-38-3	220	870	1100	180000
Methylene Chloride	75-09-2	1300	2600	3500	Not Detected U
Naphthalene	91-20-3	200	530	5300	25000
o-Xylene	95-47-6	180	870	1100	73000
Propylene	115-07-1	500	1300	1700	Not Detected U
Styrene	100-42-5	150	860	1100	Not Detected U
Tetrachloroethene	127-18-4	520	1400	1700	Not Detected U
Tetrahydrofuran	109-99-9	210	590	740	Not Detected U
Toluene	108-88-3	180	760	940	100000
Total Xylene	1330-20-7	NA	D	2200	260000
Trichloroethene	79-01-6	250	1100	1300	Not Detected U
Vinyl Chloride	75-01-4	220	510	640	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	7/10/20 07:05 PM
Lab ID:	2007140AR1-11A	Dilution Factor:	50.2
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	msd14.i / 14071025
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	87
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160 Lab Duplicate	Date/Time Analyzed:	7/10/20 08:09 PM
Lab ID:	2007140AR1-11AA	Dilution Factor:	50.2
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	msd14.i / 14071028
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	210	810	1000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1500	5600	7400	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	130	990	1200	200000
1,2-Dibromoethane (EDB)	106-93-4	340	1500	1900	Not Detected U
1,2-Dichlorobenzene	95-50-1	320	1200	1500	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	160	990	1200	50000
1,3-Butadiene	106-99-0	230	440	560	Not Detected U
1,4-Dioxane	123-91-1	1100	2700	3600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	870	2200	3000	1100 J
2-Hexanone	591-78-6	970	3100	4100	Not Detected U
2-Propanol	67-63-0	680	1800	2500	2900
4-Methyl-2-pentanone	108-10-1	520	820	1000	Not Detected U
Acetone	67-64-1	890	1800	2400	32000
Benzene	71-43-2	120	640	800	5300
Bromodichloromethane	75-27-4	310	1300	1700	Not Detected U
Bromoform	75-25-2	540	2100	2600	Not Detected U
Carbon Disulfide	75-15-0	790	2300	3100	Not Detected U
Carbon Tetrachloride	56-23-5	390	1300	1600	Not Detected U
Chloroethane	75-00-3	990	2400	2600	Not Detected U
Chloroform	67-66-3	200	980	1200	Not Detected U
Chloromethane	74-87-3	660	1600	2100	Not Detected U
Cyclohexane	110-82-7	180	690	860	17000
Dibromochloromethane	124-48-1	370	1700	2100	Not Detected U
Ethanol	64-17-5	920	1400	1900	1600 J

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160 Lab Duplicate		
Lab ID:	2007140AR1-11AA	Date/Time Analyzed:	7/10/20 08:09 PM
Date/Time Collected:	6/30/20 10:41 AM	Dilution Factor:	50.2
Media:	6 Liter Summa Canister (100% SIM certifie	Instrument/File name:	msd14.i / 14071028

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	3600	Not Detected
Ethyl Benzene	100-41-4	210	870	1100	66000
Freon 11	75-69-4	190	1100	1400	Not Detected U
Freon 113	76-13-1	450	1500	1900	Not Detected U
Freon 12	75-71-8	160	990	1200	Not Detected U
Heptane	142-82-5	360	820	1000	86000
Hexane	110-54-3	200	710	880	11000
m,p-Xylene	108-38-3	220	870	1100	200000
Methylene Chloride	75-09-2	1300	2600	3500	Not Detected U
Naphthalene	91-20-3	200	530	5300	16000
o-Xylene	95-47-6	180	870	1100	79000
Propylene	115-07-1	500	1300	1700	Not Detected U
Styrene	100-42-5	150	860	1100	Not Detected U
Tetrachloroethene	127-18-4	520	1400	1700	Not Detected U
Tetrahydrofuran	109-99-9	210	590	740	Not Detected U
Toluene	108-88-3	180	760	940	100000
Total Xylene	1330-20-7	NA	D	2200	280000
Trichloroethene	79-01-6	250	1100	1300	Not Detected U
Vinyl Chloride	75-01-4	220	510	640	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160 Lab Duplicate	Date/Time Analyzed:	7/10/20 08:09 PM
Lab ID:	2007140AR1-11AA	Dilution Factor:	50.2
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	msd14.i / 14071028
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	90
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	7/14/20 01:37 PM
Lab ID:	2007140AR1-12A	Dilution Factor:	406
Date/Time Collected:	6/30/20 10:52 AM	Instrument/File Name:	msd14.i / 14071415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1700	6600	8200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	12000	45000	60000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1000	8000	10000	150000
1,2-Dibromoethane (EDB)	106-93-4	2700	12000	16000	6200 J
1,2-Dichlorobenzene	95-50-1	2600	9800	12000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1300	8000	10000	50000
1,3-Butadiene	106-99-0	1800	3600	4500	Not Detected U
1,4-Dioxane	123-91-1	8800	22000	29000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7000	18000	24000	71000
2-Hexanone	591-78-6	7800	25000	33000	Not Detected U
2-Propanol	67-63-0	5500	15000	20000	75000
4-Methyl-2-pentanone	108-10-1	4200	6600	8300	Not Detected U
Acetone	67-64-1	7200	14000	19000	4600000
Benzene	71-43-2	970	5200	6500	1700000
Bromodichloromethane	75-27-4	2500	11000	14000	Not Detected U
Bromoform	75-25-2	4400	17000	21000	Not Detected U
Carbon Disulfide	75-15-0	6400	19000	25000	Not Detected U
Carbon Tetrachloride	56-23-5	3200	10000	13000	Not Detected U
Chloroethane	75-00-3	8000	19000	21000	Not Detected U
Chloroform	67-66-3	1600	7900	9900	Not Detected U
Chloromethane	74-87-3	5300	12000	17000	Not Detected U
Cyclohexane	110-82-7	1500	5600	7000	5500000
Dibromochloromethane	124-48-1	3000	14000	17000	Not Detected U
Ethanol	64-17-5	7400	11000	15000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	7/14/20 01:37 PM
Lab ID:	2007140AR1-12A	Dilution Factor:	406
Date/Time Collected:	6/30/20 10:52 AM	Instrument/Filename:	msd14.i / 14071415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	29000	Not Detected
Ethyl Benzene	100-41-4	1700	7000	8800	320000
Freon 11	75-69-4	1600	9100	11000	Not Detected U
Freon 113	76-13-1	3700	12000	16000	Not Detected U
Freon 12	75-71-8	1300	8000	10000	Not Detected U
Heptane	142-82-5	2900	6600	8300	5400000
Hexane	110-54-3	1600	5700	7200	7100000
m,p-Xylene	108-38-3	1800	7000	8800	810000
Methylene Chloride	75-09-2	11000	21000	28000	Not Detected U
Naphthalene	91-20-3	1600	4200	42000	Not Detected U
o-Xylene	95-47-6	1400	7000	8800	220000
Propylene	115-07-1	4000	10000	14000	Not Detected U
Styrene	100-42-5	1200	6900	8600	Not Detected U
Tetrachloroethene	127-18-4	4200	11000	14000	Not Detected U
Tetrahydrofuran	109-99-9	1700	4800	6000	Not Detected U
Toluene	108-88-3	1400	6100	7600	3200000
Total Xylene	1330-20-7	NA	D	18000	1000000
Trichloroethene	79-01-6	2000	8700	11000	Not Detected U
Vinyl Chloride	75-01-4	1800	4200	5200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	7/14/20 01:37 PM
Lab ID:	2007140AR1-12A	Dilution Factor:	406
Date/Time Collected:	6/30/20 10:52 AM	Instrument/Filename:	msd14.i / 14071415
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	103
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	7/10/20 08:53 PM
Lab ID:	2007140AR1-13A	Dilution Factor:	108
Date/Time Collected:	6/30/20 11:11 AM	Instrument/Filename:	msd14.i / 14071030
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	450	1700	2200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3300	12000	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	280	2100	2600	220000
1,2-Dibromoethane (EDB)	106-93-4	730	3300	4100	20000
1,2-Dichlorobenzene	95-50-1	690	2600	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	360	2100	2600	61000
1,3-Butadiene	106-99-0	490	960	1200	Not Detected U
1,4-Dioxane	123-91-1	2300	5800	7800	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1900	4800	6400	44000
2-Hexanone	591-78-6	2100	6600	8800	Not Detected U
2-Propanol	67-63-0	1500	4000	5300	82000
4-Methyl-2-pentanone	108-10-1	1100	1800	2200	Not Detected U
Acetone	67-64-1	1900	3800	5100	660000
Benzene	71-43-2	260	1400	1700	13000
Bromodichloromethane	75-27-4	670	2900	3600	Not Detected U
Bromoform	75-25-2	1200	4500	5600	Not Detected U
Carbon Disulfide	75-15-0	1700	5000	6700	Not Detected U
Carbon Tetrachloride	56-23-5	850	2700	3400	Not Detected U
Chloroethane	75-00-3	2100	5100	5700	Not Detected U
Chloroform	67-66-3	430	2100	2600	Not Detected U
Chloromethane	74-87-3	1400	3300	4500	Not Detected U
Cyclohexane	110-82-7	400	1500	1800	120000
Dibromochloromethane	124-48-1	790	3700	4600	Not Detected U
Ethanol	64-17-5	2000	3000	4100	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	7/10/20 08:53 PM
Lab ID:	2007140AR1-13A	Dilution Factor:	108
Date/Time Collected:	6/30/20 11:11 AM	Instrument/File Name:	msd14.i / 14071030
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7800	Not Detected
Ethyl Benzene	100-41-4	440	1900	2300	500000
Freon 11	75-69-4	410	2400	3000	Not Detected U
Freon 113	76-13-1	980	3300	4100	Not Detected U
Freon 12	75-71-8	340	2100	2700	Not Detected U
Heptane	142-82-5	780	1800	2200	2500000
Hexane	110-54-3	430	1500	1900	5600
m,p-Xylene	108-38-3	480	1900	2300	1200000
Methylene Chloride	75-09-2	2900	5600	7500	Not Detected U
Naphthalene	91-20-3	440	1100	11000	14000
o-Xylene	95-47-6	380	1900	2300	340000
Propylene	115-07-1	1100	2800	3700	Not Detected U
Styrene	100-42-5	320	1800	2300	Not Detected U
Tetrachloroethene	127-18-4	1100	2900	3700	Not Detected U
Tetrahydrofuran	109-99-9	460	1300	1600	Not Detected U
Toluene	108-88-3	380	1600	2000	4300000
Total Xylene	1330-20-7	NA	D	4700	1600000
Trichloroethene	79-01-6	540	2300	2900	Not Detected U
Vinyl Chloride	75-01-4	480	1100	1400	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	7/10/20 08:53 PM
Lab ID:	2007140AR1-13A	Dilution Factor:	108
Date/Time Collected:	6/30/20 11:11 AM	Instrument/Filename:	msd14.i / 14071030
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	114

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	7/14/20 03:47 PM
Lab ID:	2007140AR1-14A	Dilution Factor:	102
Date/Time Collected:	6/30/20 11:24 AM	Instrument/Filename:	msd14.i / 14071420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	420	1600	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3100	11000	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	260	2000	2500	180000
1,2-Dibromoethane (EDB)	106-93-4	690	3100	3900	12000
1,2-Dichlorobenzene	95-50-1	660	2400	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	340	2000	2500	50000
1,3-Butadiene	106-99-0	460	900	1100	Not Detected U
1,4-Dioxane	123-91-1	2200	5500	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1800	4500	6000	43000
2-Hexanone	591-78-6	2000	6300	8400	Not Detected U
2-Propanol	67-63-0	1400	3800	5000	71000
4-Methyl-2-pentanone	108-10-1	1000	1700	2100	Not Detected U
Acetone	67-64-1	1800	3600	4800	510000
Benzene	71-43-2	240	1300	1600	29000
Bromodichloromethane	75-27-4	640	2700	3400	Not Detected U
Bromoform	75-25-2	1100	4200	5300	Not Detected U
Carbon Disulfide	75-15-0	1600	4800	6400	Not Detected U
Carbon Tetrachloride	56-23-5	800	2600	3200	Not Detected U
Chloroethane	75-00-3	2000	4800	5400	Not Detected U
Chloroform	67-66-3	400	2000	2500	Not Detected U
Chloromethane	74-87-3	1300	3200	4200	Not Detected U
Cyclohexane	110-82-7	380	1400	1800	130000
Dibromochloromethane	124-48-1	750	3500	4300	Not Detected U
Ethanol	64-17-5	1900	2900	3800	6300

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	7/14/20 03:47 PM
Lab ID:	2007140AR1-14A	Dilution Factor:	102
Date/Time Collected:	6/30/20 11:24 AM	Instrument/File Name:	msd14.i / 14071420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	420	1800	2200	280000
Freon 11	75-69-4	390	2300	2900	Not Detected U
Freon 113	76-13-1	920	3100	3900	Not Detected U
Freon 12	75-71-8	320	2000	2500	Not Detected U
Heptane	142-82-5	740	1700	2100	980000
Hexane	110-54-3	410	1400	1800	55000
m,p-Xylene	108-38-3	450	1800	2200	790000
Methylene Chloride	75-09-2	2700	5300	7100	Not Detected U
Naphthalene	91-20-3	410	1100	11000	12000
o-Xylene	95-47-6	360	1800	2200	210000
Propylene	115-07-1	1000	2600	3500	2000 J
Styrene	100-42-5	300	1700	2200	Not Detected U
Tetrachloroethene	127-18-4	1000	2800	3400	Not Detected U
Tetrahydrofuran	109-99-9	430	1200	1500	Not Detected U
Toluene	108-88-3	360	1500	1900	1900000
Total Xylene	1330-20-7	NA	D	4400	990000
Trichloroethene	79-01-6	510	2200	2700	Not Detected U
Vinyl Chloride	75-01-4	460	1000	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	7/14/20 03:47 PM
Lab ID:	2007140AR1-14A	Dilution Factor:	102
Date/Time Collected:	6/30/20 11:24 AM	Instrument/Filename:	msd14.i / 14071420
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	94
4-Bromofluorobenzene	460-00-4	75-118	97
Toluene-d8	2037-26-5	84-115	110

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/10/20 10:35 AM
Lab ID:	2007140AR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071006c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4.2	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2.6	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	6.4	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3.3	20	24	Not Detected U
1,3-Butadiene	106-99-0	4.6	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	22	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	17	44	59	Not Detected U
2-Hexanone	591-78-6	19	61	82	Not Detected U
2-Propanol	67-63-0	14	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	18	36	48	Not Detected U
Benzene	71-43-2	2.4	13	16	Not Detected U
Bromodichloromethane	75-27-4	6.2	27	34	Not Detected U
Bromoform	75-25-2	11	41	52	Not Detected U
Carbon Disulfide	75-15-0	16	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.9	25	31	Not Detected U
Chloroethane	75-00-3	20	47	53	Not Detected U
Chloroform	67-66-3	4.0	20	24	Not Detected U
Chloromethane	74-87-3	13	31	41	Not Detected U
Cyclohexane	110-82-7	3.7	14	17	Not Detected U
Dibromochloromethane	124-48-1	7.3	34	42	Not Detected U
Ethanol	64-17-5	18	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/10/20 10:35 AM
Lab ID:	2007140AR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071006c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.1	17	22	Not Detected U
Freon 11	75-69-4	3.8	22	28	Not Detected U
Freon 113	76-13-1	9.0	31	38	Not Detected U
Freon 12	75-71-8	3.1	20	25	Not Detected U
Heptane	142-82-5	7.2	16	20	Not Detected U
Hexane	110-54-3	4.0	14	18	Not Detected U
m,p-Xylene	108-38-3	4.4	17	22	Not Detected U
Methylene Chloride	75-09-2	27	52	69	Not Detected U
Naphthalene	91-20-3	4.0	10	100	5.2 J
o-Xylene	95-47-6	3.5	17	22	Not Detected U
Propylene	115-07-1	9.9	26	34	Not Detected U
Styrene	100-42-5	2.9	17	21	Not Detected U
Tetrachloroethene	127-18-4	10	27	34	Not Detected U
Tetrahydrofuran	109-99-9	4.2	12	15	Not Detected U
Toluene	108-88-3	3.5	15	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	5.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.5	10	13	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/10/20 10:35 AM
Lab ID:	2007140AR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071006c
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	86
4-Bromofluorobenzene	460-00-4	75-118	94
Toluene-d8	2037-26-5	84-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/13/20 11:09 AM
Lab ID:	2007140AR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071306d
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4.2	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2.6	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	6.4	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3.3	20	24	Not Detected U
1,3-Butadiene	106-99-0	4.6	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	22	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	17	44	59	Not Detected U
2-Hexanone	591-78-6	19	61	82	Not Detected U
2-Propanol	67-63-0	14	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	18	36	48	Not Detected U
Benzene	71-43-2	2.4	13	16	Not Detected U
Bromodichloromethane	75-27-4	6.2	27	34	Not Detected U
Bromoform	75-25-2	11	41	52	Not Detected U
Carbon Disulfide	75-15-0	16	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.9	25	31	Not Detected U
Chloroethane	75-00-3	20	47	53	Not Detected U
Chloroform	67-66-3	4.0	20	24	Not Detected U
Chloromethane	74-87-3	13	31	41	Not Detected U
Cyclohexane	110-82-7	3.7	14	17	Not Detected U
Dibromochloromethane	124-48-1	7.3	34	42	Not Detected U
Ethanol	64-17-5	18	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/13/20 11:09 AM
Lab ID:	2007140AR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071306d
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.1	17	22	Not Detected U
Freon 11	75-69-4	3.8	22	28	Not Detected U
Freon 113	76-13-1	9.0	31	38	Not Detected U
Freon 12	75-71-8	3.1	20	25	Not Detected U
Heptane	142-82-5	7.2	16	20	Not Detected U
Hexane	110-54-3	4.0	14	18	Not Detected U
m,p-Xylene	108-38-3	4.4	17	22	Not Detected U
Methylene Chloride	75-09-2	27	52	69	Not Detected U
Naphthalene	91-20-3	4.0	10	100	Not Detected U
o-Xylene	95-47-6	3.5	17	22	Not Detected U
Propylene	115-07-1	9.9	26	34	Not Detected U
Styrene	100-42-5	2.9	17	21	Not Detected U
Tetrachloroethene	127-18-4	10	27	34	Not Detected U
Tetrahydrofuran	109-99-9	4.2	12	15	Not Detected U
Toluene	108-88-3	3.5	15	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	5.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.5	10	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	85

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/13/20 11:09 AM
Lab ID:	2007140AR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071306d
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	97
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/14/20 09:40 AM
Lab ID:	2007140AR1-15C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4.2	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30	110	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2.6	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	6.4	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3.3	20	24	Not Detected U
1,3-Butadiene	106-99-0	4.6	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	22	54	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	17	44	59	Not Detected U
2-Hexanone	591-78-6	19	61	82	Not Detected U
2-Propanol	67-63-0	14	37	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	18	36	48	Not Detected U
Benzene	71-43-2	2.4	13	16	Not Detected U
Bromodichloromethane	75-27-4	6.2	27	34	Not Detected U
Bromoform	75-25-2	11	41	52	Not Detected U
Carbon Disulfide	75-15-0	16	47	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.9	25	31	Not Detected U
Chloroethane	75-00-3	20	47	53	Not Detected U
Chloroform	67-66-3	4.0	20	24	Not Detected U
Chloromethane	74-87-3	13	31	41	Not Detected U
Cyclohexane	110-82-7	3.7	14	17	Not Detected U
Dibromochloromethane	124-48-1	7.3	34	42	Not Detected U
Ethanol	64-17-5	18	28	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/14/20 09:40 AM
Lab ID:	2007140AR1-15C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071406a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.1	17	22	Not Detected U
Freon 11	75-69-4	3.8	22	28	Not Detected U
Freon 113	76-13-1	9.0	31	38	Not Detected U
Freon 12	75-71-8	3.1	20	25	Not Detected U
Heptane	142-82-5	7.2	16	20	Not Detected U
Hexane	110-54-3	4.0	14	18	Not Detected U
m,p-Xylene	108-38-3	4.4	17	22	Not Detected U
Methylene Chloride	75-09-2	27	52	69	Not Detected U
Naphthalene	91-20-3	4.0	10	100	Not Detected U
o-Xylene	95-47-6	3.5	17	22	Not Detected U
Propylene	115-07-1	9.9	26	34	Not Detected U
Styrene	100-42-5	2.9	17	21	Not Detected U
Tetrachloroethene	127-18-4	10	27	34	Not Detected U
Tetrahydrofuran	109-99-9	4.2	12	15	Not Detected U
Toluene	108-88-3	3.5	15	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	5.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.5	10	13	Not Detected U

U = The analyte was not detected above the MDL.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	84

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/14/20 09:40 AM
Lab ID:	2007140AR1-15C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071406a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	93
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/10/20 08:54 AM
Lab ID:	2007140AR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071002a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	93
1,2,4-Trichlorobenzene	120-82-1	98
1,2,4-Trimethylbenzene	95-63-6	88
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	101
1,3,5-Trimethylbenzene	108-67-8	91
1,3-Butadiene	106-99-0	103
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	98
2-Hexanone	591-78-6	100
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	102
Acetone	67-64-1	104
Benzene	71-43-2	93
Bromodichloromethane	75-27-4	87
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	99
Carbon Tetrachloride	56-23-5	84
Chloroethane	75-00-3	100
Chloroform	67-66-3	88
Chloromethane	74-87-3	108
Cyclohexane	110-82-7	96
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	92

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/10/20 08:54 AM
Lab ID:	2007140AR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071002a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	99
Ethyl Benzene	100-41-4	88
Freon 11	75-69-4	87
Freon 113	76-13-1	98
Freon 12	75-71-8	84
Heptane	142-82-5	94
Hexane	110-54-3	94
m,p-Xylene	108-38-3	92
Methylene Chloride	75-09-2	95
Naphthalene	91-20-3	106
o-Xylene	95-47-6	89
Propylene	115-07-1	104
Styrene	100-42-5	94
Tetrachloroethene	127-18-4	93
Tetrahydrofuran	109-99-9	97
Toluene	108-88-3	88
Total Xylene	1330-20-7	91
Trichloroethene	79-01-6	86
Vinyl Chloride	75-01-4	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	85

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/10/20 08:54 AM
Lab ID:	2007140AR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071002a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	103
Toluene-d8	2037-26-5	84-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/10/20 09:52 PM
Lab ID:	2007140AR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071033
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	97
1,2,4-Trichlorobenzene	120-82-1	91
1,2,4-Trimethylbenzene	95-63-6	91
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	101
1,3,5-Trimethylbenzene	108-67-8	95
1,3-Butadiene	106-99-0	109
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	102
2-Hexanone	591-78-6	103
2-Propanol	67-63-0	93
4-Methyl-2-pentanone	108-10-1	96
Acetone	67-64-1	107
Benzene	71-43-2	93
Bromodichloromethane	75-27-4	87
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	88
Chloroethane	75-00-3	95
Chloroform	67-66-3	93
Chloromethane	74-87-3	111
Cyclohexane	110-82-7	101
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	128

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/10/20 09:52 PM
Lab ID:	2007140AR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071033
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	95
Freon 11	75-69-4	93
Freon 113	76-13-1	102
Freon 12	75-71-8	86
Heptane	142-82-5	98
Hexane	110-54-3	103
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	81
o-Xylene	95-47-6	94
Propylene	115-07-1	107
Styrene	100-42-5	100
Tetrachloroethene	127-18-4	97
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	91
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	91
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	84

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/10/20 09:52 PM
Lab ID:	2007140AR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071033
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	96
Toluene-d8	2037-26-5	84-115	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/13/20 08:36 AM
Lab ID:	2007140AR1-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	92
1,2,4-Trichlorobenzene	120-82-1	91
1,2,4-Trimethylbenzene	95-63-6	86
1,2-Dibromoethane (EDB)	106-93-4	90
1,2-Dichlorobenzene	95-50-1	96
1,3,5-Trimethylbenzene	108-67-8	88
1,3-Butadiene	106-99-0	106
1,4-Dioxane	123-91-1	91
2-Butanone (Methyl Ethyl Ketone)	78-93-3	96
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	95
Acetone	67-64-1	102
Benzene	71-43-2	90
Bromodichloromethane	75-27-4	82
Bromoform	75-25-2	92
Carbon Disulfide	75-15-0	96
Carbon Tetrachloride	56-23-5	82
Chloroethane	75-00-3	104
Chloroform	67-66-3	85
Chloromethane	74-87-3	101
Cyclohexane	110-82-7	90
Dibromochloromethane	124-48-1	91
Ethanol	64-17-5	94

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/13/20 08:36 AM
Lab ID:	2007140AR1-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	107
Ethyl Benzene	100-41-4	85
Freon 11	75-69-4	86
Freon 113	76-13-1	96
Freon 12	75-71-8	85
Heptane	142-82-5	90
Hexane	110-54-3	96
m,p-Xylene	108-38-3	92
Methylene Chloride	75-09-2	93
Naphthalene	91-20-3	97
o-Xylene	95-47-6	89
Propylene	115-07-1	105
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	89
Tetrahydrofuran	109-99-9	99
Toluene	108-88-3	86
Total Xylene	1330-20-7	90
Trichloroethene	79-01-6	86
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	84

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/13/20 08:36 AM
Lab ID:	2007140AR1-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071302a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/13/20 08:54 PM
Lab ID:	2007140AR1-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071330
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	93
1,2,4-Trichlorobenzene	120-82-1	96
1,2,4-Trimethylbenzene	95-63-6	89
1,2-Dibromoethane (EDB)	106-93-4	92
1,2-Dichlorobenzene	95-50-1	97
1,3,5-Trimethylbenzene	108-67-8	90
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	100
2-Hexanone	591-78-6	102
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	104
Acetone	67-64-1	105
Benzene	71-43-2	91
Bromodichloromethane	75-27-4	83
Bromoform	75-25-2	90
Carbon Disulfide	75-15-0	97
Carbon Tetrachloride	56-23-5	84
Chloroethane	75-00-3	102
Chloroform	67-66-3	90
Chloromethane	74-87-3	99
Cyclohexane	110-82-7	99
Dibromochloromethane	124-48-1	89
Ethanol	64-17-5	94

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/13/20 08:54 PM
Lab ID:	2007140AR1-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071330
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	89
Freon 11	75-69-4	88
Freon 113	76-13-1	97
Freon 12	75-71-8	87
Heptane	142-82-5	94
Hexane	110-54-3	97
m,p-Xylene	108-38-3	93
Methylene Chloride	75-09-2	93
Naphthalene	91-20-3	103
o-Xylene	95-47-6	90
Propylene	115-07-1	99
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	90
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	92
Total Xylene	1330-20-7	92
Trichloroethene	79-01-6	86
Vinyl Chloride	75-01-4	96

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	84

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/13/20 08:54 PM
Lab ID:	2007140AR1-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071330
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	99
Toluene-d8	2037-26-5	84-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/14/20 08:03 AM
Lab ID:	2007140AR1-16E	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14071402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	92
1,2,4-Trichlorobenzene	120-82-1	115
1,2,4-Trimethylbenzene	95-63-6	92
1,2-Dibromoethane (EDB)	106-93-4	93
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	92
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	104
2-Hexanone	591-78-6	98
2-Propanol	67-63-0	89
4-Methyl-2-pentanone	108-10-1	100
Acetone	67-64-1	102
Benzene	71-43-2	90
Bromodichloromethane	75-27-4	81
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	98
Carbon Tetrachloride	56-23-5	84
Chloroethane	75-00-3	101
Chloroform	67-66-3	86
Chloromethane	74-87-3	98
Cyclohexane	110-82-7	97
Dibromochloromethane	124-48-1	90
Ethanol	64-17-5	89

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/14/20 08:03 AM
Lab ID:	2007140AR1-16E	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071402a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	100
Ethyl Benzene	100-41-4	87
Freon 11	75-69-4	88
Freon 113	76-13-1	96
Freon 12	75-71-8	83
Heptane	142-82-5	90
Hexane	110-54-3	98
m,p-Xylene	108-38-3	92
Methylene Chloride	75-09-2	89
Naphthalene	91-20-3	114
o-Xylene	95-47-6	89
Propylene	115-07-1	103
Styrene	100-42-5	94
Tetrachloroethene	127-18-4	91
Tetrahydrofuran	109-99-9	95
Toluene	108-88-3	87
Total Xylene	1330-20-7	90
Trichloroethene	79-01-6	85
Vinyl Chloride	75-01-4	99

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	86

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/14/20 08:03 AM
Lab ID:	2007140AR1-16E	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071402a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	99
Toluene-d8	2037-26-5	84-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/14/20 04:33 PM
Lab ID:	2007140AR1-16F	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071422
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	94
1,2,4-Trichlorobenzene	120-82-1	117
1,2,4-Trimethylbenzene	95-63-6	96
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	102
1,3,5-Trimethylbenzene	108-67-8	92
1,3-Butadiene	106-99-0	102
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	102
2-Hexanone	591-78-6	107
2-Propanol	67-63-0	91
4-Methyl-2-pentanone	108-10-1	103
Acetone	67-64-1	108
Benzene	71-43-2	91
Bromodichloromethane	75-27-4	83
Bromoform	75-25-2	94
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	89
Chloroethane	75-00-3	106
Chloroform	67-66-3	93
Chloromethane	74-87-3	103
Cyclohexane	110-82-7	98
Dibromochloromethane	124-48-1	92
Ethanol	64-17-5	98

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/14/20 04:33 PM
Lab ID:	2007140AR1-16F	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071422
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	93
Freon 11	75-69-4	91
Freon 113	76-13-1	102
Freon 12	75-71-8	90
Heptane	142-82-5	94
Hexane	110-54-3	104
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	95
Naphthalene	91-20-3	119
o-Xylene	95-47-6	93
Propylene	115-07-1	100
Styrene	100-42-5	96
Tetrachloroethene	127-18-4	91
Tetrahydrofuran	109-99-9	100
Toluene	108-88-3	90
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	86
Vinyl Chloride	75-01-4	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	86

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	7/14/20 04:33 PM
Lab ID:	2007140AR1-16F	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071422
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/10/20 09:19 AM
Lab ID:	2007140AR1-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071003a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	94
1,2,4-Trichlorobenzene	120-82-1	105
1,2,4-Trimethylbenzene	95-63-6	89
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	92
1,3-Butadiene	106-99-0	105
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	104
2-Hexanone	591-78-6	82
2-Propanol	67-63-0	85
4-Methyl-2-pentanone	108-10-1	90
Acetone	67-64-1	116
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	87
Bromoform	75-25-2	98
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	88
Chloroethane	75-00-3	110
Chloroform	67-66-3	91
Chloromethane	74-87-3	107
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/10/20 09:19 AM
Lab ID:	2007140AR1-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071003a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	90
Freon 11	75-69-4	91
Freon 113	76-13-1	100
Freon 12	75-71-8	90
Heptane	142-82-5	98
Hexane	110-54-3	103
m,p-Xylene	108-38-3	95
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	93
o-Xylene	95-47-6	89
Propylene	115-07-1	106
Styrene	100-42-5	96
Tetrachloroethene	127-18-4	93
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	90
Total Xylene	1330-20-7	92
Trichloroethene	79-01-6	89
Vinyl Chloride	75-01-4	106

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	87

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/10/20 09:19 AM
Lab ID:	2007140AR1-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071003a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	102
Toluene-d8	2037-26-5	84-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/10/20 09:42 AM
Lab ID:	2007140AR1-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071004a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	96
1,2,4-Trichlorobenzene	120-82-1	112
1,2,4-Trimethylbenzene	95-63-6	92
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	106
1,3,5-Trimethylbenzene	108-67-8	92
1,3-Butadiene	106-99-0	107
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	103
2-Hexanone	591-78-6	84
2-Propanol	67-63-0	87
4-Methyl-2-pentanone	108-10-1	95
Acetone	67-64-1	118
Benzene	71-43-2	96
Bromodichloromethane	75-27-4	90
Bromoform	75-25-2	101
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	87
Chloroethane	75-00-3	107
Chloroform	67-66-3	92
Chloromethane	74-87-3	106
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	97
Ethanol	64-17-5	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/10/20 09:42 AM
Lab ID:	2007140AR1-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071004a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	92
Freon 11	75-69-4	91
Freon 113	76-13-1	101
Freon 12	75-71-8	93
Heptane	142-82-5	100
Hexane	110-54-3	102
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	96
Naphthalene	91-20-3	103
o-Xylene	95-47-6	92
Propylene	115-07-1	102
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	94
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	91
Total Xylene	1330-20-7	94
Trichloroethene	79-01-6	92
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	86

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/10/20 09:42 AM
Lab ID:	2007140AR1-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071004a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/13/20 08:59 AM
Lab ID:	2007140AR1-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	96
1,2,4-Trichlorobenzene	120-82-1	102
1,2,4-Trimethylbenzene	95-63-6	87
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	101
1,3,5-Trimethylbenzene	108-67-8	91
1,3-Butadiene	106-99-0	105
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	103
2-Hexanone	591-78-6	83
2-Propanol	67-63-0	82
4-Methyl-2-pentanone	108-10-1	97
Acetone	67-64-1	120
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	90
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	87
Chloroethane	75-00-3	111
Chloroform	67-66-3	90
Chloromethane	74-87-3	105
Cyclohexane	110-82-7	101
Dibromochloromethane	124-48-1	95
Ethanol	64-17-5	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/13/20 08:59 AM
Lab ID:	2007140AR1-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	92
Freon 11	75-69-4	91
Freon 113	76-13-1	100
Freon 12	75-71-8	88
Heptane	142-82-5	99
Hexane	110-54-3	104
m,p-Xylene	108-38-3	96
Methylene Chloride	75-09-2	95
Naphthalene	91-20-3	93
o-Xylene	95-47-6	92
Propylene	115-07-1	105
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	92
Tetrahydrofuran	109-99-9	102
Toluene	108-88-3	91
Total Xylene	1330-20-7	94
Trichloroethene	79-01-6	89
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	83

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/13/20 08:59 AM
Lab ID:	2007140AR1-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071303a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	101
Toluene-d8	2037-26-5	84-115	103

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/13/20 09:22 AM
Lab ID:	2007140AR1-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071304a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	94
1,2,4-Trichlorobenzene	120-82-1	93
1,2,4-Trimethylbenzene	95-63-6	89
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	101
1,3,5-Trimethylbenzene	108-67-8	91
1,3-Butadiene	106-99-0	103
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	103
2-Hexanone	591-78-6	83
2-Propanol	67-63-0	84
4-Methyl-2-pentanone	108-10-1	95
Acetone	67-64-1	113
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	89
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	86
Chloroethane	75-00-3	107
Chloroform	67-66-3	89
Chloromethane	74-87-3	101
Cyclohexane	110-82-7	97
Dibromochloromethane	124-48-1	97
Ethanol	64-17-5	96

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/13/20 09:22 AM
Lab ID:	2007140AR1-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071304a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	91
Freon 11	75-69-4	90
Freon 113	76-13-1	99
Freon 12	75-71-8	91
Heptane	142-82-5	101
Hexane	110-54-3	105
m,p-Xylene	108-38-3	95
Methylene Chloride	75-09-2	94
Naphthalene	91-20-3	90
o-Xylene	95-47-6	93
Propylene	115-07-1	103
Styrene	100-42-5	94
Tetrachloroethene	127-18-4	93
Tetrahydrofuran	109-99-9	99
Toluene	108-88-3	90
Total Xylene	1330-20-7	94
Trichloroethene	79-01-6	89
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	80

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/13/20 09:22 AM
Lab ID:	2007140AR1-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071304a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	102
Toluene-d8	2037-26-5	84-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/14/20 08:27 AM
Lab ID:	2007140AR1-17C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	95
1,2,4-Trichlorobenzene	120-82-1	108
1,2,4-Trimethylbenzene	95-63-6	92
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	91
1,3-Butadiene	106-99-0	107
1,4-Dioxane	123-91-1	96
2-Butanone (Methyl Ethyl Ketone)	78-93-3	104
2-Hexanone	591-78-6	84
2-Propanol	67-63-0	86
4-Methyl-2-pentanone	108-10-1	97
Acetone	67-64-1	116
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	87
Bromoform	75-25-2	99
Carbon Disulfide	75-15-0	104
Carbon Tetrachloride	56-23-5	88
Chloroethane	75-00-3	112
Chloroform	67-66-3	92
Chloromethane	74-87-3	105
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	95

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/14/20 08:27 AM
Lab ID:	2007140AR1-17C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071403a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	92
Freon 11	75-69-4	90
Freon 113	76-13-1	98
Freon 12	75-71-8	90
Heptane	142-82-5	101
Hexane	110-54-3	103
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	92
Naphthalene	91-20-3	102
o-Xylene	95-47-6	96
Propylene	115-07-1	99
Styrene	100-42-5	96
Tetrachloroethene	127-18-4	94
Tetrahydrofuran	109-99-9	98
Toluene	108-88-3	91
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	92
Vinyl Chloride	75-01-4	104

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	84

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/14/20 08:27 AM
Lab ID:	2007140AR1-17C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071403a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	99
Toluene-d8	2037-26-5	84-115	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/14/20 08:51 AM
Lab ID:	2007140AR1-17CC	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	96
1,2,4-Trichlorobenzene	120-82-1	110
1,2,4-Trimethylbenzene	95-63-6	91
1,2-Dibromoethane (EDB)	106-93-4	99
1,2-Dichlorobenzene	95-50-1	105
1,3,5-Trimethylbenzene	108-67-8	92
1,3-Butadiene	106-99-0	107
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	110
2-Hexanone	591-78-6	84
2-Propanol	67-63-0	86
4-Methyl-2-pentanone	108-10-1	99
Acetone	67-64-1	119
Benzene	71-43-2	94
Bromodichloromethane	75-27-4	91
Bromoform	75-25-2	100
Carbon Disulfide	75-15-0	105
Carbon Tetrachloride	56-23-5	89
Chloroethane	75-00-3	112
Chloroform	67-66-3	91
Chloromethane	74-87-3	102
Cyclohexane	110-82-7	101
Dibromochloromethane	124-48-1	97
Ethanol	64-17-5	93

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/14/20 08:51 AM
Lab ID:	2007140AR1-17CC	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	93
Freon 11	75-69-4	94
Freon 113	76-13-1	101
Freon 12	75-71-8	95
Heptane	142-82-5	104
Hexane	110-54-3	106
m,p-Xylene	108-38-3	97
Methylene Chloride	75-09-2	96
Naphthalene	91-20-3	106
o-Xylene	95-47-6	95
Propylene	115-07-1	102
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	95
Tetrahydrofuran	109-99-9	101
Toluene	108-88-3	94
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	93
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	84

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/14/20 08:51 AM
Lab ID:	2007140AR1-17CC	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14071404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	104

* % Recovery is calculated using unrounded analytical results.

7/22/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2007140BR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/3/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2007140BR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/03/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/16/2020		
DATE REISSUED:	07/22/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-3	10.2 "Hg	4.9 psi
02A	KAFB-106V1-113	Modified TO-3	10.8 "Hg	4.9 psi
03A	KAFB-106V1-160	Modified TO-3	9.4 "Hg	5.2 psi
04A	KAFB-106V1-160-DUP	Modified TO-3	10.4 "Hg	4.9 psi
05A	KAFB-106V1-217	Modified TO-3	10 "Hg	4.7 psi
05AA	KAFB-106V1-217 Lab Duplicate	Modified TO-3	10 "Hg	4.7 psi
06A	KAFB-106V1-252	Modified TO-3	9.4 "Hg	4.8 psi
07A	KAFB-106V1-263	Modified TO-3	10.6 "Hg	5 psi
08A	KAFB-106V2-102	Modified TO-3	9.6 "Hg	4.9 psi
09A	KAFB-106V2-117	Modified TO-3	10.2 "Hg	4.6 psi
10A	KAFB-106V2-117-DUP	Modified TO-3	10.2 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-3	10.2 "Hg	4.8 psi
11AA	KAFB-106V2-160 Lab Duplicate	Modified TO-3	10.2 "Hg	4.8 psi
12A	KAFB-106V2-217	Modified TO-3	10.6 "Hg	4.6 psi
13A	KAFB-106V2-252	Modified TO-3	11.4 "Hg	5 psi
14A	KAFB-106V2-270	Modified TO-3	10.2 "Hg	5.1 psi
15A	Lab Blank	Modified TO-3	NA	NA
15B	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA
16B	LCS	Modified TO-3	NA	NA
16BB	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/22/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 2007140BR1**

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on July 03, 2020. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m3. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the listed modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch <= 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

The Work Order was reissued on July 22, 2020 to revise sample identifications due to laboratory transcription error.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Manual integrations were performed on Fluorobenzene (FID) and TPH (Gasoline Range) in samples KAFB-160V1-160-DUP, KAFB-160V1-252, KAFB-160V2-102, KAFB-160V2-117 and KAFB-160V2-217.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	7/10/20 03:50 PM
Lab ID:	2007140BR1-01A	Dilution Factor:	2020
Date/Time Collected:	6/30/20 08:17 AM	Instrument/Filename:	gcd.i / d071012
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58000	99000	210000	120000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	120

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	7/10/20 04:34 PM
Lab ID:	2007140BR1-02A	Dilution Factor:	2080
Date/Time Collected:	6/30/20 08:34 AM	Instrument/Filename:	gcd.i / d071013
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	60000	100000	210000	140000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	120

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	7/10/20 05:07 PM
Lab ID:	2007140BR1-03A	Dilution Factor:	1640
Date/Time Collected:	6/30/20 08:48 AM	Instrument/Filename:	gcd.i / d071014
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	47000	80000	170000	56000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	110

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	7/10/20 05:40 PM
Lab ID:	2007140BR1-04A	Dilution Factor:	1700
Date/Time Collected:	6/30/20 08:57 AM	Instrument/Filename:	gcd.i / d071015
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	49000	83000	170000	56000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	107

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	7/13/20 11:46 AM
Lab ID:	2007140BR1-05A	Dilution Factor:	3960
Date/Time Collected:	6/30/20 09:13 AM	Instrument/Filename:	gcd.i / d071306
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	190000	400000	92000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	116

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-217 Lab Duplicate		
Lab ID:	2007140BR1-05AA	Date/Time Analyzed:	7/13/20 12:44 PM
Date/Time Collected:	6/30/20 09:13 AM	Dilution Factor:	3960
Media:	6 Liter Summa Canister (100% SIM certifie	Instrument/Filename:	gcd.i / d071307

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	110000	190000	400000	89000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	115

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	7/10/20 06:48 PM
Lab ID:	2007140BR1-06A	Dilution Factor:	1930
Date/Time Collected:	6/30/20 09:29 AM	Instrument/Filename:	gcd.i / d071017
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	55000	95000	200000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	108

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	7/13/20 01:20 PM
Lab ID:	2007140BR1-07A	Dilution Factor:	4140
Date/Time Collected:	6/30/20 09:41 AM	Instrument/Filename:	gcd.i / d071308
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	200000	420000	99000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	126

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	7/10/20 07:54 PM
Lab ID:	2007140BR1-08A	Dilution Factor:	2450
Date/Time Collected:	6/30/20 09:59 AM	Instrument/Filename:	gcd.i / d071019
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	70000	120000	250000	200000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	107

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	7/10/20 08:26 PM
Lab ID:	2007140BR1-09A	Dilution Factor:	2490
Date/Time Collected:	6/30/20 10:12 AM	Instrument/Filename:	gcd.i / d071020
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	72000	120000	250000	240000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	101

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	7/10/20 08:59 PM
Lab ID:	2007140BR1-10A	Dilution Factor:	4060
Date/Time Collected:	6/30/20 10:20 AM	Instrument/Filename:	gcd.i / d071021
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	200000	420000	230000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	114

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	7/10/20 12:55 PM
Lab ID:	2007140BR1-11A	Dilution Factor:	80.4
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	gcd.i / d071008
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	2300	3900	8200	6700000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	99

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-160 Lab Duplicate	Date/Time Analyzed:	7/10/20 12:12 PM
Lab ID:	2007140BR1-11AA	Dilution Factor:	80.4
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	gcd.i / d071007
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	2300	3900	8200	6600000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	105

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	7/10/20 01:46 PM
Lab ID:	2007140BR1-12A	Dilution Factor:	2030
Date/Time Collected:	6/30/20 10:52 AM	Instrument/Filename:	gcd.i / d071009
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58000	100000	210000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	100

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	7/10/20 02:30 PM
Lab ID:	2007140BR1-13A	Dilution Factor:	864
Date/Time Collected:	6/30/20 11:11 AM	Instrument/Filename:	gcd.i / d071010
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	25000	42000	88000	42000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	7/10/20 03:08 PM
Lab ID:	2007140BR1-14A	Dilution Factor:	816
Date/Time Collected:	6/30/20 11:24 AM	Instrument/Filename:	gcd.i / d071011
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	23000	40000	83000	42000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	109

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/10/20 10:48 AM
Lab ID:	2007140BR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071005
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	29	49	100	38 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	92

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/13/20 11:10 AM
Lab ID:	2007140BR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071305
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	29	49	100	46 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	91

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/10/20 08:42 AM
Lab ID:	2007140BR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071002
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		98

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	107

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/10/20 09:19 AM
Lab ID:	2007140BR1-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071003
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		101

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	108

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/13/20 08:52 AM
Lab ID:	2007140BR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071302
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery	
TPH (Gasoline Range)	9999-9999-208	101	

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	115

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/13/20 09:30 AM
Lab ID:	2007140BR1-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d071303
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery	
TPH (Gasoline Range)	9999-9999-208	96	

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	46-168	114

* % Recovery is calculated using unrounded analytical results.

7/22/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2007140CR1

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 7/3/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2007140CR1

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	07/03/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	07/16/2020		
DATE REISSUED:	07/22/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified ASTM D-1945	10.2 "Hg	4.9 psi
02A	KAFB-106V1-113	Modified ASTM D-1945	10.8 "Hg	4.9 psi
03A	KAFB-106V1-160	Modified ASTM D-1945	9.4 "Hg	5.2 psi
04A	KAFB-106V1-160-DUP	Modified ASTM D-1945	10.4 "Hg	4.9 psi
05A	KAFB-106V1-217	Modified ASTM D-1945	10 "Hg	4.7 psi
06A	KAFB-106V1-252	Modified ASTM D-1945	9.4 "Hg	4.8 psi
07A	KAFB-106V1-263	Modified ASTM D-1945	10.6 "Hg	5 psi
08A	KAFB-106V2-102	Modified ASTM D-1945	9.6 "Hg	4.9 psi
09A	KAFB-106V2-117	Modified ASTM D-1945	10.2 "Hg	4.6 psi
10A	KAFB-106V2-117-DUP	Modified ASTM D-1945	10.2 "Hg	5 psi
11A	KAFB-106V2-160	Modified ASTM D-1945	10.2 "Hg	4.8 psi
12A	KAFB-106V2-217	Modified ASTM D-1945	10.6 "Hg	4.6 psi
12AA	KAFB-106V2-217 Lab Duplicate	Modified ASTM D-1945	10.6 "Hg	4.6 psi
13A	KAFB-106V2-252	Modified ASTM D-1945	11.4 "Hg	5 psi
14A	KAFB-106V2-270	Modified ASTM D-1945	10.2 "Hg	5.1 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 07/22/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP – CA009332019-11, VA NELAP - 460197, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-011, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 2007140CR1

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on July 03, 2020. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

The Work Order was reissued on July 22, 2020 to revise sample identifications due to laboratory transcription error.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

The recoveries for Carbon Dioxide in the ICV, LCS and LCSD exceeded In-house generated control limits.

Methane and Ethane were manually integrated in samples KAFB-160V1-102, KAFB-160V1-113, KAFB-160V1-263, KAFB-160V2-102, KAFB-160V2-117 and KAFB-160V2-117-DUP.

Methane was manually integrated in sample KAFB-160V1-252.

Pentane was manually integrated in sample KAFB-160V2-217 Lab Duplicate.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	7/15/20 03:26 PM
Lab ID:	2007140CR1-01A	Dilution Factor:	2.02
Date/Time Collected:	6/30/20 08:17 AM	Instrument/Filename:	gc10.i / 10071520
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.00027 J
Carbon Dioxide	124-38-9	0.0017	0.0077	0.020	0.82
Carbon Monoxide	630-08-0	0.0022	0.0077	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00025 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	0.0018
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000069	0.00017	0.0020	0.040
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	7/15/20 04:10 PM
Lab ID:	2007140CR1-02A	Dilution Factor:	2.08
Date/Time Collected:	6/30/20 08:34 AM	Instrument/Filename:	gc10.i / 10071522
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000040	0.00018	0.0021	0.00050 J
Carbon Dioxide	124-38-9	0.0017	0.0079	0.021	1.4
Carbon Monoxide	630-08-0	0.0022	0.0079	0.021	Not Detected U
Ethane	74-84-0	0.000040	0.00018	0.0021	0.00028 J
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.0016
Nitrogen	7727-37-9	0.12	0.12	0.21	79
Oxygen	7782-44-7	0.011	0.011	0.21	18
Pentane	109-66-0	0.000071	0.00018	0.0021	0.049
Propane	74-98-6	0.000052	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	7/15/20 05:00 PM
Lab ID:	2007140CR1-03A	Dilution Factor:	1.97
Date/Time Collected:	6/30/20 08:48 AM	Instrument/Filename:	gc10.i / 10071524
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0075	0.020	0.77
Carbon Monoxide	630-08-0	0.0021	0.0075	0.020	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000098	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	80
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000067	0.00017	0.0020	0.00080 J
Propane	74-98-6	0.000049	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	7/15/20 05:44 PM
Lab ID:	2007140CR1-04A	Dilution Factor:	2.04
Date/Time Collected:	6/30/20 08:57 AM	Instrument/Filename:	gc10.i / 10071526
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0017	0.0078	0.020	0.79
Carbon Monoxide	630-08-0	0.0022	0.0078	0.020	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.020	Not Detected U
Methane	74-82-8	0.000057	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	80
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000069	0.00018	0.0020	0.00082 J
Propane	74-98-6	0.000051	0.00018	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	7/15/20 06:31 PM
Lab ID:	2007140CR1-05A	Dilution Factor:	1.98
Date/Time Collected:	6/30/20 09:13 AM	Instrument/File Name:	gc10.i / 10071528
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.00011 J
Carbon Dioxide	124-38-9	0.0017	0.0075	0.020	1.6
Carbon Monoxide	630-08-0	0.0021	0.0075	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000099	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	18
Pentane	109-66-0	0.000067	0.00017	0.0020	0.019
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	7/15/20 07:17 PM
Lab ID:	2007140CR1-06A	Dilution Factor:	1.93
Date/Time Collected:	6/30/20 09:29 AM	Instrument/Filename:	gc10.i / 10071530
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00016	0.0019	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0073	0.019	0.42
Carbon Monoxide	630-08-0	0.0020	0.0073	0.019	Not Detected U
Ethane	74-84-0	0.000037	0.00016	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.019	Not Detected U
Methane	74-82-8	0.000054	0.000096	0.00019	0.00026
Nitrogen	7727-37-9	0.11	0.11	0.19	79
Oxygen	7782-44-7	0.011	0.011	0.19	20
Pentane	109-66-0	0.000066	0.00016	0.0019	Not Detected U
Propane	74-98-6	0.000048	0.00016	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	7/15/20 08:03 PM
Lab ID:	2007140CR1-07A	Dilution Factor:	2.07
Date/Time Collected:	6/30/20 09:41 AM	Instrument/Filename:	gc10.i / 10071532
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.00017 J
Carbon Dioxide	124-38-9	0.0017	0.0079	0.021	0.35
Carbon Monoxide	630-08-0	0.0022	0.0079	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	0.00012 J
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.00027
Nitrogen	7727-37-9	0.11	0.11	0.21	80
Oxygen	7782-44-7	0.011	0.011	0.21	19
Pentane	109-66-0	0.000070	0.00018	0.0021	0.00036 J
Propane	74-98-6	0.000052	0.00018	0.0021	0.00017 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	7/15/20 08:54 PM
Lab ID:	2007140CR1-08A	Dilution Factor:	1.96
Date/Time Collected:	6/30/20 09:59 AM	Instrument/Filename:	gc10.i / 10071534
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0020	0.00060 J
Carbon Dioxide	124-38-9	0.0016	0.0074	0.020	1.1
Carbon Monoxide	630-08-0	0.0021	0.0074	0.020	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0020	0.000088 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000098	0.00020	0.0011
Nitrogen	7727-37-9	0.11	0.11	0.20	78
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000067	0.00017	0.0020	0.068
Propane	74-98-6	0.000049	0.00017	0.0020	0.00010 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	7/15/20 09:40 PM
Lab ID:	2007140CR1-09A	Dilution Factor:	1.99
Date/Time Collected:	6/30/20 10:12 AM	Instrument/Filename:	gc10.i / 10071536
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.0058
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	4.6
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00043 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	0.0044 J
Methane	74-82-8	0.000056	0.00010	0.00020	0.0016
Nitrogen	7727-37-9	0.11	0.11	0.20	77
Oxygen	7782-44-7	0.011	0.011	0.20	16
Pentane	109-66-0	0.000068	0.00017	0.0020	0.22
Propane	74-98-6	0.000050	0.00017	0.0020	0.00068 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	7/15/20 10:24 PM
Lab ID:	2007140CR1-10A	Dilution Factor:	2.03
Date/Time Collected:	6/30/20 10:20 AM	Instrument/File Name:	gc10.i / 10071538
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.0058
Carbon Dioxide	124-38-9	0.0017	0.0077	0.020	4.3
Carbon Monoxide	630-08-0	0.0022	0.0077	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00043 J
Hydrogen	1333-74-0	0.0018	0.012	0.020	0.0050 J
Methane	74-82-8	0.000057	0.00010	0.00020	0.0016
Nitrogen	7727-37-9	0.11	0.11	0.20	76
Oxygen	7782-44-7	0.011	0.011	0.20	17
Pentane	109-66-0	0.000069	0.00017	0.0020	0.23
Propane	74-98-6	0.000051	0.00017	0.0020	0.00065 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	7/15/20 11:40 AM
Lab ID:	2007140CR1-11A	Dilution Factor:	2.01
Date/Time Collected:	6/30/20 10:41 AM	Instrument/Filename:	gc10.i / 10071512
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	0.45
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	80
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000068	0.00017	0.0020	Not Detected U
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	7/15/20 01:26 PM
Lab ID:	2007140CR1-12A	Dilution Factor:	2.03
Date/Time Collected:	6/30/20 10:52 AM	Instrument/Filename:	gc10.i / 10071515
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.000071 J
Carbon Dioxide	124-38-9	0.0017	0.0077	0.020	1.7
Carbon Monoxide	630-08-0	0.0022	0.0077	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0018	0.012	0.020	Not Detected U
Methane	74-82-8	0.000057	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	18
Pentane	109-66-0	0.000069	0.00017	0.0020	0.023
Propane	74-98-6	0.000051	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-217 Lab Duplicate	Date/Time Analyzed:	7/15/20 01:50 PM
Lab ID:	2007140CR1-12AA	Dilution Factor:	2.03
Date/Time Collected:	6/30/20 10:52 AM	Instrument/Filename:	gc10.i / 10071516
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.000071 J
Carbon Dioxide	124-38-9	0.0017	0.0077	0.020	1.8
Carbon Monoxide	630-08-0	0.0022	0.0077	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0018	0.012	0.020	Not Detected U
Methane	74-82-8	0.000057	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	78
Oxygen	7782-44-7	0.011	0.011	0.20	18
Pentane	109-66-0	0.000069	0.00017	0.0020	0.023
Propane	74-98-6	0.000051	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	7/15/20 12:07 PM
Lab ID:	2007140CR1-13A	Dilution Factor:	2.16
Date/Time Collected:	6/30/20 11:11 AM	Instrument/Filename:	gc10.i / 10071513
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000041	0.00018	0.0022	Not Detected U
Carbon Dioxide	124-38-9	0.0018	0.0082	0.022	0.38
Carbon Monoxide	630-08-0	0.0023	0.0082	0.022	Not Detected U
Ethane	74-84-0	0.000041	0.00018	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0019	0.013	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.22	79
Oxygen	7782-44-7	0.012	0.012	0.22	20
Pentane	109-66-0	0.000073	0.00018	0.0022	Not Detected U
Propane	74-98-6	0.000054	0.00018	0.0022	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	7/15/20 02:41 PM
Lab ID:	2007140CR1-14A	Dilution Factor:	2.04
Date/Time Collected:	6/30/20 11:24 AM	Instrument/Filename:	gc10.i / 10071518
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0020	0.00063 J
Carbon Dioxide	124-38-9	0.0017	0.0078	0.020	0.58
Carbon Monoxide	630-08-0	0.0022	0.0078	0.020	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.020	Not Detected U
Methane	74-82-8	0.000057	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	20
Pentane	109-66-0	0.000069	0.00018	0.0020	0.0021
Propane	74-98-6	0.000051	0.00018	0.0020	0.00010 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/15/20 09:25 AM
Lab ID:	2007140CR1-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071507
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000019	0.000086	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.00084	0.0038	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0011	0.0038	0.010	Not Detected U
Ethane	74-84-0	0.000019	0.000086	0.0010	Not Detected U
Methane	74-82-8	0.000028	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.055	0.055	0.10	Not Detected U
Oxygen	7782-44-7	0.0055	0.0055	0.10	0.0071 J
Pentane	109-66-0	0.000034	0.000086	0.0010	Not Detected U
Propane	74-98-6	0.000025	0.000086	0.0010	Not Detected U

J = Estimated value.

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	7/15/20 09:49 AM
Lab ID:	2007140CR1-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071508c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.00086	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/15/20 07:06 AM
Lab ID:	2007140CR1-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071502a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	106
Carbon Dioxide	124-38-9	108 Q
Carbon Monoxide	630-08-0	95
Ethane	74-84-0	105
Methane	74-82-8	108
Nitrogen	7727-37-9	97
Oxygen	7782-44-7	98
Pentane	109-66-0	109
Propane	74-98-6	105

Q = Exceeds Quality Control limits.

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/15/20 07:29 AM
Lab ID:	2007140CR1-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071503a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	106
Carbon Dioxide	124-38-9	108 Q
Carbon Monoxide	630-08-0	95
Ethane	74-84-0	104
Methane	74-82-8	108
Nitrogen	7727-37-9	97
Oxygen	7782-44-7	98
Pentane	109-66-0	108
Propane	74-98-6	104

Q = Exceeds Quality Control limits.

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	7/15/20 08:23 AM
Lab ID:	2007140CR1-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071505c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	102

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	7/15/20 08:54 AM
Lab ID:	2007140CR1-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10071506c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	104

* % Recovery is calculated using unrounded analytical results.

10/15/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2010075A

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/2/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2010075A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/02/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/15/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-15 (5&20 ppbv	8.5 "Hg	5 psi
02A	KAFB-106V1-113	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
03A	KAFB-106V1-160	Modified TO-15 (5&20 ppbv	9.0 "Hg	5 psi
04A	KAFB-106V1-160-DUP	Modified TO-15 (5&20 ppbv	9.5 "Hg	5 psi
05A	KAFB-106V1-217	Modified TO-15 (5&20 ppbv	11.0 "Hg	5 psi
06A	KAFB-106V1-252	Modified TO-15 (5&20 ppbv	9.0 "Hg	5 psi
07A	KAFB-106V1-263	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
07AA	KAFB-106V1-263 Lab Duplicate	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
08A	KAFB-106V2-102	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified TO-15 (5&20 ppbv	12.0 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified TO-15 (5&20 ppbv	12.5 "Hg	5 psi
11A	KAFB-106V2-160	Modified TO-15 (5&20 ppbv	10.0 "Hg	5 psi
12A	KAFB-106V2-217	Modified TO-15 (5&20 ppbv	10.5 "Hg	5 psi
13A	KAFB-106V2-252	Modified TO-15 (5&20 ppbv	10.4 "Hg	4.9 psi
14A	KAFB-106V2-270	Modified TO-15 (5&20 ppbv	11.4 "Hg	4.9 psi
14AA	KAFB-106V2-270 Lab Duplicate	Modified TO-15 (5&20 ppbv	11.4 "Hg	4.9 psi
15A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
15B	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
16A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16B	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16C	CCV	Modified TO-15 (5&20 ppbv	NA	NA
16D	CCV	Modified TO-15 (5&20 ppbv	NA	NA
17A	LCS	Modified TO-15 (5&20 ppbv	NA	NA

Continued on next page

WORK ORDER #: 2010075A

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/02/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/15/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
17AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA
17B	LCS	Modified TO-15 (5&20 ppbv	NA	NA
17BB	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY:



Technical Director

DATE: 10/15/20

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
DoD QSM - TO-15
EA Engineering
Workorder# 2010075A

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 02, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

Total Xylenes concentration is calculated by summing the individual concentrations of m,p-Xylene and O-Xylene.

A Limit of Detection (LOD) and Method Detection Limit (MDL) study is not maintained for Total Xylenes and non-standard compounds.

4-Methyl-2-pentanone did not meet project requirement acceptance criteria of <30% RSD in the initial calibration.

Samples were analyzed in two analytical batches on MSD-14 on 10/13/20 and 10/14/20. The initial continuing calibration verifications (CCV) for the batches are reported as lab fractions 16A and 16C and the ending CCVs are reported as lab fractions 16B and 16D.

The Continuing Calibration Verification (CCV) analyzed on 10/13/20 and 10/14/20 did not meet project requirement control limits of 70-130% recovery (R) for Naphthalene.

The Laboratory Control Spike Duplicate (LCSD) analyzed on 10/13/20 did not meet DoD established control limits for 1,2,4-Trichlorobenzene.

Dilution was performed on all samples due to the presence of high level target species.

Hexane exceeded the instrument's calibration range for samples KAFB-106V1-102, KAFB-106V1-113, KAFB-106V2-102, KAFB-106V2-117 and KAFB-106V2-217 and was flagged accordingly.

Acetone and Cyclohexane exceeded the instrument's calibration range for samples KAFB-106V1-102, KAFB-106V1-113, KAFB-106V2-102 and KAFB-106V2-217 and were flagged accordingly.

2-Butanone (Methyl Ethyl Ketone) exceeded the instrument's calibration range for samples

KAFB-106V1-102, KAFB-106V1-113 and KAFB-106V2-102 and was flagged accordingly.

Heptane exceeded the instrument's calibration range for samples KAFB-106V1-263, KAFB-106V1-263 Lab Duplicate and KAFB-106V2-102 and was flagged accordingly.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	10/13/20 11:07 PM
Lab ID:	2010075A-01A	Dilution Factor:	93.5
Date/Time Collected:	9/29/20 08:34 AM	Instrument/File Name:	msd14.i / 14101337
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	390	1500	1900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2800	6900	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	240	1800	2300	64000
1,2-Dibromoethane (EDB)	106-93-4	630	2900	3600	3900
1,2-Dichlorobenzene	95-50-1	600	2200	2800	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	310	1800	2300	20000
1,3-Butadiene	106-99-0	430	830	1000	Not Detected U
1,4-Dioxane	123-91-1	2000	3400	6700	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	2800	5500	480000 J
2-Hexanone	591-78-6	1800	3800	7700	Not Detected U
2-Propanol	67-63-0	1300	2300	4600	120000
4-Methyl-2-pentanone	108-10-1	970	1500	1900	Not Detected U
Acetone	67-64-1	1600	2200	4400	3100000 J
Benzene	71-43-2	220	1200	1500	2000000
Bromodichloromethane	75-27-4	580	2500	3100	Not Detected U
Bromoform	75-25-2	1000	3900	4800	Not Detected U
Carbon Disulfide	75-15-0	1500	2900	5800	Not Detected U
Carbon Tetrachloride	56-23-5	740	2400	2900	Not Detected U
Chloroethane	75-00-3	1800	2500	4900	Not Detected U
Chloroform	67-66-3	370	1800	2300	Not Detected U
Chloromethane	74-87-3	1200	1900	3900	Not Detected U
Cyclohexane	110-82-7	340	1300	1600	4800000 J
Dibromochloromethane	124-48-1	680	3200	4000	Not Detected U
Ethanol	64-17-5	2200	2200	3500	50000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	10/13/20 11:07 PM
Lab ID:	2010075A-01A	Dilution Factor:	93.5
Date/Time Collected:	9/29/20 08:34 AM	Instrument/File Name:	msd14.i / 14101337
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6700	Not Detected
Ethyl Benzene	100-41-4	380	1600	2000	150000
Freon 11	75-69-4	360	2100	2600	Not Detected U
Freon 113	76-13-1	840	2900	3600	Not Detected U
Freon 12	75-71-8	290	1800	2300	Not Detected U
Heptane	142-82-5	680	1500	1900	2500000
Hexane	110-54-3	370	1300	1600	7300000 J
m,p-Xylene	108-38-3	410	1600	2000	240000
Methylene Chloride	75-09-2	2500	3200	6500	Not Detected U
Naphthalene	91-20-3	380	980	9800	2600 J
o-Xylene	95-47-6	330	1600	2000	74000
Propylene	115-07-1	920	1600	3200	Not Detected U
Styrene	100-42-5	270	1600	2000	Not Detected U
Tetrachloroethene	127-18-4	960	2500	3200	Not Detected U
Tetrahydrofuran	109-99-9	400	1100	1400	Not Detected U
Toluene	108-88-3	330	1400	1800	1700000
Total Xylene	1330-20-7	NA	D	4100	310000
Trichloroethene	79-01-6	470	2000	2500	Not Detected U
Vinyl Chloride	75-01-4	420	960	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	10/13/20 11:07 PM
Lab ID:	2010075A-01A	Dilution Factor:	93.5
Date/Time Collected:	9/29/20 08:34 AM	Instrument/Filename:	msd14.i / 14101337
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	136
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	10/14/20 06:28 PM
Lab ID:	2010075A-02A	Dilution Factor:	201
Date/Time Collected:	9/29/20 08:50 AM	Instrument/File Name:	msd14.i / 14101420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	840	3200	4100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6100	15000	30000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	520	4000	4900	67000
1,2-Dibromoethane (EDB)	106-93-4	1400	6200	7700	8800
1,2-Dichlorobenzene	95-50-1	1300	4800	6000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	660	4000	4900	22000
1,3-Butadiene	106-99-0	920	1800	2200	Not Detected U
1,4-Dioxane	123-91-1	4400	7200	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3500	5900	12000	710000 J
2-Hexanone	591-78-6	3900	8200	16000	Not Detected U
2-Propanol	67-63-0	2700	4900	9900	180000
4-Methyl-2-pentanone	108-10-1	2100	3300	4100	Not Detected U
Acetone	67-64-1	3600	4800	9500	4900000 J
Benzene	71-43-2	480	2600	3200	3200000
Bromodichloromethane	75-27-4	1200	5400	6700	Not Detected U
Bromoform	75-25-2	2200	8300	10000	Not Detected U
Carbon Disulfide	75-15-0	3100	6200	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	5000	6300	Not Detected U
Chloroethane	75-00-3	4000	5300	11000	Not Detected U
Chloroform	67-66-3	800	3900	4900	Not Detected U
Chloromethane	74-87-3	2600	4200	8300	Not Detected U
Cyclohexane	110-82-7	740	2800	3400	7700000 J
Dibromochloromethane	124-48-1	1500	6800	8600	Not Detected U
Ethanol	64-17-5	4700	4700	7600	100000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	10/14/20 06:28 PM
Lab ID:	2010075A-02A	Dilution Factor:	201
Date/Time Collected:	9/29/20 08:50 AM	Instrument/File Name:	msd14.i / 14101420
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	830	3500	4400	240000
Freon 11	75-69-4	770	4500	5600	Not Detected U
Freon 113	76-13-1	1800	6200	7700	Not Detected U
Freon 12	75-71-8	630	4000	5000	Not Detected U
Heptane	142-82-5	1400	3300	4100	4500000
Hexane	110-54-3	800	2800	3500	11000000 J
m,p-Xylene	108-38-3	890	3500	4400	360000
Methylene Chloride	75-09-2	5400	7000	14000	Not Detected U
Naphthalene	91-20-3	810	2100	21000	1100 J
o-Xylene	95-47-6	710	3500	4400	110000
Propylene	115-07-1	2000	3400	6900	Not Detected U
Styrene	100-42-5	590	3400	4300	Not Detected U
Tetrachloroethene	127-18-4	2100	5400	6800	Not Detected U
Tetrahydrofuran	109-99-9	850	2400	3000	Not Detected U
Toluene	108-88-3	700	3000	3800	3200000
Total Xylene	1330-20-7	NA	D	8700	470000
Trichloroethene	79-01-6	1000	4300	5400	Not Detected U
Vinyl Chloride	75-01-4	900	2000	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	10/14/20 06:28 PM
Lab ID:	2010075A-02A	Dilution Factor:	201
Date/Time Collected:	9/29/20 08:50 AM	Instrument/Filename:	msd14.i / 14101420
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	125
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	10/13/20 07:14 PM
Lab ID:	2010075A-03A	Dilution Factor:	95.5
Date/Time Collected:	9/29/20 09:02 AM	Instrument/File name:	msd14.i / 14101326
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	400	1500	1900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2900	7100	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	250	1900	2300	77000
1,2-Dibromoethane (EDB)	106-93-4	640	2900	3700	1300 J
1,2-Dichlorobenzene	95-50-1	610	2300	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	310	1900	2300	24000
1,3-Butadiene	106-99-0	440	840	1000	Not Detected U
1,4-Dioxane	123-91-1	2100	3400	6900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	2800	5600	43000
2-Hexanone	591-78-6	1800	3900	7800	Not Detected U
2-Propanol	67-63-0	1300	2300	4700	160000
4-Methyl-2-pentanone	108-10-1	990	1600	2000	Not Detected U
Acetone	67-64-1	1700	2300	4500	1400000
Benzene	71-43-2	230	1200	1500	240000
Bromodichloromethane	75-27-4	600	2600	3200	Not Detected U
Bromoform	75-25-2	1000	3900	4900	Not Detected U
Carbon Disulfide	75-15-0	1500	3000	5900	Not Detected U
Carbon Tetrachloride	56-23-5	750	2400	3000	Not Detected U
Chloroethane	75-00-3	1900	2500	5000	Not Detected U
Chloroform	67-66-3	380	1900	2300	Not Detected U
Chloromethane	74-87-3	1200	2000	3900	Not Detected U
Cyclohexane	110-82-7	350	1300	1600	920000
Dibromochloromethane	124-48-1	700	3200	4100	Not Detected U
Ethanol	64-17-5	2200	2200	3600	45000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	10/13/20 07:14 PM
Lab ID:	2010075A-03A	Dilution Factor:	95.5
Date/Time Collected:	9/29/20 09:02 AM	Instrument/Filename:	msd14.i / 14101326
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6900	Not Detected
Ethyl Benzene	100-41-4	390	1600	2100	220000
Freon 11	75-69-4	360	2100	2700	Not Detected U
Freon 113	76-13-1	860	2900	3600	Not Detected U
Freon 12	75-71-8	300	1900	2400	Not Detected U
Heptane	142-82-5	690	1600	2000	1400000
Hexane	110-54-3	380	1300	1700	350000
m,p-Xylene	108-38-3	420	1600	2100	430000
Methylene Chloride	75-09-2	2600	3300	6600	Not Detected U
Naphthalene	91-20-3	380	1000	10000	2300 J
o-Xylene	95-47-6	340	1600	2100	140000
Propylene	115-07-1	940	1600	3300	Not Detected U
Styrene	100-42-5	280	1600	2000	Not Detected U
Tetrachloroethene	127-18-4	980	2600	3200	Not Detected U
Tetrahydrofuran	109-99-9	400	1100	1400	Not Detected U
Toluene	108-88-3	330	1400	1800	1300000
Total Xylene	1330-20-7	NA	D	4100	580000
Trichloroethene	79-01-6	480	2000	2600	Not Detected U
Vinyl Chloride	75-01-4	430	980	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	10/13/20 07:14 PM
Lab ID:	2010075A-03A	Dilution Factor:	95.5
Date/Time Collected:	9/29/20 09:02 AM	Instrument/Filename:	msd14.i / 14101326
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	121
4-Bromofluorobenzene	460-00-4	75-118	97
Toluene-d8	2037-26-5	84-115	102

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	10/13/20 07:37 PM
Lab ID:	2010075A-04A	Dilution Factor:	98.0
Date/Time Collected:	9/29/20 09:09 AM	Instrument/File name:	msd14.i / 14101327
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	410	1600	2000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3000	7300	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	260	1900	2400	90000
1,2-Dibromoethane (EDB)	106-93-4	660	3000	3800	1300 J
1,2-Dichlorobenzene	95-50-1	630	2400	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	320	1900	2400	28000
1,3-Butadiene	106-99-0	450	870	1100	Not Detected U
1,4-Dioxane	123-91-1	2100	3500	7100	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1700	2900	5800	46000
2-Hexanone	591-78-6	1900	4000	8000	Not Detected U
2-Propanol	67-63-0	1300	2400	4800	190000
4-Methyl-2-pentanone	108-10-1	1000	1600	2000	Not Detected U
Acetone	67-64-1	1700	2300	4600	1500000
Benzene	71-43-2	230	1200	1600	250000
Bromodichloromethane	75-27-4	610	2600	3300	Not Detected U
Bromoform	75-25-2	1000	4000	5100	Not Detected U
Carbon Disulfide	75-15-0	1500	3000	6100	Not Detected U
Carbon Tetrachloride	56-23-5	770	2500	3100	Not Detected U
Chloroethane	75-00-3	1900	2600	5200	Not Detected U
Chloroform	67-66-3	390	1900	2400	Not Detected U
Chloromethane	74-87-3	1300	2000	4000	Not Detected U
Cyclohexane	110-82-7	360	1300	1700	980000
Dibromochloromethane	124-48-1	720	3300	4200	Not Detected U
Ethanol	64-17-5	2300	2300	3700	49000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	10/13/20 07:37 PM
Lab ID:	2010075A-04A	Dilution Factor:	98.0
Date/Time Collected:	9/29/20 09:09 AM	Instrument/File Name:	msd14.i / 14101327
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7100	Not Detected
Ethyl Benzene	100-41-4	400	1700	2100	260000
Freon 11	75-69-4	370	2200	2800	Not Detected U
Freon 113	76-13-1	890	3000	3800	Not Detected U
Freon 12	75-71-8	300	1900	2400	Not Detected U
Heptane	142-82-5	710	1600	2000	1600000
Hexane	110-54-3	390	1400	1700	370000
m,p-Xylene	108-38-3	430	1700	2100	520000
Methylene Chloride	75-09-2	2600	3400	6800	Not Detected U
Naphthalene	91-20-3	400	1000	10000	3400 J
o-Xylene	95-47-6	340	1700	2100	170000
Propylene	115-07-1	970	1700	3400	Not Detected U
Styrene	100-42-5	290	1700	2100	Not Detected U
Tetrachloroethene	127-18-4	1000	2600	3300	Not Detected U
Tetrahydrofuran	109-99-9	420	1200	1400	Not Detected U
Toluene	108-88-3	340	1500	1800	1400000
Total Xylene	1330-20-7	NA	D	4200	690000
Trichloroethene	79-01-6	490	2100	2600	Not Detected U
Vinyl Chloride	75-01-4	440	1000	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	10/13/20 07:37 PM
Lab ID:	2010075A-04A	Dilution Factor:	98.0
Date/Time Collected:	9/29/20 09:09 AM	Instrument/Filename:	msd14.i / 14101327
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	122
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	10/14/20 09:24 PM
Lab ID:	2010075A-05A	Dilution Factor:	106
Date/Time Collected:	9/29/20 09:25 AM	Instrument/Filename:	msd14.i / 14101428
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	440	1700	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3200	7900	16000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	280	2100	2600	110000
1,2-Dibromoethane (EDB)	106-93-4	720	3200	4100	3100 J
1,2-Dichlorobenzene	95-50-1	680	2500	3200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	350	2100	2600	39000
1,3-Butadiene	106-99-0	480	940	1200	Not Detected U
1,4-Dioxane	123-91-1	2300	3800	7600	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1800	3100	6200	120000
2-Hexanone	591-78-6	2000	4300	8700	Not Detected U
2-Propanol	67-63-0	1400	2600	5200	20000
4-Methyl-2-pentanone	108-10-1	1100	1700	2200	Not Detected U
Acetone	67-64-1	1900	2500	5000	1700000
Benzene	71-43-2	250	1400	1700	720000
Bromodichloromethane	75-27-4	660	2800	3600	Not Detected U
Bromoform	75-25-2	1100	4400	5500	Not Detected U
Carbon Disulfide	75-15-0	1700	3300	6600	Not Detected U
Carbon Tetrachloride	56-23-5	830	2700	3300	Not Detected U
Chloroethane	75-00-3	2100	2800	5600	Not Detected U
Chloroform	67-66-3	420	2100	2600	Not Detected U
Chloromethane	74-87-3	1400	2200	4400	Not Detected U
Cyclohexane	110-82-7	390	1400	1800	2500000
Dibromochloromethane	124-48-1	780	3600	4500	Not Detected U
Ethanol	64-17-5	2500	2500	4000	4300

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	10/14/20 09:24 PM
Lab ID:	2010075A-05A	Dilution Factor:	106
Date/Time Collected:	9/29/20 09:25 AM	Instrument/File Name:	msd14.i / 14101428
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7600	Not Detected
Ethyl Benzene	100-41-4	440	1800	2300	300000
Freon 11	75-69-4	400	2400	3000	Not Detected U
Freon 113	76-13-1	960	3200	4100	Not Detected U
Freon 12	75-71-8	330	2100	2600	Not Detected U
Heptane	142-82-5	770	1700	2200	4000000
Hexane	110-54-3	420	1500	1900	2200000
m,p-Xylene	108-38-3	470	1800	2300	910000
Methylene Chloride	75-09-2	2800	3700	7400	Not Detected U
Naphthalene	91-20-3	430	1100	11000	2800 J
o-Xylene	95-47-6	370	1800	2300	270000
Propylene	115-07-1	1000	1800	3600	Not Detected U
Styrene	100-42-5	310	1800	2200	Not Detected U
Tetrachloroethene	127-18-4	1100	2900	3600	Not Detected U
Tetrahydrofuran	109-99-9	450	1200	1600	Not Detected U
Toluene	108-88-3	370	1600	2000	2700000
Total Xylene	1330-20-7	NA	D	4600	1200000
Trichloroethene	79-01-6	530	2300	2800	Not Detected U
Vinyl Chloride	75-01-4	480	1100	1400	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	10/14/20 09:24 PM
Lab ID:	2010075A-05A	Dilution Factor:	106
Date/Time Collected:	9/29/20 09:25 AM	Instrument/Filename:	msd14.i / 14101428
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	126
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	103

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	10/13/20 07:58 PM
Lab ID:	2010075A-06A	Dilution Factor:	95.5
Date/Time Collected:	9/29/20 09:38 AM	Instrument/File Name:	msd14.i / 14101328
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	400	1500	1900	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2900	7100	14000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	250	1900	2300	82000
1,2-Dibromoethane (EDB)	106-93-4	640	2900	3700	11000
1,2-Dichlorobenzene	95-50-1	610	2300	2900	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	310	1900	2300	31000
1,3-Butadiene	106-99-0	440	840	1000	Not Detected U
1,4-Dioxane	123-91-1	2100	3400	6900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1600	2800	5600	120000
2-Hexanone	591-78-6	1800	3900	7800	Not Detected U
2-Propanol	67-63-0	1300	2300	4700	15000
4-Methyl-2-pentanone	108-10-1	990	1600	2000	Not Detected U
Acetone	67-64-1	1700	2300	4500	590000
Benzene	71-43-2	230	1200	1500	64000
Bromodichloromethane	75-27-4	600	2600	3200	Not Detected U
Bromoform	75-25-2	1000	3900	4900	Not Detected U
Carbon Disulfide	75-15-0	1500	3000	5900	Not Detected U
Carbon Tetrachloride	56-23-5	750	2400	3000	Not Detected U
Chloroethane	75-00-3	1900	2500	5000	Not Detected U
Chloroform	67-66-3	380	1900	2300	Not Detected U
Chloromethane	74-87-3	1200	2000	3900	Not Detected U
Cyclohexane	110-82-7	350	1300	1600	370000
Dibromochloromethane	124-48-1	700	3200	4100	Not Detected U
Ethanol	64-17-5	2200	2200	3600	6400

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	10/13/20 07:58 PM
Lab ID:	2010075A-06A	Dilution Factor:	95.5
Date/Time Collected:	9/29/20 09:38 AM	Instrument/Filename:	msd14.i / 14101328
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	6900	Not Detected
Ethyl Benzene	100-41-4	390	1600	2100	320000
Freon 11	75-69-4	360	2100	2700	Not Detected U
Freon 113	76-13-1	860	2900	3600	Not Detected U
Freon 12	75-71-8	300	1900	2400	Not Detected U
Heptane	142-82-5	690	1600	2000	3500000
Hexane	110-54-3	380	1300	1700	47000
m,p-Xylene	108-38-3	420	1600	2100	1000000
Methylene Chloride	75-09-2	2600	3300	6600	Not Detected U
Naphthalene	91-20-3	380	1000	10000	2600 J
o-Xylene	95-47-6	340	1600	2100	270000
Propylene	115-07-1	940	1600	3300	Not Detected U
Styrene	100-42-5	280	1600	2000	Not Detected U
Tetrachloroethene	127-18-4	980	2600	3200	Not Detected U
Tetrahydrofuran	109-99-9	400	1100	1400	Not Detected U
Toluene	108-88-3	330	1400	1800	3200000
Total Xylene	1330-20-7	NA	D	4100	1300000
Trichloroethene	79-01-6	480	2000	2600	Not Detected U
Vinyl Chloride	75-01-4	430	980	1200	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	10/13/20 07:58 PM
Lab ID:	2010075A-06A	Dilution Factor:	95.5
Date/Time Collected:	9/29/20 09:38 AM	Instrument/Filename:	msd14.i / 14101328
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	121
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	109

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	10/14/20 04:29 PM
Lab ID:	2010075A-07A	Dilution Factor:	201
Date/Time Collected:	9/29/20 09:51 AM	Instrument/File Name:	msd14.i / 14101414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	840	3200	4100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6100	15000	30000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	520	4000	4900	70000
1,2-Dibromoethane (EDB)	106-93-4	1400	6200	7700	25000
1,2-Dichlorobenzene	95-50-1	1300	4800	6000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	660	4000	4900	26000
1,3-Butadiene	106-99-0	920	1800	2200	Not Detected U
1,4-Dioxane	123-91-1	4400	7200	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3500	5900	12000	390000
2-Hexanone	591-78-6	3900	8200	16000	36000
2-Propanol	67-63-0	2700	4900	9900	38000
4-Methyl-2-pentanone	108-10-1	2100	3300	4100	Not Detected U
Acetone	67-64-1	3600	4800	9500	1800000
Benzene	71-43-2	480	2600	3200	400000
Bromodichloromethane	75-27-4	1200	5400	6700	Not Detected U
Bromoform	75-25-2	2200	8300	10000	Not Detected U
Carbon Disulfide	75-15-0	3100	6200	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	5000	6300	Not Detected U
Chloroethane	75-00-3	4000	5300	11000	Not Detected U
Chloroform	67-66-3	800	3900	4900	Not Detected U
Chloromethane	74-87-3	2600	4200	8300	Not Detected U
Cyclohexane	110-82-7	740	2800	3400	1800000
Dibromochloromethane	124-48-1	1500	6800	8600	Not Detected U
Ethanol	64-17-5	4700	4700	7600	8500

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	10/14/20 04:29 PM
Lab ID:	2010075A-07A	Dilution Factor:	201
Date/Time Collected:	9/29/20 09:51 AM	Instrument/File Name:	msd14.i / 14101414
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	830	3500	4400	420000
Freon 11	75-69-4	770	4500	5600	Not Detected U
Freon 113	76-13-1	1800	6200	7700	Not Detected U
Freon 12	75-71-8	630	4000	5000	Not Detected U
Heptane	142-82-5	1400	3300	4100	9500000 J
Hexane	110-54-3	800	2800	3500	470000
m,p-Xylene	108-38-3	890	3500	4400	1000000
Methylene Chloride	75-09-2	5400	7000	14000	Not Detected U
Naphthalene	91-20-3	810	2100	21000	1000 J
o-Xylene	95-47-6	710	3500	4400	260000
Propylene	115-07-1	2000	3400	6900	Not Detected U
Styrene	100-42-5	590	3400	4300	Not Detected U
Tetrachloroethene	127-18-4	2100	5400	6800	Not Detected U
Tetrahydrofuran	109-99-9	850	2400	3000	Not Detected U
Toluene	108-88-3	700	3000	3800	7000000
Total Xylene	1330-20-7	NA	D	8700	1300000
Trichloroethene	79-01-6	1000	4300	5400	Not Detected U
Vinyl Chloride	75-01-4	900	2000	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	10/14/20 04:29 PM
Lab ID:	2010075A-07A	Dilution Factor:	201
Date/Time Collected:	9/29/20 09:51 AM	Instrument/Filename:	msd14.i / 14101414
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	120
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263 Lab Duplicate	Date/Time Analyzed:	10/14/20 04:49 PM
Lab ID:	2010075A-07AA	Dilution Factor:	201
Date/Time Collected:	9/29/20 09:51 AM	Instrument/File Name:	msd14.i / 14101415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	840	3200	4100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6100	15000	30000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	520	4000	4900	70000
1,2-Dibromoethane (EDB)	106-93-4	1400	6200	7700	26000
1,2-Dichlorobenzene	95-50-1	1300	4800	6000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	660	4000	4900	26000
1,3-Butadiene	106-99-0	920	1800	2200	Not Detected U
1,4-Dioxane	123-91-1	4400	7200	14000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3500	5900	12000	380000
2-Hexanone	591-78-6	3900	8200	16000	36000
2-Propanol	67-63-0	2700	4900	9900	37000
4-Methyl-2-pentanone	108-10-1	2100	3300	4100	Not Detected U
Acetone	67-64-1	3600	4800	9500	1800000
Benzene	71-43-2	480	2600	3200	390000
Bromodichloromethane	75-27-4	1200	5400	6700	Not Detected U
Bromoform	75-25-2	2200	8300	10000	Not Detected U
Carbon Disulfide	75-15-0	3100	6200	12000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	5000	6300	Not Detected U
Chloroethane	75-00-3	4000	5300	11000	Not Detected U
Chloroform	67-66-3	800	3900	4900	Not Detected U
Chloromethane	74-87-3	2600	4200	8300	Not Detected U
Cyclohexane	110-82-7	740	2800	3400	1800000
Dibromochloromethane	124-48-1	1500	6800	8600	Not Detected U
Ethanol	64-17-5	4700	4700	7600	10000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263 Lab Duplicate	Date/Time Analyzed:	10/14/20 04:49 PM
Lab ID:	2010075A-07AA	Dilution Factor:	201
Date/Time Collected:	9/29/20 09:51 AM	Instrument/Filename:	msd14.i / 14101415
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	14000	Not Detected
Ethyl Benzene	100-41-4	830	3500	4400	420000
Freon 11	75-69-4	770	4500	5600	Not Detected U
Freon 113	76-13-1	1800	6200	7700	Not Detected U
Freon 12	75-71-8	630	4000	5000	Not Detected U
Heptane	142-82-5	1400	3300	4100	9400000 J
Hexane	110-54-3	800	2800	3500	460000
m,p-Xylene	108-38-3	890	3500	4400	1100000
Methylene Chloride	75-09-2	5400	7000	14000	Not Detected U
Naphthalene	91-20-3	810	2100	21000	1400 J
o-Xylene	95-47-6	710	3500	4400	260000
Propylene	115-07-1	2000	3400	6900	Not Detected U
Styrene	100-42-5	590	3400	4300	Not Detected U
Tetrachloroethene	127-18-4	2100	5400	6800	Not Detected U
Tetrahydrofuran	109-99-9	850	2400	3000	Not Detected U
Toluene	108-88-3	700	3000	3800	7000000
Total Xylene	1330-20-7	NA	D	8700	1400000
Trichloroethene	79-01-6	1000	4300	5400	Not Detected U
Vinyl Chloride	75-01-4	900	2000	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V1-263 Lab Duplicate	Date/Time Analyzed:	10/14/20 04:49 PM
Lab ID:	2010075A-07AA	Dilution Factor:	201
Date/Time Collected:	9/29/20 09:51 AM	Instrument/Filename:	msd14.i / 14101415
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	116
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	108

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	10/14/20 05:49 PM
Lab ID:	2010075A-08A	Dilution Factor:	206
Date/Time Collected:	9/29/20 10:24 AM	Instrument/File Name:	msd14.i / 14101418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	860	3300	4200	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	6200	15000	30000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	540	4000	5100	70000
1,2-Dibromoethane (EDB)	106-93-4	1400	6300	7900	24000
1,2-Dichlorobenzene	95-50-1	1300	5000	6200	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	680	4000	5100	28000
1,3-Butadiene	106-99-0	940	1800	2300	Not Detected U
1,4-Dioxane	123-91-1	4500	7400	15000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3600	6100	12000	900000 J
2-Hexanone	591-78-6	4000	8400	17000	Not Detected U
2-Propanol	67-63-0	2800	5100	10000	310000
4-Methyl-2-pentanone	108-10-1	2100	3400	4200	Not Detected U
Acetone	67-64-1	3600	4900	9800	6400000 J
Benzene	71-43-2	490	2600	3300	3000000
Bromodichloromethane	75-27-4	1300	5500	6900	Not Detected U
Bromoform	75-25-2	2200	8500	11000	Not Detected U
Carbon Disulfide	75-15-0	3200	6400	13000	Not Detected U
Carbon Tetrachloride	56-23-5	1600	5200	6500	Not Detected U
Chloroethane	75-00-3	4100	5400	11000	Not Detected U
Chloroform	67-66-3	810	4000	5000	Not Detected U
Chloromethane	74-87-3	2700	4200	8500	Not Detected U
Cyclohexane	110-82-7	760	2800	3500	8900000 J
Dibromochloromethane	124-48-1	1500	7000	8800	Not Detected U
Ethanol	64-17-5	4800	4800	7800	38000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	10/14/20 05:49 PM
Lab ID:	2010075A-08A	Dilution Factor:	206
Date/Time Collected:	9/29/20 10:24 AM	Instrument/Filename:	msd14.i / 14101418
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	15000	Not Detected
Ethyl Benzene	100-41-4	850	3600	4500	400000
Freon 11	75-69-4	790	4600	5800	Not Detected U
Freon 113	76-13-1	1900	6300	7900	Not Detected U
Freon 12	75-71-8	640	4100	5100	Not Detected U
Heptane	142-82-5	1500	3400	4200	9500000 J
Hexane	110-54-3	820	2900	3600	11000000 J
m,p-Xylene	108-38-3	910	3600	4500	960000
Methylene Chloride	75-09-2	5500	7200	14000	Not Detected U
Naphthalene	91-20-3	830	2200	22000	Not Detected UJ
o-Xylene	95-47-6	720	3600	4500	250000
Propylene	115-07-1	2000	3500	7100	Not Detected U
Styrene	100-42-5	600	3500	4400	Not Detected U
Tetrachloroethene	127-18-4	2100	5600	7000	Not Detected U
Tetrahydrofuran	109-99-9	870	2400	3000	Not Detected U
Toluene	108-88-3	720	3100	3900	6700000
Total Xylene	1330-20-7	NA	D	8900	1200000
Trichloroethene	79-01-6	1000	4400	5500	Not Detected U
Vinyl Chloride	75-01-4	930	2100	2600	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	10/14/20 05:49 PM
Lab ID:	2010075A-08A	Dilution Factor:	206
Date/Time Collected:	9/29/20 10:24 AM	Instrument/Filename:	msd14.i / 14101418
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	136
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	10/14/20 05:09 PM
Lab ID:	2010075A-09A	Dilution Factor:	446
Date/Time Collected:	9/29/20 10:37 AM	Instrument/File Name:	msd14.i / 14101416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1800	7200	9000	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	14000	33000	66000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	8800	11000	84000
1,2-Dibromoethane (EDB)	106-93-4	3000	14000	17000	21000
1,2-Dichlorobenzene	95-50-1	2900	11000	13000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1500	8800	11000	36000
1,3-Butadiene	106-99-0	2000	3900	4900	Not Detected U
1,4-Dioxane	123-91-1	9700	16000	32000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	7700	13000	26000	480000
2-Hexanone	591-78-6	8600	18000	36000	Not Detected U
2-Propanol	67-63-0	6000	11000	22000	56000
4-Methyl-2-pentanone	108-10-1	4600	7300	9100	Not Detected U
Acetone	67-64-1	7900	10000	21000	4200000
Benzene	71-43-2	1100	5700	7100	4400000
Bromodichloromethane	75-27-4	2800	12000	15000	Not Detected U
Bromoform	75-25-2	4800	18000	23000	Not Detected U
Carbon Disulfide	75-15-0	7000	14000	28000	Not Detected U
Carbon Tetrachloride	56-23-5	3500	11000	14000	Not Detected U
Chloroethane	75-00-3	8800	12000	24000	Not Detected U
Chloroform	67-66-3	1800	8700	11000	Not Detected U
Chloromethane	74-87-3	5800	9200	18000	Not Detected U
Cyclohexane	110-82-7	1600	6100	7700	12000000
Dibromochloromethane	124-48-1	3300	15000	19000	Not Detected U
Ethanol	64-17-5	10000	10000	17000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	10/14/20 05:09 PM
Lab ID:	2010075A-09A	Dilution Factor:	446
Date/Time Collected:	9/29/20 10:37 AM	Instrument/Filename:	msd14.i / 14101416
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	32000	Not Detected
Ethyl Benzene	100-41-4	1800	7700	9700	500000
Freon 11	75-69-4	1700	10000	12000	Not Detected U
Freon 113	76-13-1	4000	14000	17000	Not Detected U
Freon 12	75-71-8	1400	8800	11000	Not Detected U
Heptane	142-82-5	3200	7300	9100	11000000
Hexane	110-54-3	1800	6300	7800	16000000 J
m,p-Xylene	108-38-3	2000	7700	9700	1200000
Methylene Chloride	75-09-2	12000	15000	31000	Not Detected U
Naphthalene	91-20-3	1800	4700	47000	Not Detected UJ
o-Xylene	95-47-6	1600	7700	9700	340000
Propylene	115-07-1	4400	7700	15000	Not Detected U
Styrene	100-42-5	1300	7600	9500	Not Detected U
Tetrachloroethene	127-18-4	4600	12000	15000	Not Detected U
Tetrahydrofuran	109-99-9	1900	5300	6600	Not Detected U
Toluene	108-88-3	1600	6700	8400	7800000
Total Xylene	1330-20-7	NA	D	19000	1600000
Trichloroethene	79-01-6	2200	9600	12000	Not Detected U
Vinyl Chloride	75-01-4	2000	4600	5700	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	10/14/20 05:09 PM
Lab ID:	2010075A-09A	Dilution Factor:	446
Date/Time Collected:	9/29/20 10:37 AM	Instrument/Filename:	msd14.i / 14101416
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	125
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	10/14/20 05:29 PM
Lab ID:	2010075A-10A	Dilution Factor:	460
Date/Time Collected:	9/29/20 10:45 AM	Instrument/File Name:	msd14.i / 14101417
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	1900	7400	9300	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	14000	34000	68000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	1200	9000	11000	78000
1,2-Dibromoethane (EDB)	106-93-4	3100	14000	18000	21000
1,2-Dichlorobenzene	95-50-1	3000	11000	14000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	1500	9000	11000	32000
1,3-Butadiene	106-99-0	2100	4100	5100	Not Detected U
1,4-Dioxane	123-91-1	10000	16000	33000	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	8000	14000	27000	460000
2-Hexanone	591-78-6	8800	19000	38000	Not Detected U
2-Propanol	67-63-0	6200	11000	23000	52000
4-Methyl-2-pentanone	108-10-1	4800	7500	9400	Not Detected U
Acetone	67-64-1	8100	11000	22000	4000000
Benzene	71-43-2	1100	5900	7300	4300000
Bromodichloromethane	75-27-4	2900	12000	15000	Not Detected U
Bromoform	75-25-2	4900	19000	24000	Not Detected U
Carbon Disulfide	75-15-0	7200	14000	29000	Not Detected U
Carbon Tetrachloride	56-23-5	3600	12000	14000	Not Detected U
Chloroethane	75-00-3	9100	12000	24000	Not Detected U
Chloroform	67-66-3	1800	9000	11000	Not Detected U
Chloromethane	74-87-3	6000	9500	19000	Not Detected U
Cyclohexane	110-82-7	1700	6300	7900	12000000
Dibromochloromethane	124-48-1	3400	16000	20000	Not Detected U
Ethanol	64-17-5	11000	11000	17000	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	10/14/20 05:29 PM
Lab ID:	2010075A-10A	Dilution Factor:	460
Date/Time Collected:	9/29/20 10:45 AM	Instrument/Filename:	msd14.i / 14101417
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	33000	Not Detected
Ethyl Benzene	100-41-4	1900	8000	10000	490000
Freon 11	75-69-4	1800	10000	13000	Not Detected U
Freon 113	76-13-1	4200	14000	18000	Not Detected U
Freon 12	75-71-8	1400	9100	11000	Not Detected U
Heptane	142-82-5	3300	7500	9400	11000000
Hexane	110-54-3	1800	6500	8100	15000000
m,p-Xylene	108-38-3	2000	8000	10000	1200000
Methylene Chloride	75-09-2	12000	16000	32000	Not Detected U
Naphthalene	91-20-3	1800	4800	48000	Not Detected UJ
o-Xylene	95-47-6	1600	8000	10000	320000
Propylene	115-07-1	4500	7900	16000	Not Detected U
Styrene	100-42-5	1400	7800	9800	Not Detected U
Tetrachloroethene	127-18-4	4700	12000	16000	Not Detected U
Tetrahydrofuran	109-99-9	2000	5400	6800	Not Detected U
Toluene	108-88-3	1600	6900	8700	7600000
Total Xylene	1330-20-7	NA	D	20000	1500000
Trichloroethene	79-01-6	2300	9900	12000	Not Detected U
Vinyl Chloride	75-01-4	2100	4700	5900	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	10/14/20 05:29 PM
Lab ID:	2010075A-10A	Dilution Factor:	460
Date/Time Collected:	9/29/20 10:45 AM	Instrument/Filename:	msd14.i / 14101417
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	123
4-Bromofluorobenzene	460-00-4	75-118	99
Toluene-d8	2037-26-5	84-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	10/14/20 07:59 PM
Lab ID:	2010075A-11A	Dilution Factor:	20.1
Date/Time Collected:	9/29/20 11:03 AM	Instrument/Filename:	msd14.i / 14101424
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	84	320	410	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	610	1500	3000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	52	400	490	170000
1,2-Dibromoethane (EDB)	106-93-4	140	620	770	230 J
1,2-Dichlorobenzene	95-50-1	130	480	600	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	66	400	490	46000
1,3-Butadiene	106-99-0	92	180	220	Not Detected U
1,4-Dioxane	123-91-1	440	720	1400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	350	590	1200	2900
2-Hexanone	591-78-6	390	820	1600	Not Detected U
2-Propanol	67-63-0	270	490	990	6500
4-Methyl-2-pentanone	108-10-1	210	330	410	Not Detected U
Acetone	67-64-1	360	480	950	43000
Benzene	71-43-2	48	260	320	3700
Bromodichloromethane	75-27-4	120	540	670	Not Detected U
Bromoform	75-25-2	220	830	1000	Not Detected U
Carbon Disulfide	75-15-0	310	620	1200	Not Detected U
Carbon Tetrachloride	56-23-5	160	500	630	Not Detected U
Chloroethane	75-00-3	400	530	1100	Not Detected U
Chloroform	67-66-3	80	390	490	Not Detected U
Chloromethane	74-87-3	260	420	830	Not Detected U
Cyclohexane	110-82-7	74	280	340	9800
Dibromochloromethane	124-48-1	150	680	860	Not Detected U
Ethanol	64-17-5	470	470	760	1600

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	10/14/20 07:59 PM
Lab ID:	2010075A-11A	Dilution Factor:	20.1
Date/Time Collected:	9/29/20 11:03 AM	Instrument/File Name:	msd14.i / 14101424
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	1400	Not Detected
Ethyl Benzene	100-41-4	83	350	440	46000
Freon 11	75-69-4	77	450	560	Not Detected U
Freon 113	76-13-1	180	620	770	Not Detected U
Freon 12	75-71-8	63	400	500	Not Detected U
Heptane	142-82-5	140	330	410	50000
Hexane	110-54-3	80	280	350	6400
m,p-Xylene	108-38-3	89	350	440	140000
Methylene Chloride	75-09-2	540	700	1400	Not Detected U
Naphthalene	91-20-3	81	210	2100	11000 J
o-Xylene	95-47-6	71	350	440	61000
Propylene	115-07-1	200	340	690	Not Detected U
Styrene	100-42-5	59	340	430	Not Detected U
Tetrachloroethene	127-18-4	210	540	680	Not Detected U
Tetrahydrofuran	109-99-9	85	240	300	Not Detected U
Toluene	108-88-3	70	300	380	74000
Total Xylene	1330-20-7	NA	D	870	200000
Trichloroethene	79-01-6	100	430	540	Not Detected U
Vinyl Chloride	75-01-4	90	200	260	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	10/14/20 07:59 PM
Lab ID:	2010075A-11A	Dilution Factor:	20.1
Date/Time Collected:	9/29/20 11:03 AM	Instrument/Filename:	msd14.i / 14101424
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	99
4-Bromofluorobenzene	460-00-4	75-118	99
Toluene-d8	2037-26-5	84-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	10/13/20 11:50 PM
Lab ID:	2010075A-12A	Dilution Factor:	103
Date/Time Collected:	9/29/20 11:15 AM	Instrument/Filename:	msd14.i / 14101338
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	430	1700	2100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	3100	7600	15000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	270	2000	2500	110000
1,2-Dibromoethane (EDB)	106-93-4	700	3200	4000	4600
1,2-Dichlorobenzene	95-50-1	660	2500	3100	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	340	2000	2500	33000
1,3-Butadiene	106-99-0	470	910	1100	Not Detected U
1,4-Dioxane	123-91-1	2200	3700	7400	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1800	3000	6100	58000
2-Hexanone	591-78-6	2000	4200	8400	Not Detected U
2-Propanol	67-63-0	1400	2500	5100	64000
4-Methyl-2-pentanone	108-10-1	1100	1700	2100	Not Detected U
Acetone	67-64-1	1800	2400	4900	3200000 J
Benzene	71-43-2	250	1300	1600	1400000
Bromodichloromethane	75-27-4	640	2800	3400	Not Detected U
Bromoform	75-25-2	1100	4200	5300	Not Detected U
Carbon Disulfide	75-15-0	1600	3200	6400	Not Detected U
Carbon Tetrachloride	56-23-5	810	2600	3200	Not Detected U
Chloroethane	75-00-3	2000	2700	5400	Not Detected U
Chloroform	67-66-3	410	2000	2500	Not Detected U
Chloromethane	74-87-3	1300	2100	4200	Not Detected U
Cyclohexane	110-82-7	380	1400	1800	4200000 J
Dibromochloromethane	124-48-1	750	3500	4400	Not Detected U
Ethanol	64-17-5	2400	2400	3900	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	10/13/20 11:50 PM
Lab ID:	2010075A-12A	Dilution Factor:	103
Date/Time Collected:	9/29/20 11:15 AM	Instrument/Filename:	msd14.i / 14101338
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	7400	Not Detected
Ethyl Benzene	100-41-4	420	1800	2200	250000
Freon 11	75-69-4	390	2300	2900	Not Detected U
Freon 113	76-13-1	930	3200	3900	Not Detected U
Freon 12	75-71-8	320	2000	2500	Not Detected U
Heptane	142-82-5	750	1700	2100	4100000
Hexane	110-54-3	410	1400	1800	5000000 J
m,p-Xylene	108-38-3	460	1800	2200	610000
Methylene Chloride	75-09-2	2800	3600	7200	Not Detected U
Naphthalene	91-20-3	420	1100	11000	4300 J
o-Xylene	95-47-6	360	1800	2200	180000
Propylene	115-07-1	1000	1800	3500	Not Detected U
Styrene	100-42-5	300	1800	2200	Not Detected U
Tetrachloroethene	127-18-4	1100	2800	3500	Not Detected U
Tetrahydrofuran	109-99-9	440	1200	1500	Not Detected U
Toluene	108-88-3	360	1600	1900	2600000
Total Xylene	1330-20-7	NA	D	4500	780000
Trichloroethene	79-01-6	510	2200	2800	Not Detected U
Vinyl Chloride	75-01-4	460	1000	1300	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	10/13/20 11:50 PM
Lab ID:	2010075A-12A	Dilution Factor:	103
Date/Time Collected:	9/29/20 11:15 AM	Instrument/Filename:	msd14.i / 14101338
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	130
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	104

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	10/13/20 06:52 PM
Lab ID:	2010075A-13A	Dilution Factor:	68.0
Date/Time Collected:	9/29/20 11:28 AM	Instrument/File Name:	msd14.i / 14101325
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	280	1100	1400	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	2100	5000	10000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	180	1300	1700	120000
1,2-Dibromoethane (EDB)	106-93-4	460	2100	2600	8400
1,2-Dichlorobenzene	95-50-1	440	1600	2000	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	220	1300	1700	36000
1,3-Butadiene	106-99-0	310	600	750	Not Detected U
1,4-Dioxane	123-91-1	1500	2400	4900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	1200	2000	4000	9900
2-Hexanone	591-78-6	1300	2800	5600	Not Detected U
2-Propanol	67-63-0	920	1700	3300	31000
4-Methyl-2-pentanone	108-10-1	700	1100	1400	Not Detected U
Acetone	67-64-1	1200	1600	3200	240000
Benzene	71-43-2	160	870	1100	1800
Bromodichloromethane	75-27-4	420	1800	2300	Not Detected U
Bromoform	75-25-2	730	2800	3500	Not Detected U
Carbon Disulfide	75-15-0	1100	2100	4200	Not Detected U
Carbon Tetrachloride	56-23-5	530	1700	2100	Not Detected U
Chloroethane	75-00-3	1300	1800	3600	Not Detected U
Chloroform	67-66-3	270	1300	1700	Not Detected U
Chloromethane	74-87-3	890	1400	2800	Not Detected U
Cyclohexane	110-82-7	250	940	1200	12000
Dibromochloromethane	124-48-1	500	2300	2900	Not Detected U
Ethanol	64-17-5	1600	1600	2600	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	10/13/20 06:52 PM
Lab ID:	2010075A-13A	Dilution Factor:	68.0
Date/Time Collected:	9/29/20 11:28 AM	Instrument/File Name:	msd14.i / 14101325
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	4900	Not Detected
Ethyl Benzene	100-41-4	280	1200	1500	250000
Freon 11	75-69-4	260	1500	1900	Not Detected U
Freon 113	76-13-1	610	2100	2600	Not Detected U
Freon 12	75-71-8	210	1300	1700	Not Detected U
Heptane	142-82-5	490	1100	1400	680000
Hexane	110-54-3	270	960	1200	2000
m,p-Xylene	108-38-3	300	1200	1500	610000
Methylene Chloride	75-09-2	1800	2400	4700	Not Detected U
Naphthalene	91-20-3	270	710	7100	6500 J
o-Xylene	95-47-6	240	1200	1500	160000
Propylene	115-07-1	670	1200	2300	Not Detected U
Styrene	100-42-5	200	1200	1400	Not Detected U
Tetrachloroethene	127-18-4	700	1800	2300	Not Detected U
Tetrahydrofuran	109-99-9	290	800	1000	Not Detected U
Toluene	108-88-3	240	1000	1300	1500000
Total Xylene	1330-20-7	NA	D	3000	770000
Trichloroethene	79-01-6	340	1500	1800	Not Detected U
Vinyl Chloride	75-01-4	300	700	870	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	10/13/20 06:52 PM
Lab ID:	2010075A-13A	Dilution Factor:	68.0
Date/Time Collected:	9/29/20 11:28 AM	Instrument/Filename:	msd14.i / 14101325
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	107
4-Bromofluorobenzene	460-00-4	75-118	101
Toluene-d8	2037-26-5	84-115	106

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	10/13/20 06:09 PM
Lab ID:	2010075A-14A	Dilution Factor:	53.8
Date/Time Collected:	9/29/20 11:42 AM	Instrument/File Name:	msd14.i / 14101323
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	220	870	1100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1600	4000	8000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	140	1000	1300	110000
1,2-Dibromoethane (EDB)	106-93-4	360	1600	2100	7500
1,2-Dichlorobenzene	95-50-1	350	1300	1600	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	180	1000	1300	35000
1,3-Butadiene	106-99-0	240	480	600	Not Detected U
1,4-Dioxane	123-91-1	1200	1900	3900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	930	1600	3200	22000
2-Hexanone	591-78-6	1000	2200	4400	Not Detected U
2-Propanol	67-63-0	730	1300	2600	36000
4-Methyl-2-pentanone	108-10-1	560	880	1100	Not Detected U
Acetone	67-64-1	950	1300	2600	300000
Benzene	71-43-2	130	690	860	17000
Bromodichloromethane	75-27-4	340	1400	1800	Not Detected U
Bromoform	75-25-2	580	2200	2800	Not Detected U
Carbon Disulfide	75-15-0	840	1700	3400	Not Detected U
Carbon Tetrachloride	56-23-5	420	1400	1700	Not Detected U
Chloroethane	75-00-3	1100	1400	2800	Not Detected U
Chloroform	67-66-3	210	1000	1300	Not Detected U
Chloromethane	74-87-3	700	1100	2200	Not Detected U
Cyclohexane	110-82-7	200	740	920	53000
Dibromochloromethane	124-48-1	390	1800	2300	Not Detected U
Ethanol	64-17-5	1200	1200	2000	2000

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	10/13/20 06:09 PM
Lab ID:	2010075A-14A	Dilution Factor:	53.8
Date/Time Collected:	9/29/20 11:42 AM	Instrument/Filename:	msd14.i / 14101323
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	3900	Not Detected
Ethyl Benzene	100-41-4	220	930	1200	280000
Freon 11	75-69-4	200	1200	1500	Not Detected U
Freon 113	76-13-1	490	1600	2100	Not Detected U
Freon 12	75-71-8	170	1100	1300	Not Detected U
Heptane	142-82-5	390	880	1100	270000
Hexane	110-54-3	210	760	950	31000
m,p-Xylene	108-38-3	240	930	1200	740000
Methylene Chloride	75-09-2	1400	1900	3700	Not Detected U
Naphthalene	91-20-3	220	560	5600	4300 J
o-Xylene	95-47-6	190	930	1200	200000
Propylene	115-07-1	530	920	1800	Not Detected U
Styrene	100-42-5	160	920	1100	Not Detected U
Tetrachloroethene	127-18-4	550	1400	1800	Not Detected U
Tetrahydrofuran	109-99-9	230	630	790	Not Detected U
Toluene	108-88-3	190	810	1000	860000
Total Xylene	1330-20-7	NA	D	2300	940000
Trichloroethene	79-01-6	270	1200	1400	Not Detected U
Vinyl Chloride	75-01-4	240	550	690	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	10/13/20 06:09 PM
Lab ID:	2010075A-14A	Dilution Factor:	53.8
Date/Time Collected:	9/29/20 11:42 AM	Instrument/Filename:	msd14.i / 14101323
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	104
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	107

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270 Lab Duplicate	Date/Time Analyzed:	10/13/20 06:30 PM
Lab ID:	2010075A-14AA	Dilution Factor:	53.8
Date/Time Collected:	9/29/20 11:42 AM	Instrument/File Name:	msd14.i / 14101324
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	220	870	1100	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	1600	4000	8000	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	140	1000	1300	120000
1,2-Dibromoethane (EDB)	106-93-4	360	1600	2100	7200
1,2-Dichlorobenzene	95-50-1	350	1300	1600	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	180	1000	1300	37000
1,3-Butadiene	106-99-0	240	480	600	Not Detected U
1,4-Dioxane	123-91-1	1200	1900	3900	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	930	1600	3200	22000
2-Hexanone	591-78-6	1000	2200	4400	Not Detected U
2-Propanol	67-63-0	730	1300	2600	36000
4-Methyl-2-pentanone	108-10-1	560	880	1100	Not Detected U
Acetone	67-64-1	950	1300	2600	310000
Benzene	71-43-2	130	690	860	17000
Bromodichloromethane	75-27-4	340	1400	1800	Not Detected U
Bromoform	75-25-2	580	2200	2800	Not Detected U
Carbon Disulfide	75-15-0	840	1700	3400	Not Detected U
Carbon Tetrachloride	56-23-5	420	1400	1700	Not Detected U
Chloroethane	75-00-3	1100	1400	2800	Not Detected U
Chloroform	67-66-3	210	1000	1300	Not Detected U
Chloromethane	74-87-3	700	1100	2200	Not Detected U
Cyclohexane	110-82-7	200	740	920	54000
Dibromochloromethane	124-48-1	390	1800	2300	Not Detected U
Ethanol	64-17-5	1200	1200	2000	2100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270 Lab Duplicate	Date/Time Analyzed:	10/13/20 06:30 PM
Lab ID:	2010075A-14AA	Dilution Factor:	53.8
Date/Time Collected:	9/29/20 11:42 AM	Instrument/File Name:	msd14.i / 14101324
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	3900	Not Detected
Ethyl Benzene	100-41-4	220	930	1200	280000
Freon 11	75-69-4	200	1200	1500	Not Detected U
Freon 113	76-13-1	490	1600	2100	Not Detected U
Freon 12	75-71-8	170	1100	1300	Not Detected U
Heptane	142-82-5	390	880	1100	270000
Hexane	110-54-3	210	760	950	31000
m,p-Xylene	108-38-3	240	930	1200	740000
Methylene Chloride	75-09-2	1400	1900	3700	Not Detected U
Naphthalene	91-20-3	220	560	5600	7500 J
o-Xylene	95-47-6	190	930	1200	210000
Propylene	115-07-1	530	920	1800	Not Detected U
Styrene	100-42-5	160	920	1100	Not Detected U
Tetrachloroethene	127-18-4	550	1400	1800	Not Detected U
Tetrahydrofuran	109-99-9	230	630	790	Not Detected U
Toluene	108-88-3	190	810	1000	870000
Total Xylene	1330-20-7	NA	D	2300	950000
Trichloroethene	79-01-6	270	1200	1400	Not Detected U
Vinyl Chloride	75-01-4	240	550	690	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	KAFB-106V2-270 Lab Duplicate	Date/Time Analyzed:	10/13/20 06:30 PM
Lab ID:	2010075A-14AA	Dilution Factor:	53.8
Date/Time Collected:	9/29/20 11:42 AM	Instrument/Filename:	msd14.i / 14101324
Media:	6 Liter Summa Canister (100% SIM certifie		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	105
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	105

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/13/20 09:42 AM
Lab ID:	2010075A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101306a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4.2	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2.6	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	6.4	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3.3	20	24	Not Detected U
1,3-Butadiene	106-99-0	4.6	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	22	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	17	29	59	Not Detected U
2-Hexanone	591-78-6	19	41	82	Not Detected U
2-Propanol	67-63-0	14	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	18	24	48	Not Detected U
Benzene	71-43-2	2.4	13	16	Not Detected U
Bromodichloromethane	75-27-4	6.2	27	34	Not Detected U
Bromoform	75-25-2	11	41	52	Not Detected U
Carbon Disulfide	75-15-0	16	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.9	25	31	Not Detected U
Chloroethane	75-00-3	20	26	53	Not Detected U
Chloroform	67-66-3	4.0	20	24	Not Detected U
Chloromethane	74-87-3	13	21	41	Not Detected U
Cyclohexane	110-82-7	3.7	14	17	Not Detected U
Dibromochloromethane	124-48-1	7.3	34	42	Not Detected U
Ethanol	64-17-5	23	23	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/13/20 09:42 AM
Lab ID:	2010075A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101306a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.1	17	22	Not Detected U
Freon 11	75-69-4	3.8	22	28	Not Detected U
Freon 113	76-13-1	9.0	31	38	Not Detected U
Freon 12	75-71-8	3.1	20	25	Not Detected U
Heptane	142-82-5	7.2	16	20	Not Detected U
Hexane	110-54-3	4.0	14	18	Not Detected U
m,p-Xylene	108-38-3	4.4	17	22	Not Detected U
Methylene Chloride	75-09-2	27	35	69	Not Detected U
Naphthalene	91-20-3	4.0	10	100	Not Detected UJ
o-Xylene	95-47-6	3.5	17	22	Not Detected U
Propylene	115-07-1	9.9	17	34	Not Detected U
Styrene	100-42-5	2.9	17	21	Not Detected U
Tetrachloroethene	127-18-4	10	27	34	Not Detected U
Tetrahydrofuran	109-99-9	4.2	12	15	Not Detected U
Toluene	108-88-3	3.5	15	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	5.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.5	10	13	Not Detected U

U = The analyte was not detected above the MDL.

UJ = Analyte associated with low bias in the CCV.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/13/20 09:42 AM
Lab ID:	2010075A-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101306a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	98
4-Bromofluorobenzene	460-00-4	75-118	95
Toluene-d8	2037-26-5	84-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/14/20 12:55 PM
Lab ID:	2010075A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101407a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethane	75-34-3	4.2	16	20	Not Detected U
1,2,4-Trichlorobenzene	120-82-1	30	74	150	Not Detected U
1,2,4-Trimethylbenzene	95-63-6	2.6	20	24	Not Detected U
1,2-Dibromoethane (EDB)	106-93-4	6.8	31	38	Not Detected U
1,2-Dichlorobenzene	95-50-1	6.4	24	30	Not Detected U
1,3,5-Trimethylbenzene	108-67-8	3.3	20	24	Not Detected U
1,3-Butadiene	106-99-0	4.6	8.8	11	Not Detected U
1,4-Dioxane	123-91-1	22	36	72	Not Detected U
2-Butanone (Methyl Ethyl Ketone)	78-93-3	17	29	59	Not Detected U
2-Hexanone	591-78-6	19	41	82	Not Detected U
2-Propanol	67-63-0	14	24	49	Not Detected U
4-Methyl-2-pentanone	108-10-1	10	16	20	Not Detected U
Acetone	67-64-1	18	24	48	Not Detected U
Benzene	71-43-2	2.4	13	16	Not Detected U
Bromodichloromethane	75-27-4	6.2	27	34	Not Detected U
Bromoform	75-25-2	11	41	52	Not Detected U
Carbon Disulfide	75-15-0	16	31	62	Not Detected U
Carbon Tetrachloride	56-23-5	7.9	25	31	Not Detected U
Chloroethane	75-00-3	20	26	53	Not Detected U
Chloroform	67-66-3	4.0	20	24	Not Detected U
Chloromethane	74-87-3	13	21	41	Not Detected U
Cyclohexane	110-82-7	3.7	14	17	Not Detected U
Dibromochloromethane	124-48-1	7.3	34	42	Not Detected U
Ethanol	64-17-5	23	23	38	Not Detected U

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/14/20 12:55 PM
Lab ID:	2010075A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14101407a
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethyl Acetate	141-78-6	NA	D	72	Not Detected
Ethyl Benzene	100-41-4	4.1	17	22	Not Detected U
Freon 11	75-69-4	3.8	22	28	Not Detected U
Freon 113	76-13-1	9.0	31	38	Not Detected U
Freon 12	75-71-8	3.1	20	25	Not Detected U
Heptane	142-82-5	7.2	16	20	Not Detected U
Hexane	110-54-3	4.0	14	18	Not Detected U
m,p-Xylene	108-38-3	4.4	17	22	Not Detected U
Methylene Chloride	75-09-2	27	35	69	Not Detected U
Naphthalene	91-20-3	4.0	10	100	4.2 J
o-Xylene	95-47-6	3.5	17	22	Not Detected U
Propylene	115-07-1	9.9	17	34	Not Detected U
Styrene	100-42-5	2.9	17	21	Not Detected U
Tetrachloroethene	127-18-4	10	27	34	Not Detected U
Tetrahydrofuran	109-99-9	4.2	12	15	Not Detected U
Toluene	108-88-3	3.5	15	19	Not Detected U
Total Xylene	1330-20-7	NA	D	43	Not Detected
Trichloroethene	79-01-6	5.0	21	27	Not Detected U
Vinyl Chloride	75-01-4	4.5	10	13	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
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EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/14/20 12:55 PM
Lab ID:	2010075A-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101407a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	96
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/13/20 07:07 AM
Lab ID:	2010075A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	99
1,2,4-Trichlorobenzene	120-82-1	96
1,2,4-Trimethylbenzene	95-63-6	104
1,2-Dibromoethane (EDB)	106-93-4	99
1,2-Dichlorobenzene	95-50-1	109
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	99
1,4-Dioxane	123-91-1	97
2-Butanone (Methyl Ethyl Ketone)	78-93-3	90
2-Hexanone	591-78-6	84
2-Propanol	67-63-0	82
4-Methyl-2-pentanone	108-10-1	75
Acetone	67-64-1	96
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	107
Bromoform	75-25-2	100
Carbon Disulfide	75-15-0	100
Carbon Tetrachloride	56-23-5	99
Chloroethane	75-00-3	87
Chloroform	67-66-3	102
Chloromethane	74-87-3	98
Cyclohexane	110-82-7	91
Dibromochloromethane	124-48-1	102
Ethanol	64-17-5	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/13/20 07:07 AM
Lab ID:	2010075A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101302a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	89
Ethyl Benzene	100-41-4	96
Freon 11	75-69-4	111
Freon 113	76-13-1	101
Freon 12	75-71-8	99
Heptane	142-82-5	93
Hexane	110-54-3	92
m,p-Xylene	108-38-3	100
Methylene Chloride	75-09-2	102
Naphthalene	91-20-3	68 Q
o-Xylene	95-47-6	97
Propylene	115-07-1	96
Styrene	100-42-5	94
Tetrachloroethene	127-18-4	103
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	99
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	102
Vinyl Chloride	75-01-4	98

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/13/20 07:07 AM
Lab ID:	2010075A-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101302a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	102
Toluene-d8	2037-26-5	84-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 12:35 AM
Lab ID:	2010075A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101340
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	100
1,2,4-Trichlorobenzene	120-82-1	118
1,2,4-Trimethylbenzene	95-63-6	107
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	110
1,3,5-Trimethylbenzene	108-67-8	106
1,3-Butadiene	106-99-0	97
1,4-Dioxane	123-91-1	98
2-Butanone (Methyl Ethyl Ketone)	78-93-3	95
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	86
4-Methyl-2-pentanone	108-10-1	79
Acetone	67-64-1	119
Benzene	71-43-2	104
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	92
Carbon Disulfide	75-15-0	97
Carbon Tetrachloride	56-23-5	99
Chloroethane	75-00-3	96
Chloroform	67-66-3	102
Chloromethane	74-87-3	94
Cyclohexane	110-82-7	99
Dibromochloromethane	124-48-1	95
Ethanol	64-17-5	86

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 12:35 AM
Lab ID:	2010075A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101340
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	96
Freon 11	75-69-4	113
Freon 113	76-13-1	110
Freon 12	75-71-8	102
Heptane	142-82-5	98
Hexane	110-54-3	99
m,p-Xylene	108-38-3	102
Methylene Chloride	75-09-2	104
Naphthalene	91-20-3	96
o-Xylene	95-47-6	95
Propylene	115-07-1	95
Styrene	100-42-5	93
Tetrachloroethene	127-18-4	104
Tetrahydrofuran	109-99-9	85
Toluene	108-88-3	106
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	98

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 12:35 AM
Lab ID:	2010075A-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101340
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	101
Toluene-d8	2037-26-5	84-115	99

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 11:10 AM
Lab ID:	2010075A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	96
1,2,4-Trichlorobenzene	120-82-1	80
1,2,4-Trimethylbenzene	95-63-6	98
1,2-Dibromoethane (EDB)	106-93-4	100
1,2-Dichlorobenzene	95-50-1	104
1,3,5-Trimethylbenzene	108-67-8	100
1,3-Butadiene	106-99-0	97
1,4-Dioxane	123-91-1	95
2-Butanone (Methyl Ethyl Ketone)	78-93-3	92
2-Hexanone	591-78-6	92
2-Propanol	67-63-0	85
4-Methyl-2-pentanone	108-10-1	84
Acetone	67-64-1	100
Benzene	71-43-2	100
Bromodichloromethane	75-27-4	104
Bromoform	75-25-2	95
Carbon Disulfide	75-15-0	98
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	95
Chloroform	67-66-3	102
Chloromethane	74-87-3	95
Cyclohexane	110-82-7	94
Dibromochloromethane	124-48-1	97
Ethanol	64-17-5	87

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 11:10 AM
Lab ID:	2010075A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101404a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	92
Ethyl Benzene	100-41-4	95
Freon 11	75-69-4	112
Freon 113	76-13-1	105
Freon 12	75-71-8	98
Heptane	142-82-5	94
Hexane	110-54-3	93
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	102
Naphthalene	91-20-3	63 Q
o-Xylene	95-47-6	93
Propylene	115-07-1	94
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	88
Toluene	108-88-3	98
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	95

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	97

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 11:10 AM
Lab ID:	2010075A-16C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101404a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	102
Toluene-d8	2037-26-5	84-115	101

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 10:06 PM
Lab ID:	2010075A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101430
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	97
1,2,4-Trichlorobenzene	120-82-1	100
1,2,4-Trimethylbenzene	95-63-6	108
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	110
1,3,5-Trimethylbenzene	108-67-8	103
1,3-Butadiene	106-99-0	98
1,4-Dioxane	123-91-1	102
2-Butanone (Methyl Ethyl Ketone)	78-93-3	88
2-Hexanone	591-78-6	91
2-Propanol	67-63-0	84
4-Methyl-2-pentanone	108-10-1	78
Acetone	67-64-1	103
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	106
Bromoform	75-25-2	97
Carbon Disulfide	75-15-0	98
Carbon Tetrachloride	56-23-5	98
Chloroethane	75-00-3	88
Chloroform	67-66-3	103
Chloromethane	74-87-3	96
Cyclohexane	110-82-7	100
Dibromochloromethane	124-48-1	100
Ethanol	64-17-5	88

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 10:06 PM
Lab ID:	2010075A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101430
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	97
Freon 11	75-69-4	114
Freon 113	76-13-1	108
Freon 12	75-71-8	101
Heptane	142-82-5	100
Hexane	110-54-3	98
m,p-Xylene	108-38-3	103
Methylene Chloride	75-09-2	106
Naphthalene	91-20-3	76
o-Xylene	95-47-6	97
Propylene	115-07-1	96
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	106
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	102
Total Xylene	1330-20-7	100
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	96

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	CCV	Date/Time Analyzed:	10/14/20 10:06 PM
Lab ID:	2010075A-16D	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101430
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	101
Toluene-d8	2037-26-5	84-115	100

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/13/20 07:38 AM
Lab ID:	2010075A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/File Name:	msd14.i / 14101303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	94
1,2,4-Trichlorobenzene	120-82-1	121
1,2,4-Trimethylbenzene	95-63-6	107
1,2-Dibromoethane (EDB)	106-93-4	96
1,2-Dichlorobenzene	95-50-1	104
1,3,5-Trimethylbenzene	108-67-8	101
1,3-Butadiene	106-99-0	94
1,4-Dioxane	123-91-1	98
2-Butanone (Methyl Ethyl Ketone)	78-93-3	91
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	86
4-Methyl-2-pentanone	108-10-1	80
Acetone	67-64-1	92
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	105
Bromoform	75-25-2	100
Carbon Disulfide	75-15-0	97
Carbon Tetrachloride	56-23-5	99
Chloroethane	75-00-3	93
Chloroform	67-66-3	100
Chloromethane	74-87-3	93
Cyclohexane	110-82-7	90
Dibromochloromethane	124-48-1	97
Ethanol	64-17-5	77

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/13/20 07:38 AM
Lab ID:	2010075A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101303a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	93
Freon 11	75-69-4	109
Freon 113	76-13-1	102
Freon 12	75-71-8	99
Heptane	142-82-5	92
Hexane	110-54-3	93
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	97
Naphthalene	91-20-3	96
o-Xylene	95-47-6	93
Propylene	115-07-1	92
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	98
Tetrahydrofuran	109-99-9	84
Toluene	108-88-3	95
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	101
Vinyl Chloride	75-01-4	94

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/13/20 07:38 AM
Lab ID:	2010075A-17A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101303a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	98
Toluene-d8	2037-26-5	84-115	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/13/20 08:04 AM
Lab ID:	2010075A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101304a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	98
1,2,4-Trichlorobenzene	120-82-1	151 Q
1,2,4-Trimethylbenzene	95-63-6	116
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	112
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	98
1,4-Dioxane	123-91-1	101
2-Butanone (Methyl Ethyl Ketone)	78-93-3	92
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	83
Acetone	67-64-1	96
Benzene	71-43-2	102
Bromodichloromethane	75-27-4	107
Bromoform	75-25-2	104
Carbon Disulfide	75-15-0	99
Carbon Tetrachloride	56-23-5	102
Chloroethane	75-00-3	99
Chloroform	67-66-3	102
Chloromethane	74-87-3	96
Cyclohexane	110-82-7	94
Dibromochloromethane	124-48-1	100
Ethanol	64-17-5	80

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/13/20 08:04 AM
Lab ID:	2010075A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101304a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	100
Freon 11	75-69-4	111
Freon 113	76-13-1	102
Freon 12	75-71-8	102
Heptane	142-82-5	93
Hexane	110-54-3	94
m,p-Xylene	108-38-3	99
Methylene Chloride	75-09-2	105
Naphthalene	91-20-3	120
o-Xylene	95-47-6	96
Propylene	115-07-1	92
Styrene	100-42-5	95
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	97
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	98

Q = Exceeds Quality Control limits.

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/13/20 08:04 AM
Lab ID:	2010075A-17AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101304a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	104
Toluene-d8	2037-26-5	84-115	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/14/20 12:08 PM
Lab ID:	2010075A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101405a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	94
1,2,4-Trichlorobenzene	120-82-1	118
1,2,4-Trimethylbenzene	95-63-6	106
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	103
1,3,5-Trimethylbenzene	108-67-8	98
1,3-Butadiene	106-99-0	89
1,4-Dioxane	123-91-1	98
2-Butanone (Methyl Ethyl Ketone)	78-93-3	88
2-Hexanone	591-78-6	94
2-Propanol	67-63-0	86
4-Methyl-2-pentanone	108-10-1	80
Acetone	67-64-1	95
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	103
Bromoform	75-25-2	98
Carbon Disulfide	75-15-0	95
Carbon Tetrachloride	56-23-5	101
Chloroethane	75-00-3	104
Chloroform	67-66-3	99
Chloromethane	74-87-3	91
Cyclohexane	110-82-7	95
Dibromochloromethane	124-48-1	98
Ethanol	64-17-5	72

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/14/20 12:08 PM
Lab ID:	2010075A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101405a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	96
Freon 11	75-69-4	108
Freon 113	76-13-1	103
Freon 12	75-71-8	97
Heptane	142-82-5	88
Hexane	110-54-3	93
m,p-Xylene	108-38-3	99
Methylene Chloride	75-09-2	100
Naphthalene	91-20-3	94
o-Xylene	95-47-6	96
Propylene	115-07-1	91
Styrene	100-42-5	92
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	82
Toluene	108-88-3	95
Total Xylene	1330-20-7	98
Trichloroethene	79-01-6	103
Vinyl Chloride	75-01-4	91

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/14/20 12:08 PM
Lab ID:	2010075A-17B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101405a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	100
Toluene-d8	2037-26-5	84-115	100

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/14/20 12:31 PM
Lab ID:	2010075A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101406a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethane	75-34-3	96
1,2,4-Trichlorobenzene	120-82-1	104
1,2,4-Trimethylbenzene	95-63-6	106
1,2-Dibromoethane (EDB)	106-93-4	101
1,2-Dichlorobenzene	95-50-1	101
1,3,5-Trimethylbenzene	108-67-8	99
1,3-Butadiene	106-99-0	93
1,4-Dioxane	123-91-1	99
2-Butanone (Methyl Ethyl Ketone)	78-93-3	95
2-Hexanone	591-78-6	97
2-Propanol	67-63-0	88
4-Methyl-2-pentanone	108-10-1	79
Acetone	67-64-1	96
Benzene	71-43-2	96
Bromodichloromethane	75-27-4	101
Bromoform	75-25-2	100
Carbon Disulfide	75-15-0	97
Carbon Tetrachloride	56-23-5	101
Chloroethane	75-00-3	100
Chloroform	67-66-3	102
Chloromethane	74-87-3	90
Cyclohexane	110-82-7	96
Dibromochloromethane	124-48-1	99
Ethanol	64-17-5	80

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/14/20 12:31 PM
Lab ID:	2010075A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101406a
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethyl Acetate	141-78-6	Not Spiked
Ethyl Benzene	100-41-4	96
Freon 11	75-69-4	110
Freon 113	76-13-1	104
Freon 12	75-71-8	100
Heptane	142-82-5	92
Hexane	110-54-3	96
m,p-Xylene	108-38-3	98
Methylene Chloride	75-09-2	99
Naphthalene	91-20-3	84
o-Xylene	95-47-6	93
Propylene	115-07-1	92
Styrene	100-42-5	94
Tetrachloroethene	127-18-4	102
Tetrahydrofuran	109-99-9	86
Toluene	108-88-3	93
Total Xylene	1330-20-7	96
Trichloroethene	79-01-6	100
Vinyl Chloride	75-01-4	92

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	73-141	98

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS

KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/14/20 12:31 PM
Lab ID:	2010075A-17BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd14.i / 14101406a
Media:	NA - Not Applicable		

Surrogates	CAS#	Limits	%Recovery
4-Bromofluorobenzene	460-00-4	75-118	101
Toluene-d8	2037-26-5	84-115	99

* % Recovery is calculated using unrounded analytical results.

10/15/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2010075B

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/2/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2010075B

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/02/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/15/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified TO-3	8.5 "Hg	5.0 psi
02A	KAFB-106V1-113	Modified TO-3	10.0 "Hg	5.0 psi
03A	KAFB-106V1-160	Modified TO-3	9.0 "Hg	5.0 psi
04A	KAFB-106V1-160-DUP	Modified TO-3	9.5 "Hg	5.0 psi
05A	KAFB-106V1-217	Modified TO-3	11.0 "Hg	5.0 psi
06A	KAFB-106V1-252	Modified TO-3	9.0 "Hg	5.0 psi
07A	KAFB-106V1-263	Modified TO-3	10.0 "Hg	5.0 psi
08A	KAFB-106V2-102	Modified TO-3	10.5 "Hg	5.0 psi
09A	KAFB-106V2-117	Modified TO-3	12.0 "Hg	5.0 psi
10A	KAFB-106V2-117-DUP	Modified TO-3	12.5 "Hg	5.0 psi
10AA	KAFB-106V2-117-DUP Lab Duplicate	Modified TO-3	12.5 "Hg	5.0 psi
11A	KAFB-106V2-160	Modified TO-3	10.0 "Hg	5.0 psi
12A	KAFB-106V2-217	Modified TO-3	10.5 "Hg	5.0 psi
13A	KAFB-106V2-252	Modified TO-3	10.4 "Hg	4.9 psi
13AA	KAFB-106V2-252 Lab Duplicate	Modified TO-3	10.4 "Hg	4.9 psi
14A	KAFB-106V2-270	Modified TO-3	11.4 "Hg	4.9 psi
15A	Lab Blank	Modified TO-3	NA	NA
15B	Lab Blank	Modified TO-3	NA	NA
16A	LCS	Modified TO-3	NA	NA
16AA	LCSD	Modified TO-3	NA	NA
16B	LCS	Modified TO-3	NA	NA
16BB	LCSD	Modified TO-3	NA	NA

CERTIFIED BY:



Technical Director

DATE: 10/15/20

Certification numbers: AZ Licensure AZ0775, FL NELAP - E87680, LA NELAP - 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP - CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
DoD QSM - TO-3
EA Engineering
Workorder# 2010075B**

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 02, 2020. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. A molecular weight of 100 is used to convert the TPH ppmv result to ug/m3. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>TO-3</i>	<i>ATL Modifications</i>
Sample Collection	In-line field method	Collection of sample in specially treated canisters or alternative inert containers for transport to and analysis by an off-site laboratory.
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch <=/= 20 samples.
Minimum Detection Limit (MDL)	Calculated using the equation $DL = A + 3.3S$, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Moisture Control	Nafion system	Sorbent system

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

TPH (Gasoline Range) and Fluorobenzene (FID) were manually integrated in sample KAFB-106V1-217 and KAFB-106V1-263.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	10/8/20 05:35 PM
Lab ID:	2010075B-01A	Dilution Factor:	1870
Date/Time Collected:	9/29/20 08:34 AM	Instrument/Filename:	gcd.i / d100809
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	54000	92000	190000	110000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	122

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	10/8/20 06:19 PM
Lab ID:	2010075B-02A	Dilution Factor:	2010
Date/Time Collected:	9/29/20 08:50 AM	Instrument/Filename:	gcd.i / d100810
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	58000	99000	200000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	124

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	10/8/20 07:01 PM
Lab ID:	2010075B-03A	Dilution Factor:	1270
Date/Time Collected:	9/29/20 09:02 AM	Instrument/Filename:	gcd.i / d100811
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	36000	62000	130000	34000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	113

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	10/8/20 07:39 PM
Lab ID:	2010075B-04A	Dilution Factor:	1310
Date/Time Collected:	9/29/20 09:09 AM	Instrument/Filename:	gcd.i / d100812
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	38000	64000	130000	38000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	112

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	10/8/20 08:20 PM
Lab ID:	2010075B-05A	Dilution Factor:	2120
Date/Time Collected:	9/29/20 09:25 AM	Instrument/Filename:	gcd.i / d100813
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	61000	100000	220000	85000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	118

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	10/8/20 09:03 PM
Lab ID:	2010075B-06A	Dilution Factor:	1910
Date/Time Collected:	9/29/20 09:38 AM	Instrument/Filename:	gcd.i / d100814
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	55000	94000	200000	64000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	119

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	10/12/20 11:02 AM
Lab ID:	2010075B-07A	Dilution Factor:	4020
Date/Time Collected:	9/29/20 09:51 AM	Instrument/Filename:	gcd.i / d101206
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	200000	410000	130000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	126

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	10/8/20 10:20 PM
Lab ID:	2010075B-08A	Dilution Factor:	4120
Date/Time Collected:	9/29/20 10:24 AM	Instrument/Filename:	gcd.i / d100816
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	120000	200000	420000	160000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	125

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	10/12/20 11:47 AM
Lab ID:	2010075B-09A	Dilution Factor:	4460
Date/Time Collected:	9/29/20 10:37 AM	Instrument/Filename:	gcd.i / d101207
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	220000	460000	270000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	122

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	10/12/20 12:54 PM
Lab ID:	2010075B-10A	Dilution Factor:	4600
Date/Time Collected:	9/29/20 10:45 AM	Instrument/Filename:	gcd.i / d101208
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	220000	470000	280000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	122

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP Lab Duplicate	Date/Time Analyzed:	10/12/20 02:09 PM
Lab ID:	2010075B-10AA	Dilution Factor:	4600
Date/Time Collected:	9/29/20 10:45 AM	Instrument/Filename:	gcd.i / d101210
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	130000	220000	470000	270000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	123

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	10/8/20 02:57 PM
Lab ID:	2010075B-11A	Dilution Factor:	100
Date/Time Collected:	9/29/20 11:03 AM	Instrument/Filename:	gcd.i / d100805
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	2900	4900	10000	5300000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
 KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	10/12/20 01:32 PM
Lab ID:	2010075B-12A	Dilution Factor:	2580
Date/Time Collected:	9/29/20 11:15 AM	Instrument/Filename:	gcd.i / d101209
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	74000	130000	260000	150000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	117

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	10/8/20 04:17 PM
Lab ID:	2010075B-13A	Dilution Factor:	816
Date/Time Collected:	9/29/20 11:28 AM	Instrument/Filename:	gcd.i / d100807
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	23000	40000	83000	34000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	107

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-252 Lab Duplicate	Date/Time Analyzed:	10/8/20 04:57 PM
Lab ID:	2010075B-13AA	Dilution Factor:	816
Date/Time Collected:	9/29/20 11:28 AM	Instrument/Filename:	gcd.i / d100808
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	23000	40000	83000	33000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	108

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	10/8/20 03:36 PM
Lab ID:	2010075B-14A	Dilution Factor:	860
Date/Time Collected:	9/29/20 11:42 AM	Instrument/Filename:	gcd.i / d100806
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	25000	42000	88000	27000000

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	102

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/8/20 01:51 PM
Lab ID:	2010075B-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d100804
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	29	49	100	38 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	92

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/12/20 10:20 AM
Lab ID:	2010075B-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d101205
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	9999-9999-208	29	49	100	40 J

J = Estimated value.

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	86

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/8/20 12:23 PM
Lab ID:	2010075B-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d100802
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		86

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	104

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/8/20 12:59 PM
Lab ID:	2010075B-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d100803
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		82

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	110

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/12/20 07:58 AM
Lab ID:	2010075B-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d101202
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		82

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	112

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-3 GC/PID/FID
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/12/20 08:42 AM
Lab ID:	2010075B-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gcd.i / d101203
Media:	NA - Not Applicable		

Compound	CAS#		%Recovery
TPH (Gasoline Range)	9999-9999-208		81

Surrogates	CAS#	Limits	%Recovery
Fluorobenzene (FID)	462-06-602	28-169	112

* % Recovery is calculated using unrounded analytical results.

10/15/2020

Ms. Pamela Moss

EA Engineering

7995 E. Prentice Ave

Suite 206E

Greenwood Village CO 80111

Project Name: KAFB Bioventing

Project #:

Workorder #: 2010075C

Dear Ms. Pamela Moss

The following report includes the data for the above referenced project for sample(s) received on 10/2/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1945 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 2010075C

Work Order Summary

CLIENT:	Ms. Pamela Moss EA Engineering 7995 E. Prentice Ave Suite 206E Greenwood Village, CO 80111	BILL TO:	Accounts Payable - Lewisville EA Engineering 405 S. Highway 121 Suite C-100 Lewisville, TX 75067
PHONE:	303-590-9143	P.O. #	19162
FAX:		PROJECT #	KAFB Bioventing
DATE RECEIVED:	10/02/2020	CONTACT:	Brian Whittaker
DATE COMPLETED:	10/15/2020		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	KAFB-106V1-102	Modified ASTM D-1945	8.5 "Hg	5 psi
02A	KAFB-106V1-113	Modified ASTM D-1945	10.0 "Hg	5 psi
03A	KAFB-106V1-160	Modified ASTM D-1945	9.0 "Hg	5 psi
04A	KAFB-106V1-160-DUP	Modified ASTM D-1945	9.5 "Hg	5 psi
05A	KAFB-106V1-217	Modified ASTM D-1945	11.0 "Hg	5 psi
06A	KAFB-106V1-252	Modified ASTM D-1945	9.0 "Hg	5 psi
07A	KAFB-106V1-263	Modified ASTM D-1945	10.0 "Hg	5 psi
08A	KAFB-106V2-102	Modified ASTM D-1945	10.5 "Hg	5 psi
09A	KAFB-106V2-117	Modified ASTM D-1945	12.0 "Hg	5 psi
10A	KAFB-106V2-117-DUP	Modified ASTM D-1945	12.5 "Hg	5 psi
11A	KAFB-106V2-160	Modified ASTM D-1945	10.0 "Hg	5 psi
11AA	KAFB-106V2-160 Lab Duplicate	Modified ASTM D-1945	10.0 "Hg	5 psi
12A	KAFB-106V2-217	Modified ASTM D-1945	10.5 "Hg	5 psi
13A	KAFB-106V2-252	Modified ASTM D-1945	10.4 "Hg	4.9 psi
14A	KAFB-106V2-270	Modified ASTM D-1945	11.4 "Hg	4.9 psi
15A	Lab Blank	Modified ASTM D-1945	NA	NA
15B	Lab Blank	Modified ASTM D-1945	NA	NA
16A	LCS	Modified ASTM D-1945	NA	NA
16AA	LCSD	Modified ASTM D-1945	NA	NA
16B	LCS	Modified ASTM D-1945	NA	NA
16BB	LCSD	Modified ASTM D-1945	NA	NA

CERTIFIED BY:



Technical Director

DATE: 10/15/20

Certification numbers: AZ Licensure AZ0775, FL NELAP - E87680, LA NELAP - 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP - CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
DoD QSM - ASTM D1945
EA Engineering
Workorder# 2010075C

Fourteen 6 Liter Summa Canister (100% SIM certified DOD5.1) samples were received on October 02, 2020. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

<i>Requirement</i>	<i>ASTM D1945</i>	<i>ATL Modifications</i>
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor with an acceptance criterion of %RSD \leq 15%. All target analytes must be within the linear range of calibration (with the exception of O ₂ , N ₂ , and C ₆ +
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C ₅ and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 85-115%. Normalization of data not performed.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A DoD QSM waiver has been established and approved between Eurofins Air Toxics and the client. A copy of the waiver is available upon request.

As per project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit.

Since Nitrogen is used to pressurize samples, the Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

The recovery for Carbon Dioxide in the ICV exceeded In-house generated control limits.

Methane was manually integrated in sample KAFB-106V1-252, KAFB-106V1-263 and KAFB-106V2-252.

Pentane was manually integrated in sample KAFB-106V2-270

Methane and Ethane were manually integrated in samples KAFB-106V1-102, KAFB-106V1-113, KAFB-106V1-160-DUP, KAFB-106V2-102, KAFB-106V2-117 and KAFB-106V2-117-DUP.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-102	Date/Time Analyzed:	10/13/20 02:10 PM
Lab ID:	2010075C-01A	Dilution Factor:	1.87
Date/Time Collected:	9/29/20 08:34 AM	Instrument/Filename:	gc10.i / 10101324
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000036	0.00016	0.0019	0.00017 J
Carbon Dioxide	124-38-9	0.0016	0.0071	0.019	0.81
Carbon Monoxide	630-08-0	0.0020	0.0071	0.019	Not Detected U
Ethane	74-84-0	0.000036	0.00016	0.0019	0.00031 J
Hydrogen	1333-74-0	0.0016	0.012	0.019	Not Detected U
Methane	74-82-8	0.000052	0.000094	0.00019	0.0015
Nitrogen	7727-37-9	0.10	0.10	0.19	79
Oxygen	7782-44-7	0.010	0.010	0.19	19
Pentane	109-66-0	0.000064	0.00016	0.0019	0.027
Propane	74-98-6	0.000047	0.00016	0.0019	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-113	Date/Time Analyzed:	10/13/20 02:57 PM
Lab ID:	2010075C-02A	Dilution Factor:	2.01
Date/Time Collected:	9/29/20 08:50 AM	Instrument/Filename:	gc10.i / 10101326
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.00038 J
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	1.2
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	0.00035 J
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	0.0013
Nitrogen	7727-37-9	0.11	0.11	0.20	78
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000068	0.00017	0.0020	0.037
Propane	74-98-6	0.000050	0.00017	0.0020	0.000082 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-160	Date/Time Analyzed:	10/13/20 03:44 PM
Lab ID:	2010075C-03A	Dilution Factor:	1.91
Date/Time Collected:	9/29/20 09:02 AM	Instrument/Filename:	gc10.i / 10101328
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000036	0.00016	0.0019	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0072	0.019	0.67
Carbon Monoxide	630-08-0	0.0020	0.0072	0.019	Not Detected U
Ethane	74-84-0	0.000036	0.00016	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0016	0.012	0.019	Not Detected U
Methane	74-82-8	0.000053	0.000096	0.00019	Not Detected U
Nitrogen	7727-37-9	0.10	0.10	0.19	80
Oxygen	7782-44-7	0.010	0.010	0.19	19
Pentane	109-66-0	0.000065	0.00016	0.0019	0.00039 J
Propane	74-98-6	0.000048	0.00016	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-160-DUP	Date/Time Analyzed:	10/13/20 04:36 PM
Lab ID:	2010075C-04A	Dilution Factor:	1.96
Date/Time Collected:	9/29/20 09:09 AM	Instrument/Filename:	gc10.i / 10101330
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000037	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0074	0.020	0.71
Carbon Monoxide	630-08-0	0.0021	0.0074	0.020	Not Detected U
Ethane	74-84-0	0.000037	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000055	0.000098	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	80
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000067	0.00017	0.0020	0.00041 J
Propane	74-98-6	0.000049	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-217	Date/Time Analyzed:	10/13/20 05:24 PM
Lab ID:	2010075C-05A	Dilution Factor:	2.12
Date/Time Collected:	9/29/20 09:25 AM	Instrument/Filename:	gc10.i / 10101332
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000040	0.00018	0.0021	Not Detected U
Carbon Dioxide	124-38-9	0.0018	0.0080	0.021	1.4
Carbon Monoxide	630-08-0	0.0022	0.0080	0.021	Not Detected U
Ethane	74-84-0	0.000040	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000059	0.00011	0.00021	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.21	80
Oxygen	7782-44-7	0.012	0.012	0.21	18
Pentane	109-66-0	0.000072	0.00018	0.0021	0.010
Propane	74-98-6	0.000053	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V1-252	Date/Time Analyzed:	10/13/20 06:15 PM
Lab ID:	2010075C-06A	Dilution Factor:	1.91
Date/Time Collected:	9/29/20 09:38 AM	Instrument/Filename:	gc10.i / 10101334
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000036	0.00016	0.0019	Not Detected U
Carbon Dioxide	124-38-9	0.0016	0.0072	0.019	0.22
Carbon Monoxide	630-08-0	0.0020	0.0072	0.019	Not Detected U
Ethane	74-84-0	0.000036	0.00016	0.0019	Not Detected U
Hydrogen	1333-74-0	0.0016	0.012	0.019	Not Detected U
Methane	74-82-8	0.000053	0.000096	0.00019	0.00020
Nitrogen	7727-37-9	0.10	0.10	0.19	79
Oxygen	7782-44-7	0.010	0.010	0.19	20
Pentane	109-66-0	0.000065	0.00016	0.0019	Not Detected U
Propane	74-98-6	0.000048	0.00016	0.0019	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V1-263	Date/Time Analyzed:	10/13/20 01:24 PM
Lab ID:	2010075C-07A	Dilution Factor:	2.01
Date/Time Collected:	9/29/20 09:51 AM	Instrument/Filename:	gc10.i / 10101322
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	0.000074 J
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	0.29
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	0.00031
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	20
Pentane	109-66-0	0.000068	0.00017	0.0020	0.00016 J
Propane	74-98-6	0.000050	0.00017	0.0020	0.000091 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-102	Date/Time Analyzed:	10/13/20 12:34 PM
Lab ID:	2010075C-08A	Dilution Factor:	2.06
Date/Time Collected:	9/29/20 10:24 AM	Instrument/Filename:	gc10.i / 10101320
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.00043 J
Carbon Dioxide	124-38-9	0.0017	0.0078	0.021	0.96
Carbon Monoxide	630-08-0	0.0022	0.0078	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	0.0019
Nitrogen	7727-37-9	0.11	0.11	0.21	79
Oxygen	7782-44-7	0.011	0.011	0.21	18
Pentane	109-66-0	0.000070	0.00018	0.0021	0.052
Propane	74-98-6	0.000052	0.00018	0.0021	0.000082 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

KAFB Bioventing

Client ID:	KAFB-106V2-117	Date/Time Analyzed:	10/13/20 11:35 AM
Lab ID:	2010075C-09A	Dilution Factor:	2.23
Date/Time Collected:	9/29/20 10:37 AM	Instrument/Filename:	gc10.i / 10101318
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000042	0.00019	0.0022	0.0021 J
Carbon Dioxide	124-38-9	0.0019	0.0085	0.022	2.0
Carbon Monoxide	630-08-0	0.0024	0.0085	0.022	Not Detected U
Ethane	74-84-0	0.000042	0.00019	0.0022	0.00022 J
Hydrogen	1333-74-0	0.0019	0.014	0.022	Not Detected U
Methane	74-82-8	0.000062	0.00011	0.00022	0.0020
Nitrogen	7727-37-9	0.12	0.12	0.22	77
Oxygen	7782-44-7	0.012	0.012	0.22	18
Pentane	109-66-0	0.000076	0.00019	0.0022	0.14
Propane	74-98-6	0.000056	0.00019	0.0022	0.00019 J

U = The analyte was not detected above the MDL.

J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-117-DUP	Date/Time Analyzed:	10/13/20 10:28 AM
Lab ID:	2010075C-10A	Dilution Factor:	2.30
Date/Time Collected:	9/29/20 10:45 AM	Instrument/Filename:	gc10.i / 10101316
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000044	0.00020	0.0023	0.0020 J
Carbon Dioxide	124-38-9	0.0019	0.0087	0.023	1.9
Carbon Monoxide	630-08-0	0.0024	0.0087	0.023	Not Detected U
Ethane	74-84-0	0.000044	0.00020	0.0023	0.00025 J
Hydrogen	1333-74-0	0.0020	0.014	0.023	Not Detected U
Methane	74-82-8	0.000064	0.00012	0.00023	0.0019
Nitrogen	7727-37-9	0.13	0.13	0.23	78
Oxygen	7782-44-7	0.013	0.013	0.23	18
Pentane	109-66-0	0.000078	0.00020	0.0023	0.13
Propane	74-98-6	0.000058	0.00020	0.0023	0.00020 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-160	Date/Time Analyzed:	10/13/20 08:06 AM
Lab ID:	2010075C-11A	Dilution Factor:	2.01
Date/Time Collected:	9/29/20 11:03 AM	Instrument/Filename:	gc10.i / 10101310
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	0.52
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	80
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000068	0.00017	0.0020	Not Detected U
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-160 Lab Duplicate	Date/Time Analyzed:	10/13/20 08:30 AM
Lab ID:	2010075C-11AA	Dilution Factor:	2.01
Date/Time Collected:	9/29/20 11:03 AM	Instrument/Filename:	gc10.i / 10101311
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000038	0.00017	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0017	0.0076	0.020	0.52
Carbon Monoxide	630-08-0	0.0021	0.0076	0.020	Not Detected U
Ethane	74-84-0	0.000038	0.00017	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0017	0.012	0.020	Not Detected U
Methane	74-82-8	0.000056	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	80
Oxygen	7782-44-7	0.011	0.011	0.20	19
Pentane	109-66-0	0.000068	0.00017	0.0020	Not Detected U
Propane	74-98-6	0.000050	0.00017	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-217	Date/Time Analyzed:	10/13/20 09:41 AM
Lab ID:	2010075C-12A	Dilution Factor:	2.06
Date/Time Collected:	9/29/20 11:15 AM	Instrument/Filename:	gc10.i / 10101314
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0021	0.000050 J
Carbon Dioxide	124-38-9	0.0017	0.0078	0.021	1.8
Carbon Monoxide	630-08-0	0.0022	0.0078	0.021	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0021	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.021	Not Detected U
Methane	74-82-8	0.000058	0.00010	0.00021	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.21	79
Oxygen	7782-44-7	0.011	0.011	0.21	18
Pentane	109-66-0	0.000070	0.00018	0.0021	0.018
Propane	74-98-6	0.000052	0.00018	0.0021	Not Detected U

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-252	Date/Time Analyzed:	10/13/20 08:52 AM
Lab ID:	2010075C-13A	Dilution Factor:	2.04
Date/Time Collected:	9/29/20 11:28 AM	Instrument/Filename:	gc10.i / 10101312
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000039	0.00018	0.0020	Not Detected U
Carbon Dioxide	124-38-9	0.0017	0.0078	0.020	0.42
Carbon Monoxide	630-08-0	0.0022	0.0078	0.020	Not Detected U
Ethane	74-84-0	0.000039	0.00018	0.0020	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.020	Not Detected U
Methane	74-82-8	0.000057	0.00010	0.00020	Not Detected U
Nitrogen	7727-37-9	0.11	0.11	0.20	79
Oxygen	7782-44-7	0.011	0.011	0.20	20
Pentane	109-66-0	0.000069	0.00018	0.0020	Not Detected U
Propane	74-98-6	0.000051	0.00018	0.0020	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	KAFB-106V2-270	Date/Time Analyzed:	10/13/20 09:17 AM
Lab ID:	2010075C-14A	Dilution Factor:	2.15
Date/Time Collected:	9/29/20 11:42 AM	Instrument/Filename:	gc10.i / 10101313
Media:	6 Liter Summa Canister (100% SIM certifie		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000041	0.00018	0.0022	0.00031 J
Carbon Dioxide	124-38-9	0.0018	0.0082	0.022	0.37
Carbon Monoxide	630-08-0	0.0023	0.0082	0.022	Not Detected U
Ethane	74-84-0	0.000041	0.00018	0.0022	Not Detected U
Hydrogen	1333-74-0	0.0018	0.013	0.022	Not Detected U
Methane	74-82-8	0.000060	0.00011	0.00022	Not Detected U
Nitrogen	7727-37-9	0.12	0.12	0.22	79
Oxygen	7782-44-7	0.012	0.012	0.22	20
Pentane	109-66-0	0.000073	0.00018	0.0022	0.0014 J
Propane	74-98-6	0.000054	0.00018	0.0022	0.000064 J

U = The analyte was not detected above the MDL.
 J = Estimated value.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
 KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/13/20 07:38 AM
Lab ID:	2010075C-15A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10101309
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Butane	106-97-8	0.000019	0.000086	0.0010	Not Detected U
Carbon Dioxide	124-38-9	0.00084	0.0038	0.010	Not Detected U
Carbon Monoxide	630-08-0	0.0011	0.0038	0.010	Not Detected U
Ethane	74-84-0	0.000019	0.000086	0.0010	Not Detected U
Methane	74-82-8	0.000028	0.000050	0.00010	Not Detected U
Nitrogen	7727-37-9	0.055	0.055	0.10	Not Detected U
Oxygen	7782-44-7	0.0055	0.0055	0.10	Not Detected U
Pentane	109-66-0	0.000034	0.000086	0.0010	Not Detected U
Propane	74-98-6	0.000025	0.000086	0.0010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	Lab Blank	Date/Time Analyzed:	10/13/20 07:15 AM
Lab ID:	2010075C-15B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10101308c
Media:	NA - Not Applicable		

Compound	CAS#	MDL (%)	LOD (%)	Rpt. Limit (%)	Amount (%)
Hydrogen	1333-74-0	0.00086	0.0062	0.010	Not Detected U

U = The analyte was not detected above the MDL.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/12/20 11:20 PM
Lab ID:	2010075C-16A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10101306
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	104
Carbon Dioxide	124-38-9	110
Carbon Monoxide	630-08-0	93
Ethane	74-84-0	104
Methane	74-82-8	107
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	99
Pentane	109-66-0	106
Propane	74-98-6	103

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/12/20 11:44 PM
Lab ID:	2010075C-16AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10101307
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Butane	106-97-8	104
Carbon Dioxide	124-38-9	110
Carbon Monoxide	630-08-0	93
Ethane	74-84-0	104
Methane	74-82-8	107
Nitrogen	7727-37-9	98
Oxygen	7782-44-7	98
Pentane	109-66-0	106
Propane	74-98-6	104

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCS	Date/Time Analyzed:	10/12/20 08:40 PM
Lab ID:	2010075C-16B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10101302c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	104

* % Recovery is calculated using unrounded analytical results.

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945
KAFB Bioventing

Client ID:	LCSD	Date/Time Analyzed:	10/12/20 09:05 PM
Lab ID:	2010075C-16BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	gc10.i / 10101303c
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Hydrogen	1333-74-0	96

* % Recovery is calculated using unrounded analytical results.

APPENDIX E-3
SUMMARY OF SOIL VAPOR ANALYTICAL DATA
(PROVIDED VIA CD)

APPENDIX E-4

Data Quality Evaluation Report – Bioventilation Pilot Testing (April 2019–September 2020)

LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
AFB	Air Force Base
ASTM	ASTM International
DL	detection limit
DoD	Department of Defense
EPA	U.S. Environmental Protection Agency
Eurofins	Eurofins Air Toxics, Inc.
GRO	gasoline range organics
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
QAPjP	Quality Assurance Project Plan
QC	quality control
RPD	relative percent different
RSD	relative standard deviation
SDG	sample delivery group
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

DATA QUALITY EVALUATION REPORT – Bioventilation Pilot Testing (April 2019–September 2020)

1. LABORATORY DATA QUALITY SUMMARY

This Data Quality Evaluation Report describes the findings of the data validation performed for the analysis of soil vapor samples collected during April 2019 through September 2020. These data were collected in support of the bioventilation pilot testing performed in accordance with the Work Plan for Bioventing and Air-Lift Enhanced Bioremediation Pilot Tests, November 2017 (Work Plan [Kirtland AFB, 2017a]). Sampling and analysis for the bioventilation pilot testing were conducted in accordance with the procedures and overall quality control (QC) and quality assurance protocols presented in the Work Plan and Quality Assurance Project Plan (QAPjP) for Bulk Fuels Facility Vadose Zone Treatability Studies, Solid Waste Management Units ST-106/SS-111, Kirtland AFB, New Mexico (Kirtland AFB, 2017b).

Samples discussed in this report were collected during the period of April 10, 2019 through September 29, 2020, in association with the Kirtland AFB bioventilation pilot testing. Sampling was conducted at two nested soil vapor monitoring wells (KAFB-106V1 and KAFB-106V2) on a monthly then quarterly basis including 132 vapor samples and collection of 22 field duplicate samples.

Soil vapor samples were shipped to Eurofins Air Toxics, Inc. (Eurofins), Folsom, California, for analysis. Eurofins maintains current Department of Defense (DoD) Environmental Laboratory Accreditation Program certification for the required analysis in support of this project. Sample analysis was performed in accordance with:

- U.S. Environmental Protection Agency (EPA) Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA 1999), Method TO-15 for volatile organic compounds (VOCs) and Method TO-3 for total petroleum hydrocarbons (TPH) gasoline range organics (GRO)
- ASTM International Method D-1945 (ASTM 2019) for fixed gases and C1 to C5 hydrocarbon compounds

Chemical analytical data were reported by Eurofins in 14 sample delivery groups (SDGs). Appendix E-4 – Table 1 summarizes samples collected from the soil vapor and extraction wells and the associated field QC samples, collection date, laboratory SDG, and analytical method for the bioventilation pilot testing.

A third-party subcontractor (Environmental Data Services, Inc.) conducted EPA Stage 3 data validation on 100 percent (%) of the VOC and TPH-GRO bioventilation pilot testing sample data. All data underwent data verification for completeness and compliance to project requirements. Analytical data validation was performed using the quality criteria specified in the following documents, analytical guidelines, and methods:

- Work Plan (Kirtland AFB, 2017a)
- Work Plan and QAPjP (Kirtland AFB, 2017b)
- EPA Contract Laboratory Program, National Functional Guidelines for Superfund Organic Methods Data Review (EPA, 2014)

- EPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Method TO-15 and TO-3 (EPA, 1999).

The following QC criteria were included in the EPA Stage 3 validation as applicable to the analytical method:

- Sample preservation and extraction and analysis holding times
- Canister certification and pressure differences
- Canister certification blank
- Laboratory method blank
- Surrogate spike recoveries
- Laboratory control sample (LCS) and LCS duplicate (LCSD) recoveries
- Relative percent difference (RPD)
- Initial and continuing calibrations
- Internal standard area
- Field duplicate sample precision.

Analytical data were reviewed to evaluate precision, accuracy (bias), representativeness, comparability, completeness, and sensitivity as defined below:

- *Precision* is expressed as the RPD between the results of replicate sample analyses: sample duplicates and LCSDs. When analyte RPDs exceed the acceptance criteria, the data are qualified accordingly.
- *Accuracy (bias)* is demonstrated by recovery of target analytes from fortified blank and sample matrices such as the LCS/LCSD samples. For organic methods, bias is also demonstrated through recovery of surrogates from each field and QC sample. A comparison was made from the recovery of target analytes from fortified samples to the acceptance criteria defined in the QAPjP (Kirtland AFB, 2017b). When the acceptance criteria are not available in the QAPjP, results are compared with the laboratory in-house control limits. When these criteria are not met, the data are qualified accordingly. Bias may be indicated as high or low.
- *Representativeness* of the samples submitted for analysis is ensured by adherence to standard sampling techniques and standard analytical method protocols.
- *Comparability* of sample results is ensured through the use of approved sampling and analysis methods and comparison of sample results to previous or historical sample data.
- *Completeness* of data is evaluated based on contractual, analytical, and technical completeness for the monthly supply well data. Technical completeness of data is used to assess overall project completeness and is expressed as a percentage of the ratio of the number of usable data results to the total number of analytical data results. Only rejected data (R-qualified) are considered not usable to achieve project objectives.
- *Sensitivity* is determined by the ability to achieve the established method-specific reporting limits in accordance with DoD Quality Systems Manual Version 5.1 (DoD, 2017) requirements and includes establishing the detection limit (DL), limit of detection (LOD), and limit of quantitation (LOQ). For this project, the laboratory reported positive results to the DL and flagged with a “J” qualifier, signifying estimated data. Non-detect results were reported at the LOD with a “U”

qualifier per the QAPjP. Sensitivity will be evaluated based on comparison of the sample reporting limits to the project screening levels.

The following sections present the EPA Stage 3 data validation findings for the bioventilation pilot testing sample data. Appendix E-4 – Table 2 presents the data qualification flags and reason codes to be applied to analytical data, if required.

1.1 DATA QUALITY FINDINGS

1.1.1 Sample Preservation and Sample Extraction and Analysis Holding Times (Reason Code HT)

The vapor samples were shipped to the Eurofins laboratory. No temperature preservation requirement is applicable to vapor samples. The 30-day sample hold time was evaluated by comparing the sample collection date to the sample analysis date. Sample analysis holding times were met for all bioventilation pilot testing samples.

1.1.2 Canister Certification and Laboratory Method Blanks (Reason Code CB/MB)

The vapor sample results were evaluated with respect to the canister certification blanks and laboratory method blanks prepared and analyzed for each analytical batch. All volatile organic compound (VOC) analytes were non-detect or less than the one-half the LOQ in the canister certification blank samples. Low-level detections of toluene, methylene chloride, naphthalene, and TPH-GRO were reported in method blank samples. Only methylene chloride resulted in data qualification since all other associated samples were non-detect or greater than five times the amount in the blank. However, the associated sample data were ultimately rejected due to professional judgement and data comparability, see Section 1.1.10. No sample data were qualified based on canister or method blank contamination.

1.1.3 Initial and Continuing Calibration Blanks (Reason Code CB/CCB)

Initial and continuing calibration blank criteria were reviewed to ensure that the instruments were free of contamination prior to sample analysis. Calibration blank concentrations are considered acceptable when contaminant levels in the blank are less than one-half the LOQ for target analytes and less than the LOQ for common laboratory contaminants. Initial and continuing calibration blank data were within control criteria for all sample analysis. No sample data were qualified based on calibration blank contamination.

1.1.4 Surrogate Recoveries (Reason Code SURR)

Surrogate compounds are added to field and laboratory QC samples for organic analysis to evaluate the matrix effect and method performance on an individual sample basis. VOC surrogate compound recoveries for toluene-d8 and 1,2-dichloroethane-d4 exceeded the method control criteria for soil vapor samples in 10 of 14 SDGs. This is due in part to the elevated VOC sample concentrations resulting in sample dilution and masking surrogate recoveries. Associated sample results were qualified “J” and “UJ”, signifying estimated data. Appendix E-4 – Table 3 presents the qualified sample results based on surrogate recovery.

1.1.5 Laboratory Control Sample/Laboratory Control Sample Duplicate Recoveries and Precision (Reason Codes LCS/RPD)

The LCS is an aliquot of an analyte-free matrix spiked with target analytes that are prepared with each analytical batch for each analytical method. The recovery of target analytes from the LCS analysis is a measurement of method performance in an interference-free sample matrix. All LCS recoveries for the soil vapor samples were within method control limits or did not result in data qualification since the LCS recovery was above the control limit and associated results were non-detect. No sample data were qualified based on LCS recoveries.

1.1.6 Internal Standard Recoveries (Reason Code IS)

Internal standards are added to all samples including QC samples to monitor the instrumentation sensitivity and response during sample analysis. The internal standard area response and retention times are monitored to ensure they are within the control criteria for the analytical method. All VOC internal standard recoveries were within control limits for the bioventilation pilot testing sample data. No sample data were qualified based on internal standard recoveries.

1.1.7 Initial and Continuing Calibration Verification (Reason Code CCV)

Instrument calibration is performed for all analyses in accordance with method requirements. The linear analytical range is established for each method by analysis of calibration standards prepared at increasing concentrations that cover the expected sample concentration range. The acceptability of the initial calibration is determined by calculation of a percent relative standard deviation (RSD) or coefficient. Initial calibration percent RSD exceeded control criteria for VOC analytes 1,2,4-trichlorobenzene and 4-methyl-2-pentanone. Associated sample data was qualified “J” and “UJ”, signifying estimated data. Appendix E-4 – Table 3 presents the qualified sample results based on exceedance of initial calibration criteria.

The stability of the analytical system is monitored by analysis of continuing calibration standards at concentrations near the mid-point of the instrument calibration range. The percent difference values between the relative response factor in the initial calibration and the relative response factor in the continuing calibration are reviewed to ensure instrument calibration criteria are within method control limits. Continuing calibration verifications exceeded control criteria for VOC analytes naphthalene, chloroethane, and tetrahydrofuran. Associated sample results were “J” or “UJ” qualified during validation. Appendix E-4 – Table 3 presents the qualified sample results based on continuing calibration criteria.

1.1.8 Trip Blanks for Volatile Organic Compounds (Reason Code TB)

Trip blanks samples were not required to be collected with the bioventilation pilot testing samples for VOCs per the Work Plan (Kirtland AFB, 2017a) and QAPjP (Kirtland AFB, 2017b).

1.1.9 Field Duplicate Samples

In accordance with the project QAPjP requirements (Kirtland AFB, 2017b), field duplicate samples are collected at a frequency of one field duplicate for every 10 samples collected (10%). For the bioventilation pilot testing sampling events, 22 field duplicate samples were collected in association with 132 soil vapor samples and analyzed for VOCs, TPH, and fixed gases. Field duplicate samples were collected at a frequency of 17% (one per six samples) which exceeds the required 10 percent.

For field duplicate samples, RPD was evaluated by calculating the RPD between the parent sample and the duplicate sample. The RPD was calculated using the following equation:

$$RPD = |(S-D)|/[(S+D)/2] \times 100$$

where

- S = Sample result.
D = Duplicate result.

Acceptable precision control criteria are established at less than or equal to 50% for soil vapor samples per the QAPjP (Kirtland AFB, 2017b). The RPD was calculated between pairs of field duplicate samples when both results are reported at or above LOQ. The results for the soil vapor and the associated field duplicate samples are provided in Appendix E-4 – Table 4. Field duplicate sample RPD was achieved for all samples with exception of two field duplicates for VOCs. However, the results for one field duplicate were already qualified for exceedance of surrogate recovery. Sample results for 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene associated with KAFB-106V2-117 and the duplicate sample collected in SDG 2007140 were qualified “J” based on exceedance of the RPD criteria and presented in Appendix E-4 – Table 3.

1.1.10 Professional Judgement

Professional judgement may be applied by a third-party data validation subcontractor or the project chemist during the data review process to apply validation qualifiers based on site-specific and project-specific knowledge, historical data, comparability of data, and analytical expertise. Professional judgement was applied by the data validation subcontractor and the project chemist to qualify data as noted below.

- Biovent samples with elevated concentrations of target analytes were diluted in Tedlar® bags. Per the laboratory, Tedlar® bags have been tested and may contain low-level concentrations of toluene. The laboratory and the data validator “J” qualified the toluene results associated with diluted samples in three SDGs—1905302, 1905303, and 1907216.
- Biovent samples with elevated concentrations of target analytes were diluted for analysis however, some very high concentrations of VOC analytes still exceeded the upper calibration range (acetone, cyclohexane, 2-butanone, hexane, n-heptane, and 1,2-dibromoethane). Associated results were “J” qualified.
- Laboratory results for vapor samples from wells KAFB-106V1-102, KAFB-106V1-113, KAFB-106V1-160 and duplicate, and KAFB-106V1-217 collected on October 22, 2019, appear to have been diluted with atmospheric air during the sample collection process. The TPH and related VOC concentrations were reported to be significantly lower than the concentrations reported for the same samples collected on October 15 and 31, 2019. The field team indicated the leak likely occurred during sampling within the canister fittings and connections to the sample trains. Based on the data usability and comparability assessment by the project team, the VOC, TPH and fixed gases/hydrocarbon sample data have been qualified “R,” signifying rejected data in the project database for the four samples and field duplicate collected on October 22, 2019.

Qualified sample results based on professional judgement are presented in Appendix E-4 - Table 3.

1.2 COMPLETENESS

The following sections present a discussion of contractual, analytical, and technical completeness for the bioventilation pilot testing analytical data completeness.

1.2.1 Contractual Completeness

Contractual completeness is a quantitative determination of the number of unqualified results compared to the total number of sample results expressed as a percentage, based on data qualified for QC outliers related to analytical method performance. These include data qualified for calibration or method blank contamination, missed holding times, LCS recovery, and/or analytical precision. The contractual completeness goal is 95% per each event. Contractual completeness was calculated as follows:

$$\text{Percent Contractual Completeness} = \frac{\text{Number of Unqualified Results}}{\text{Total Number of Results}} \times 100$$

For the biovent soil vapor results, the contractual completeness was 98.9% for the TO-15 analytical method (85 qualified analytes for initial and continuing calibration exceedance out of 8,316 analytes for field and field duplicate samples). The contractual completeness for the TPH and fixed gases was 100%. The 95% contractual completeness objective was achieved for the bioventilation pilot testing data.

1.2.2 Analytical Completeness

Analytical completeness is a quantitative measure of the number of unqualified data results compared to the total number of results expressed as a percentage, based on the target analytes qualified for exceedances of QC requirements from calibration, LCS, surrogate, method precision, blank contamination, and professional judgement results. The analytical completeness goal is 90% for the project. Analytical completeness was calculated as follows:

$$\text{Percent Analytical Completeness} = \frac{\text{Number of Unqualified Results}}{\text{Total Number of Results}} \times 100 =$$

Overall analytical completeness for biovent sample data is 86% (1,165 qualified analytes out of 8,316 analytes for field and field duplicate samples) based on calibration, surrogate recovery, field duplicate and RPD exceedance, and professional judgement. The analytical completeness was slightly below the 90% goal due to elevated target concentrations in samples affecting surrogate recoveries, sample dilutions, data reported above the calibration range, and data comparability however, technical completeness was still achieved for the project as discussed below.

1.2.3 Technical Completeness

Technical completeness is a quantitative measure of the data usability based on the number of rejected data compared to the total number of sample results. The technical completeness goal for each method is equal to or greater than 95%. The technical completeness calculation considers all data that are not rejected (R-qualified) to be usable data to achieve project objectives. The technical completeness was calculated as follows:

$$\text{Percent Technical Completeness} = \frac{\text{Number of Usable Results}}{\text{Total Number of Results}} \times 100$$

Technical completeness for the biovent sample data is 97% (8,046 usable results out of 8,316 analytes for field and field duplicate samples). 270 results for VOCs, TPH, and fixed gases were “R” qualified, signifying rejected data. The project data quality objectives were achieved for the biovent soil vapor data. Technical completeness is provided in Appendix D-1 – Table 5.

1.2.4 Data Analysis Completeness

As a part of the data review process, chain-of-custody forms and project data deliverables are reviewed against the project requirements in the Work Plan (Kirtland AFB, 2017a) to ensure compliance with the sampling plan and that analytical results were reported for all planned methods and samples. Data completeness for the biovent data deliverables was determined to be 100% complete. Analytical data packages are provided in Appendix E-2.

1.3 REPRESENTATIVENESS AND COMPARABILITY

Bioventilation pilot testing sampling was conducted in accordance with the sampling and analysis protocols and standard operating procedures documented in the Work Plan (Kirtland AFB, 2017a). Approved procedures were used to collect, document, and ship samples to the Eurofins laboratory, thus ensuring the samples collected were representative of the vapor wells.

Eurofins maintains current DoD Environmental Laboratory Accreditation Program certification and adhered to the analytical methods documented in the project QAPjP (Kirtland AFB, 2017b) and DoD QSM (DoD, 2017) requirements to prepare and analyze samples and report the data. The certification ensures the comparability of the analytical results between different samples and different sampling events.

EPA Stage 3 validation was performed on 100% of the VOC and TPH analytical data to ensure the laboratory complied with the project QAPjP (Kirtland AFB, 2017b) and method requirements. QC results that exceeded method control criteria resulted in data qualification as presented in the previous sections. Based on a review of the completed sample collection logs, chain-of-custody forms, sample receipt forms, and laboratory data packages, the analytical data reported for the biovent sampling achieved the project data representativeness and comparability requirements as qualified based on validation.

1.4 SENSITIVITY

Data sensitivity for the biovent analytical data was achieved by complying with the analytical method guidelines specified in the project QAPjP (Kirtland AFB, 2017b). Non-detect analytes are reported at the LOD and qualified “U.” Detections of target analytes below the method LOQ are qualified “J” as estimated values per the project requirements.

1.5 CONCLUSIONS

The analytical data reported for the bioventilation pilot testing have been reviewed for precision, accuracy (bias), representativeness, comparability, completeness, and sensitivity. Data quality criteria exceedances were noted for 1) calibration exceedance for VOCs, 2) surrogate recovery exceedances for VOCs, 3) field duplicate sample RPD for VOCs, and 4) professional judgement applied to VOC, TPH and fixed gases data based on sample dilution, calibration range exceedance and data comparability. Data quality exceedances resulted in “J,” “UJ,” and “R” qualified (estimated detect and nondetect, and rejected) sample results. Estimated data are usable to achieve project objectives however, data qualified as rejected do not meet project objectives. The 95% technical completeness goal was achieved for the bioventilation

pilot testing. Data are usable to achieve the project data quality objectives as qualified based on validation.

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TABLES

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Table 1
Bioventilation Pilot Testing Sample Collection Summary

Sample Location ID	Field Sample ID	Sample Date	Sample Delivery Group	Analytical Parameter ^a	Comments
KAFB-106V1-102	KAFB-106V1 102.1	4/10/2019	1904263A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 112.6	4/10/2019	1904263A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 159.6	4/10/2019	1904263A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-217	KAFB-106V1 217.1	4/10/2019	1904263A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252.1	4/10/2019	1904263A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 262.6	4/10/2019	1904263A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102.2	4/11/2019	1904325A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117.1	4/11/2019	1904325A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 159.9	4/11/2019	1904325A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2 217.1	4/11/2019	1904325A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252.2	4/11/2019	1904325A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-270	KAFB-106V2 269.5	4/11/2019	1904325A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102.2	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117.1	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 159.9	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2 217.1	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252.2	5/9/2019	1905303A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2 269.5	5/9/2019	1905303A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1 102.1	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 112.6	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 159.6	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1 217.1	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252.1	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 262.6	5/9/2019	1905302A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1 102.1	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 112.6	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 159.6	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1 217.1	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252.1	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 262.6	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102.2	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117.1	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 159.9	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2 217.1	7/5/2019	1907216A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252.2	7/5/2019	1907217A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2 269.5	7/5/2019	1907217A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1 102.1	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 159.6	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1 217.1	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252.1	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 262.6	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102.2	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117.1	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 159.9	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2 217.1	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252.2	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2 269.5	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 112.6	10/15/2019	1910500A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1 102.1	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 112.6	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 159.6	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1 217.1	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252.1	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 262.6	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102.2	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117.1	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 159.9	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	

Table 1
Bioventilation Pilot Testing Sample Collection Summary

Sample Location ID	Field Sample ID	Sample Date	Sample Delivery Group	Analytical Parameter ^a	Comments
KAFB-106V2-217	KAFB-106V2 217.1	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252.2	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2 269.5	10/22/2019	1910626A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1 102.1	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 112.6	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 159.6	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1 217.1	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252.1	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 262.6	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102.2	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117.1	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 159.9	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2 217.1	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252.2	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2 269.5	10/31/2019	1911080A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1 102	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1 113	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1 160	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1 217	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1 252	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1 263	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2 102	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2 117	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2 160	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2 217	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2 252	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2 270	11/5/2019	1911173A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1-102	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1-113	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1-160	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1-217	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1-252	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1-263	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2-102	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2-117	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2-160	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2-217	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2-252	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2-270	1/13/2020	2001312A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1-102	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1-113	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1-160	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1-217	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1-252	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1-263	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2-102	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2-117	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2-160	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2-217	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2-252	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2-270	4/6/2020	2004180A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1-102	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1-113	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1-160	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1-217	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1-252	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1-263	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	

Table 1
Bioventilation Pilot Testing Sample Collection Summary

Sample Location ID	Field Sample ID	Sample Date	Sample Delivery Group	Analytical Parameter ^a	Comments
KAFB-106V2-102	KAFB-106V2-102	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2-117	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2-160	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2-217	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2-252	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2-270	6/30/2020	2007140A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-102	KAFB-106V1-102	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-113	KAFB-106V1-113	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-160	KAFB-106V1-160	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V1-217	KAFB-106V1-217	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-252	KAFB-106V1-252	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V1-263	KAFB-106V1-263	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-102	KAFB-106V2-102	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-117	KAFB-106V2-117	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	Field Duplicate
KAFB-106V2-160	KAFB-106V2-160	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-217	KAFB-106V2-217	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-252	KAFB-106V2-252	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	
KAFB-106V2-270	KAFB-106V2-270	9/29/2020	2010075A/B/C	VOCs, TPH-GRO, Fixed Gases	

Notes:
^aAnalytical methods include: EPA Method TO-15 for VOCs; EPA Method TO-3 for TPH-GRO; and ASTM Method D1945 for fixed gases and hydrocarbons.
ID = identification
TPH-GRO = Total Petroleum Hydrocarbons – Gasoline Range Organics
VOCs = volatile organic compounds

Table 2
Data Qualification Flags and Reason Codes

Data Qualifier Definitions for Data Validation

Qualifier	Definition
	No Qualifier indicates that the data are acceptable both qualitatively and quantitatively.
U	The analyte was analyzed for but was not detected above the detection limit. The value associated with the U-qualifier is the limit of detection.
J	The analyte was analyzed for and was positively identified, but the reported numerical value may not be consistent with the amount actually present in the environmental sample. Results are estimated, although the data are considered usable and may be used as appropriate to meet project objectives. Results are qualitatively acceptable and quantitatively uncertain.
J-	The analyte was positively identified; the associated numerical value is its approximate concentration with a low bias in the sample.
J+	The analyte was positively identified; the associated numerical value is its approximate concentration with a high bias in the sample.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Re-sampling and re-analysis may be necessary to confirm or deny the presence of the analyte. Results are rejected, and data are <u>unusable</u> for any purposes.

Reason Codes for Data Validation

Reason Code	Description
CB/CCB	Calibration blank or continuing calibration blank outside of control limits
CCV	Calibration verification outside of control limits
EB	Equipment rinse blank contamination
FB	Field blank contamination
FD	Field duplicate sample results out of control criteria
HT	Holding time exceedance
ICS	Interference check sample
LCS	Laboratory control sample recovery out of control criteria
MB	Method blank contamination
MS/MSD	Matrix spike/ matrix spike duplicate recovery outside of control criteria
RPD	Relative percent difference outside of control limits
SD	Inductively Coupled Plasma serial dilution out of control criteria
SURR	Surrogate recovery outside of control limits
TB	Trip blank contamination

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-102	KAFB-106V1 102.1	1904263A	Summa	N	1,2-Dibromoethane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1904263A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 112.6	1904263A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-217	KAFB-106V1 217.1	1904263A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-263	KAFB-106V1 262.6	1904263A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1904263A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1904263A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-217	KAFB-106V1 217.1	1904263A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1904263A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 112.6	1904263A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1904263A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-217	KAFB-106V1 217.1	1904263A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1904263A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 112.6	1904263A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1904263A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-217	KAFB-106V1 217.1	1904263A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-217	KAFB-106V1 217.1	1904263A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V1-252	KAFB-106V1 252.1	1904263A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V1-263	KAFB-106V1 262.6	1904263A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 112.6	1904263A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-102	KAFB-106V1 102.1	1904263A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-160	KAFB-106V1 159.6	1904263A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-217	KAFB-106V1 217.1	1904263A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-252	KAFB-106V1 252.1	1904263A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-263	KAFB-106V1 262.6	1904263A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-217	KAFB-106V2 217.1	1904325A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V2-252	KAFB-106V2 252.2 DUP	1904325A	Summa	FD	2-Butanone	J	Calibration Range
KAFB-106V2-252	KAFB-106V2 252.2	1904325A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V2-270	KAFB-106V2 269.5	1904325A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V2-217	KAFB-106V2 217.1	1904325A	Summa	N	Acetone	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1904325A	Summa	FD	Cyclohexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1	1904325A	Summa	N	Cyclohexane	J	Calibration Range

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-217	KAFB-106V2 217.1	1904325A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1904325A	Summa	FD	Hexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1	1904325A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-217	KAFB-106V2 217.1	1904325A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1904325A	Summa	FD	n-Heptane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1	1904325A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V2-217	KAFB-106V2 217.1	1904325A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V2-252	KAFB-106V2 252.2 DUP	1904325A	Summa	FD	n-Heptane	J	Calibration Range
KAFB-106V2-252	KAFB-106V2 252.2	1904325A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V2-160	KAFB-106V2 159.9	1904325A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-252	KAFB-106V2 252.2 DUP	1904325A	Summa	FD	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-252	KAFB-106V2 252.2	1904325A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1904325A	Summa	FD	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1	1904325A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-217	KAFB-106V2 217.1	1904325A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-270	KAFB-106V2 269.5	1904325A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Propylene (propene)	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-102	KAFB-106V2 102.2	1904325A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1905302A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1905302A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1905302A	Summa	FD	Acetone	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1905302A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1905302A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1905302A	Summa	FD	Cyclohexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1905302A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1905302A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 112.6	1905302A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1905302A	Summa	FD	Hexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1905302A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1905302A	Summa	FD	n-Heptane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102.1	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-113	KAFB-106V1 112.6	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1905302A	Summa	FD	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-160	KAFB-106V1 159.6	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-217	KAFB-106V1 217.1	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-252	KAFB-106V1 252.1	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-263	KAFB-106V1 262.6	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-102	KAFB-106V2 102.2	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1905302A	Summa	FD	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-160	KAFB-106V2 159.9	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-217	KAFB-106V2 217.1	1905302A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-217	KAFB-106V1 217.1	1905302A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V1-252	KAFB-106V1 252.1	1905302A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V1-263	KAFB-106V1 262.6	1905302A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-102	KAFB-106V2 102.2	1905302A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1905302A	Summa	FD	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-117	KAFB-106V2 117.1	1905302A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-217	KAFB-106V2 217.1	1905302A	Summa	N	Toluene	J	CQ (Tedlar Bag)

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-252	KAFB-106V2 252.2	1905303A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-270	KAFB-106V2 269.5	1905303A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-270	KAFB-106V2 269.5	1905303A	Summa	N	Naphthalene	UJ	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Toluene	J	CQ (Tedlar Bag)
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Toluene	J	CQ (Tedlar Bag)
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	2-Butanone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	2-Butanone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Acetone	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Acetone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Benzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Carbon disulfide	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Carbon disulfide	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Carbon disulfide	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Carbon disulfide	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Carbon disulfide	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Ethanol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Ethanol	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Ethanol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Hexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Hexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	n-Heptane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	n-Heptane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	o-Xylene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Toluene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1907216A	Summa	FD	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 159.6	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-217	KAFB-106V1 217.1	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1907216A	Summa	FD	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1907216A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	1,1-Dichloroethane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Carbon tetrachloride	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Tetrachloroethene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Trichloroethene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1907217A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1907217A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	2-Butanone	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	2-Butanone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	4-Methyl-2-pentanone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	4-Methyl-2-pentanone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	4-Methyl-2-pentanone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	4-Methyl-2-pentanone	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Acetone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Benzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Hexane	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Hexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	n-Heptane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Tetrachloroethene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Tetrachloroethene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Tetrachloroethene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Tetrachloroethene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Tetrachloroethene	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Toluene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Trichloroethene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Trichloroethene	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 112.6	1910500A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1 217.1	1910500A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910500A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910500A	Summa	FD	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2 117.1	1910500A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V1-263	KAFB-106V1 262.6	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910626A	Summa	FD	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V2-252	KAFB-106V2 252.2	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Chloroethane	UJ	Continuing Calibration Verification
KAFB-106V1-252	KAFB-106V1 252.1	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V1-263	KAFB-106V1 262.6	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1910626A	Summa	FD	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2 117.1	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V2-252	KAFB-106V2 252.2	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Tetrahydrofuran	UJ	Continuing Calibration Verification
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,1,2-Trichloro-1,2,2-trifluoroethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,1,2-Trichloro-1,2,2-trifluoroethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,1,2-Trichloro-1,2,2-trifluoroethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,1,2-Trichloro-1,2,2-trifluoroethane	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,1,2-Trichloro-1,2,2-trifluoroethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,1-Dichloroethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,1-Dichloroethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,1-Dichloroethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,1-Dichloroethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,1-Dichloroethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,2,4-Trichlorobenzene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,2,4-Trichlorobenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,2,4-Trichlorobenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,2,4-Trichlorobenzene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,2,4-Trichlorobenzene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,2,4-Trimethylbenzene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,2,4-Trimethylbenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,2,4-Trimethylbenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,2,4-Trimethylbenzene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,2,4-Trimethylbenzene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,2-Dibromoethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,2-Dibromoethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,2-Dibromoethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,2-Dibromoethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,2-Dibromoethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,2-Dichlorobenzene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,2-Dichlorobenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,2-Dichlorobenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,2-Dichlorobenzene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,2-Dichlorobenzene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,3,5-Trimethylbenzene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,3,5-Trimethylbenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,3,5-Trimethylbenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,3,5-Trimethylbenzene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,3,5-Trimethylbenzene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,3-Butadiene	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,3-Butadiene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,3-Butadiene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,3-Butadiene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,3-Butadiene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	1,4-Dioxane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	1,4-Dioxane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	1,4-Dioxane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	1,4-Dioxane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	1,4-Dioxane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	2-Butanone	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	2-Butanone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	2-Butanone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	2-Butanone	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	2-Butanone	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	2-Hexanone	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	2-Hexanone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	2-Hexanone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	2-Hexanone	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	2-Hexanone	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	4-Methyl-2-pentanone	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	4-Methyl-2-pentanone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	4-Methyl-2-pentanone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	4-Methyl-2-pentanone	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	4-Methyl-2-pentanone	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Acetone	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Acetone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Acetone	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Acetone	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Acetone	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Benzene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Benzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Benzene	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Benzene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Benzene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Bromodichloromethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Bromodichloromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Bromodichloromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Bromodichloromethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Bromodichloromethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Bromoform	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Bromoform	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Bromoform	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Bromoform	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Bromoform	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Carbon disulfide	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Carbon disulfide	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Carbon disulfide	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Carbon disulfide	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Carbon disulfide	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Carbon tetrachloride	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Carbon tetrachloride	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Carbon tetrachloride	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Carbon tetrachloride	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Carbon tetrachloride	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Chloroethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Chloroethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Chloroethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Chloroethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Chloroethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Chloroform	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Chloroform	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Chloroform	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Chloroform	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Chloroform	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Chloromethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Chloromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Chloromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Chloromethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Chloromethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Cyclohexane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Cyclohexane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Cyclohexane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Cyclohexane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Cyclohexane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Dibromochloromethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Dibromochloromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Dibromochloromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Dibromochloromethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Dibromochloromethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Dichlorodifluoromethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Dichlorodifluoromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Dichlorodifluoromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Dichlorodifluoromethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Dichlorodifluoromethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Ethanol	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Ethanol	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Ethanol	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Ethanol	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Ethanol	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Ethyl acetate	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Ethyl acetate	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Ethyl acetate	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Ethyl acetate	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Ethyl acetate	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Ethylbenzene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Ethylbenzene	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Ethylbenzene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Ethylbenzene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Ethylbenzene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Hexane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Hexane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Hexane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Hexane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Hexane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Isopropyl alcohol	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Isopropyl alcohol	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Isopropyl alcohol	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Isopropyl alcohol	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Isopropyl alcohol	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	m- & p-Xylenes	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	m- & p-Xylenes	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	m- & p-Xylenes	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	m- & p-Xylenes	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	m- & p-Xylenes	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Methylene chloride	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Methylene chloride	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Methylene chloride	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Methylene chloride	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Methylene chloride	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Naphthalene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Naphthalene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Naphthalene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Naphthalene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Naphthalene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	n-Heptane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	n-Heptane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	n-Heptane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	n-Heptane	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	n-Heptane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	o-Xylene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	o-Xylene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	o-Xylene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	o-Xylene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	o-Xylene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Propylene (propene)	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Propylene (propene)	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Propylene (propene)	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Propylene (propene)	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Propylene (propene)	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Styrene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Styrene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Styrene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Styrene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Styrene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Tetrachloroethene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Tetrachloroethene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Tetrachloroethene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Tetrachloroethene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Tetrachloroethene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Tetrahydrofuran	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Tetrahydrofuran	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Tetrahydrofuran	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Tetrahydrofuran	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Tetrahydrofuran	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Toluene	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Toluene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Toluene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Toluene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Toluene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Trichloroethene	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Trichloroethene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Trichloroethene	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Trichloroethene	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Trichloroethene	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Trichlorofluoromethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Trichlorofluoromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Trichlorofluoromethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Trichlorofluoromethane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Trichlorofluoromethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Vinyl chloride	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Vinyl chloride	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Vinyl chloride	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Vinyl chloride	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Vinyl chloride	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626A	Summa	N	Xylenes, total	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626A	Summa	N	Xylenes, total	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626A	Summa	FD	Xylenes, total	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626A	Summa	N	Xylenes, total	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626A	Summa	N	Xylenes, total	R	Data Comparability
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1910626A	Summa	N	2-Hexanone	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	2-Hexanone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1 262.6	1910626A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-252	KAFB-106V1 252.1	1910626A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	o-Xylene	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2 102.2	1910626A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217.1	1910626A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2 269.5	1910626A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102.1	1910626B	Summa	N	TPH-GRO (C6-C10)	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626B	Summa	N	TPH-GRO (C6-C10)	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626B	Summa	FD	TPH-GRO (C6-C10)	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626B	Summa	N	TPH-GRO (C6-C10)	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626B	Summa	N	TPH-GRO (C6-C10)	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Butane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Butane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Butane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Butane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Butane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Carbon dioxide	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Carbon dioxide	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Carbon dioxide	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Carbon dioxide	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Carbon dioxide	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Carbon monoxide	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Carbon monoxide	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Carbon monoxide	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Carbon monoxide	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Carbon monoxide	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Ethane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Ethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Ethane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Ethane	R	Data Comparability

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Ethane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Hydrogen	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Hydrogen	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Hydrogen	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Hydrogen	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Hydrogen	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Methane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Methane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Methane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Methane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Methane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Nitrogen	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Nitrogen	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Nitrogen	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Nitrogen	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Nitrogen	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Oxygen	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Oxygen	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Oxygen	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Oxygen	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Oxygen	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Pentane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Pentane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Pentane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Pentane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Pentane	R	Data Comparability
KAFB-106V1-102	KAFB-106V1 102.1	1910626CR1	Summa	N	Propane	R	Data Comparability
KAFB-106V1-113	KAFB-106V1 112.6	1910626CR1	Summa	N	Propane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1910626CR1	Summa	FD	Propane	R	Data Comparability
KAFB-106V1-160	KAFB-106V1 159.6	1910626CR1	Summa	N	Propane	R	Data Comparability
KAFB-106V1-217	KAFB-106V1 217.1	1910626CR1	Summa	N	Propane	R	Data Comparability
KAFB-106V2-270	KAFB-106V2 269.5	1911080A	Summa	N	2-Butanone	J	Calibration Range

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1911080A	Summa	FD	Acetone	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1911080A	Summa	N	Acetone	J	Calibration Range
KAFB-106V2-270	KAFB-106V2 269.5	1911080A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1911080A	Summa	FD	Cyclohexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1911080A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6 DUP	1911080A	Summa	FD	Hexane	J	Calibration Range
KAFB-106V1-160	KAFB-106V1 159.6	1911080A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117.1 DUP	1911080A	Summa	FD	Hexane	J	Calibration Range
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	2-Hexanone	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	4-Methyl-2-pentanone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	4-Methyl-2-pentanone	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Carbon disulfide	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Hexane	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-160	KAFB-106V2 159.9	1911080A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252.2	1911080A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-113	KAFB-106V1 113	1911173A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-263	KAFB-106V1 263	1911173A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V2-102	KAFB-106V2 102	1911173A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 113	1911173A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 113	1911173A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1 113	1911173A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117 DUP	1911173A	Summa	FD	Hexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2 117	1911173A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-252	KAFB-106V1 252	1911173A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V1-263	KAFB-106V1 263	1911173A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	2-Butanone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Benzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Ethanol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Ethylbenzene	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Hexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Naphthalene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Naphthalene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Naphthalene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	n-Heptane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	o-Xylene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Propylene (propene)	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Toluene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1 102	1911173A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160 DUP	1911173A	Summa	FD	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1 160	1911173A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2 217	1911173A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2 252	1911173A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	2-Butanone	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Carbon disulfide	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Hexane	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Toluene	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-102	KAFB-106V1-102	2001312A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160	2001312A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2001312A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2001312A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-252	KAFB-106V2-252	2001312A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-270	KAFB-106V2-270	2001312A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	1,2,4-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	1,2-Dibromoethane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	1,3,5-Trimethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	2-Butanone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	2-Butanone	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	2-Butanone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	2-Butanone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Acetone	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Acetone	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Acetone	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Benzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Benzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Benzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Cyclohexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Cyclohexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Ethanol	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Ethanol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Ethylbenzene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Ethylbenzene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Hexane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Hexane	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Hexane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Hexane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Isopropyl alcohol	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	m- & p-Xylenes	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Naphthalene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	n-Heptane	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	n-Heptane	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	n-Heptane	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	o-Xylene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	o-Xylene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	o-Xylene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Propylene (propene)	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Propylene (propene)	J	Surrogate Recovery

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Styrene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Toluene	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Toluene	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Toluene	J	Surrogate Recovery
KAFB-106V1-160	KAFB-106V1-160-DUP	2004180A	Summa	FD	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-217	KAFB-106V1-217	2004180A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V1-263	KAFB-106V1-263	2004180A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-102	KAFB-106V2-102	2004180A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117-DUP	2004180A	Summa	FD	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-217	KAFB-106V2-217	2004180A	Summa	N	Xylenes, total	J	Surrogate Recovery
KAFB-106V2-117	KAFB-106V2-117	2007140A	Summa	N	1,2,4-Trimethylbenzene	J	Field Duplicate RPD
KAFB-106V2-117	KAFB-106V2-117-DUP	2007140A	Summa	FD	1,2,4-Trimethylbenzene	J	Field Duplicate RPD
KAFB-106V2-117	KAFB-106V2-117	2007140A	Summa	N	1,3,5-Trimethylbenzene	J	Field Duplicate RPD
KAFB-106V2-117	KAFB-106V2-117-DUP	2007140A	Summa	FD	1,3,5-Trimethylbenzene	J	Field Duplicate RPD
KAFB-106V1-102	KAFB-106V1-102	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-113	KAFB-106V1-113	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-160	KAFB-106V1-160	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-160	KAFB-106V1-160-DUP	2007140A	Summa	FD	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-217	KAFB-106V1-217	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-252	KAFB-106V1-252	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-263	KAFB-106V1-263	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-102	KAFB-106V2-102	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-117	KAFB-106V2-117	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-117	KAFB-106V2-117-DUP	2007140A	Summa	FD	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-160	KAFB-106V2-160	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-217	KAFB-106V2-217	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-252	KAFB-106V2-252	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V2-270	KAFB-106V2-270	2007140A	Summa	N	1,2,4-Trichlorobenzene	UJ	Initial Calibration
KAFB-106V1-102	KAFB-106V1-102	2010075A	Summa	N	2-Butanone	J	Calibration Range

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-113	KAFB-106V1-113	2010075A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	2-Butanone	J	Calibration Range
KAFB-106V1-102	KAFB-106V1-102	2010075A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-113	KAFB-106V1-113	2010075A	Summa	N	Acetone	J	Calibration Range
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	Acetone	J	Calibration Range
KAFB-106V2-217	KAFB-106V2-217	2010075A	Summa	N	Acetone	J	Calibration Range
KAFB-106V1-102	KAFB-106V1-102	2010075A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1-113	2010075A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V2-217	KAFB-106V2-217	2010075A	Summa	N	Cyclohexane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1-102	2010075A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-113	KAFB-106V1-113	2010075A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-117	KAFB-106V2-117	2010075A	Summa	N	Hexane	J	Calibration Range
KAFB-106V2-217	KAFB-106V2-217	2010075A	Summa	N	Hexane	J	Calibration Range
KAFB-106V1-263	KAFB-106V1-263	2010075A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	n-Heptane	J	Calibration Range
KAFB-106V1-102	KAFB-106V1-102	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-113	KAFB-106V1-113	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-160	KAFB-106V1-160	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-160	KAFB-106V1-160-DUP	2010075A	Summa	FD	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-217	KAFB-106V1-217	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-252	KAFB-106V1-252	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V1-263	KAFB-106V1-263	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-160	KAFB-106V2-160	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-217	KAFB-106V2-217	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-252	KAFB-106V2-252	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-270	KAFB-106V2-270	2010075A	Summa	N	Naphthalene	J	Continuing Calibration Verification
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2-117	2010075A	Summa	N	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V2-117	KAFB-106V2-117-DUP	2010075A	Summa	FD	Naphthalene	UJ	Continuing Calibration Verification
KAFB-106V1-102	KAFB-106V1-102	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration

Table 3
Qualified Sample Results

Well Location ID	Sample Name	Sample Delivery Group	Collection Method	Sample Type	Analyte	Data Qualifier	Validation Reason Code
KAFB-106V1-113	KAFB-106V1-113	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V1-160	KAFB-106V1-160	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V1-160	KAFB-106V1-160-DUP	2010075A	Summa	FD	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V1-217	KAFB-106V1-217	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V1-252	KAFB-106V1-252	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V1-263	KAFB-106V1-263	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-102	KAFB-106V2-102	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-117	KAFB-106V2-117	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-117	KAFB-106V2-117-DUP	2010075A	Summa	FD	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-160	KAFB-106V2-160	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-217	KAFB-106V2-217	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-252	KAFB-106V2-252	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration
KAFB-106V2-270	KAFB-106V2-270	2010075A	Summa	N	4-Methyl-2-pentanone	UJ	Initial Calibration

Notes:

CQ = contamination from tedlar bag used for sample dilution (noted by the lab)

FD = field duplicate

ID = identification

N = normal field sample

RPD = relative percent difference

Qualifiers:

J = Qualifier denotes the analyte was positively identified, but the associated numerical value is estimated.

R = Qualifier denotes the analyte was rejected and is not useable.

U = Qualifier denotes the analyte was analyzed for but was not detected above the detection limit.

Table 4
Field Duplicate Sample Results

		Location ID:	KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160		
		Field Sample ID:	KAFB-106V1 159.6			KAFB-106V1 159.6 DUP			KAFB-106V1 159.6			KAFB-106V1 159.6 DUP			KAFB-106V1 159.6		
		Sample Date:	5/9/2019			5/9/2019			7/5/2019			7/5/2019			10/15/2019		
		Sample Type:	REG			Field Duplicate			REG			Field Duplicate			REG		
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	2,400	ND	U	2,500	ND	U	3,600	ND	U	3,600	ND	U	10,000
		1,1-Dichloroethane	ND	U	1,300	ND	U	1,300	ND	U	1,900	ND	U	1,900	ND	U	5,400
		1,2,4-Trichlorobenzene	ND	U	7,900	ND	U	8,000	ND	U	11,000	ND	U	12,000	ND	U	50,000
		1,2,4-Trimethylbenzene	180,000	--	1,600	200,000	--	1,600	150,000	J	2,300	160,000	J	2,300	170,000	--	6,600
		1,2-Dibromomethane	2,600	J	2,400	2,700	J	2,500	2,700	J	3,600	2,700	J	3,700	3,400	J	10,000
		1,2-Dichlorobenzene	ND	U	1,900	ND	U	1,900	ND	U	2,800	ND	U	2,900	ND	U	8,000
		1,3,5-Trimethylbenzene	53,000	--	1,600	60,000	--	1,600	51,000	J	2,300	53,000	J	2,300	64,000	--	6,600
		1,3-Butadiene	ND	U	700	ND	U	720	ND	U	1,000	ND	U	1,000	ND	U	3,000
		1,4-Dioxane	ND	U	3,800	ND	U	3,900	ND	U	5,600	ND	U	5,700	ND	U	24,000
		2-Butanone	150,000	--	3,100	160,000	--	3,200	140,000	J	4,600	140,000	J	4,700	160,000	--	20,000
		2-Hexanone	5,700	J	4,300	7,300	J	4,400	ND	U	6,300	ND	U	6,500	ND	U	27,000
		4-Methyl-2-Pentanone	6,400	--	1,300	5,600	--	1,300	ND	U	1,900	ND	U	2,000	ND	U	5,500
		Acetone	2,900,000	J	2,500	3,000,000	J	2,600	3,100,000	J	3,700	3,100,000	J	3,800	3,100,000	--	16,000
		Benzene	1,600,000	--	1,000	1,700,000	--	1,000	1,600,000	J	1,500	1,600,000	J	1,500	2,100,000	--	4,300
		Bromodichloromethane	ND	U	2,100	ND	U	2,200	ND	U	3,100	ND	U	3,200	ND	U	9,000
		Bromoform	ND	U	3,300	ND	U	3,300	ND	U	4,800	ND	U	4,900	ND	U	14,000
		Carbon Disulfide	ND	U	3,300	ND	U	3,400	1,000	J	4,800	980	J	5,000	ND	U	21,000
		Carbon Tetrachloride	ND	U	2,000	ND	U	2,000	ND	U	2,900	ND	U	3,000	ND	U	8,400
		Chloroethane	ND	U	2,800	ND	U	2,800	ND	U	4,100	ND	U	4,200	ND	U	18,000
		Chloroform	ND	U	1,600	ND	U	1,600	ND	U	2,300	ND	U	2,300	ND	U	6,500
		Chloromethane	ND	U	2,200	ND	U	2,200	ND	U	3,200	ND	U	3,300	ND	U	14,000
		Cyclohexane	4,400,000	J	1,100	4,600,000	J	1,100	4,200,000	J	1,600	4,200,000	J	1,600	5,600,000	--	4,600
		Dibromochloromethane	ND	U	2,700	ND	U	2,800	ND	U	3,900	ND	U	4,100	ND	U	11,000
		Dichlorodifluoromethane	ND	U	1,600	ND	U	1,600	ND	U	2,300	ND	U	2,400	ND	U	6,600
		Ethanol	93,000	--	2,000	98,000	--	2,000	97,000	J	2,900	98,000	J	3,000	65,000	--	13,000
		Ethyl Acetate	ND	U	7,600	ND	U	7,800	ND	U	7,400	ND	U	7,600	ND	U	32,000
		Ethylbenzene	390,000	--	1,400	430,000	--	1,400	330,000	J	2,000	330,000	J	2,100	430,000	--	5,800
		Hexane	5,900,000	J	1,100	6,300,000	J	1,100	4,800,000	J	1,600	4,800,000	J	1,700	7,300,000	--	4,700
		Isopropyl Alcohol	400,000	--	2,600	420,000	--	2,600	350,000	J	3,800	350,000	J	3,900	280,000	--	16,000
		m- & p-Xylenes	880,000	--	1,400	960,000	--	1,400	690,000	J	2,000	740,000	J	2,100	1,000,000	--	5,800
		Methylene Chloride	ND	U	3,700	ND	U	3,800	ND	U	5,400	ND	U	5,500	ND	U	23,000
		Naphthalene	ND	UJ	5,600	ND	UJ	5,700	ND	U	5,400	ND	U	5,600	ND	U	4,700
		n-Heptane	4,300,000	--	1,300	4,700,000	J	1,300	3,500,000	J	1,900	3,500,000	J	2,000	5,600,000	--	5,500
		o-Xylene	280,000	--	1,400	320,000	--	1,400	230,000	J	2,000	240,000	J	2,100	320,000	--	5,800
		Propylene (Propene)	29,000	--	1,800	31,000	--	1,800	20,000	J	2,600	20,000	J	2,700	ND	U	12,000
		Styrene	ND	U	1,400	ND	U	1,400	ND	U	2,000	ND	U	2,000	ND	U	5,700
		Tetrachloroethene	ND	U	2,200	ND	U	2,200	ND	U	3,100	ND	U	3,200	99,000	--	9,100
		Tetrahydrofuran	ND	U	940	ND	U	960	ND	U	1,400	ND	U	1,400	ND	U	3,900
		Toluene	2,800,000	--	1,200	3,100,000	--	1,200	1,800,000	J	1,700	1,800,000	J	1,800	3,500,000	--	5,000
		Trichloroethene	ND	U	1,700	ND	U	1,700	ND	U	2,500	ND	U	2,600	3,700	J	7,200
		Trichlorofluoromethane	ND	U	1,800	ND	U	1,800	ND	U	2,600	ND	U	2,700	ND	U	7,500
		Vinyl Chloride	ND	U	810	ND	U	830	ND	U	1,200	ND	U	1,200	ND	U	3,400
		Xylenes, Total	1,200,000	--	2,300	1,200,000	--	2,300	920,000	J	2,200	980,000	J	2,300	1,300,000	--	9,700
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	130,000,000	--	170,000	130,000,000	--	180,000	130,000,000	--	210,000	130,000,000	--	170,000	120,000,000	--	240,000
Fixed Gases	Method D1945 (%)	Butane	0.0068	--	0.00023	0.0068	--	0.00024	0.0064	--	2,300	0.0064	--	2,300	0.0035	--	0.00024
		Carbon Dioxide	7.7	--	0.01	7.8	--	0.01	6.8	--	0.0099	6.9	--	0.01	1.9	--	0.011
		Carbon Monoxide	ND	U	0.01	ND	U	0.01	ND	U	0.0099	ND	U	0.01	ND	U	0.011
		Ethane	0.0015	J	0.00023	0.0015	J	0.00024	0.00093	J	2,300	0.00092	J	2,300	ND	U	0.00024
		Hydrogen	ND	U	0.013	ND	U	0.013	ND	U	0.013	ND	U	0.013	ND	U	0.014
		Methane	0.0052	--	0.00011	0.0053	--	0.00011	0.0032	--	0.0001	0.0033	--	0.00011	0.00017	J	0.00011
		Nitrogen (Ammonia As N)	78	--	0.14	78	--	0.15	79	--	0.14	79	--	0.14	77	--	0.15
		Oxygen	12	--	0.039	12	--	0.04	12	--	0.038	12	--	0.039	19	--	0.041
		Pentane	0.18	--	0.00023	0.18	--	0.00024	0.18	--	0.00023	0.18	--	0.00023	0.16	--	0.00024
		Propane	0.0011	J	0.00023	0.0011	J	0.00024	0.00073	J	0.00023	0.00076	J	0.00023	0.00016	J	0.00024

Table 4
Field Duplicate Sample Results

		Location ID:	KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-1	
		Field Sample ID:	KAFB-106V1 159.6 DUP			KAFB-106V1 159.6			KAFB-106V1 159.6 DUP			KAFB-106V1 159.6			KAFB-106V1 159.6	
		Sample Date:	10/15/2019			10/22/2019			10/22/2019			10/31/2019			10/31/2019	
		Sample Type:	Field Duplicate			REG			Field Duplicate			REG			Field Duplicate	
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	10,000	ND	R	49	ND	R	47	ND	U	2,100	ND	U
		1,1-Dichloroethane	ND	U	5,600	ND	R	26	ND	R	25	ND	U	1,100	ND	U
		1,2,4-Trichlorobenzene	ND	U	51,000	ND	R	240	ND	R	230	ND	U	10,000	ND	U
		1,2,4-Trimethylbenzene	130,000	--	6,800	3,900	R	31	190	R	30	19,000	--	1,400	25,000	--
		1,2-Dibromoethane	ND	U	11,000	ND	R	49	ND	R	47	1,800	J	2,100	1,900	J
		1,2-Dichlorobenzene	ND	U	8,300	ND	R	38	ND	R	37	ND	U	1,600	ND	U
		1,3,5-Trimethylbenzene	51,000	--	6,800	1,200	R	31	56	R	30	7,500	--	1,400	8,800	--
		1,3-Butadiene	ND	U	3,000	ND	R	14	ND	R	14	ND	U	610	ND	U
		1,4-Dioxane	ND	U	25,000	ND	R	110	ND	R	110	ND	U	5,000	ND	U
		2-Butanone	130,000	--	20,000	150	R	94	ND	R	91	91,000	--	4,100	99,000	--
		2-Hexanone	ND	U	28,000	ND	R	130	ND	R	130	4,400	J	5,600	3,900	J
		4-Methyl-2-Pentanone	ND	U	5,600	ND	R	26	ND	R	25	3,700	--	1,100	5,000	--
		Acetone	2,900,000	--	16,000	1,600	R	76	120	R	73	2,300,000	J	3,300	2,400,000	J
		Benzene	2,000,000	--	4,400	1,900	R	20	140	R	20	1,200,000	--	880	1,300,000	--
		Bromodichloromethane	ND	U	9,200	ND	R	43	ND	R	41	ND	U	1,800	ND	U
		Bromoform	ND	U	14,000	ND	R	66	ND	R	64	ND	U	2,800	ND	U
		Carbon Disulfide	ND	U	21,000	ND	R	99	ND	R	96	ND	U	4,300	ND	U
		Carbon Tetrachloride	ND	U	8,700	ND	R	40	ND	R	39	ND	U	1,700	ND	U
		Chloroethane	ND	U	18,000	ND	R	84	ND	R	82	ND	U	3,600	ND	U
		Chloroform	ND	U	6,700	ND	R	31	ND	R	30	ND	U	1,300	ND	U
		Chloromethane	ND	U	14,000	ND	R	66	ND	R	64	ND	U	2,800	ND	U
		Cyclohexane	5,500,000	--	4,800	5,900	R	22	430	R	21	3,400,000	J	950	3,600,000	J
		Dibromochloromethane	ND	U	12,000	ND	R	54	ND	R	53	ND	U	2,400	ND	U
		Dichlorodifluoromethane	ND	U	6,800	ND	R	31	ND	R	30	ND	U	1,400	ND	U
		Ethanol	50,000	--	13,000	100	R	60	ND	R	58	33,000	--	2,600	35,000	--
		Ethyl Acetate	ND	U	33,000	ND	R	150	ND	R	150	ND	U	6,600	ND	U
		Ethylbenzene	420,000	--	6,000	3,000	R	28	160	R	27	190,000	--	1,200	200,000	--
		Hexane	7,200,000	--	4,900	4,600	R	22	240	R	22	4,700,000	J	970	5,000,000	J
		Isopropyl Alcohol	220,000	--	17,000	290	R	78	25	R	76	120,000	--	3,400	140,000	--
		m- & p-Xylenes	950,000	--	6,000	7,800	R	28	330	R	27	360,000	--	1,200	400,000	--
		Methylene Chloride	ND	U	24,000	ND	R	110	ND	R	110	ND	U	4,800	ND	U
		Naphthalene	ND	U	4,800	180	R	22	38	R	22	ND	U	960	750	J
		n-Heptane	5,400,000	--	5,600	9,600	R	26	800	R	25	3,000,000	--	1,100	3,300,000	--
		o-Xylene	280,000	--	6,000	2,800	R	28	120	R	27	96,000	--	1,200	110,000	--
		Propylene (Propene)	ND	U	12,000	ND	R	55	ND	R	53	ND	U	2,400	ND	U
		Styrene	ND	U	5,900	ND	R	27	ND	R	26	ND	U	1,200	ND	U
		Tetrachloroethene	97,000	--	9,400	ND	R	43	ND	R	42	ND	U	1,900	ND	U
		Tetrahydrofuran	ND	U	4,100	ND	R	19	ND	R	18	ND	U	810	ND	U
		Toluene	3,400,000	--	5,200	9,600	R	24	820	R	23	2,000,000	--	1,000	2,200,000	--
		Trichloroethene	4,200	J	7,400	ND	R	34	ND	R	33	ND	U	1,500	ND	U
		Trichlorofluoromethane	ND	U	7,800	ND	R	36	ND	R	35	ND	U	1,600	ND	U
		Vinyl Chloride	ND	U	3,500	ND	R	16	ND	R	16	ND	U	700	ND	U
		Xylenes, Total	1,200,000	--	10,000	11,000	R	46	450	R	45	460,000	--	2,000	510,000	--
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	130,000,000	--	190,000	520,000	R	690	29,000	R	170	70,000,000	--	150,000	76,000,000	--
Fixed Gases	Method D1945 (%)	Butane	0.0036	--	0.00025	ND	R	0.00023	ND	R	0.00023	0.00054	J	0.0002	0.00056	J
		Carbon Dioxide	1.9	--	0.011	0.043	R	0.01	0.042	R	0.0099	0.48	--	0.0088	0.48	--
		Carbon Monoxide	ND	U	0.011	ND	R	0.01	ND	R	0.0099	ND	U	0.0088	ND	U
		Ethane	ND	U	0.00025	ND	R	0.00023	ND	R	0.00023	ND	U	0.0002	ND	U
		Hydrogen	ND	U	0.014	ND	R	0.013	ND	R	0.013	ND	U	0.011	ND	U
		Methane	0.00013	J	0.00012	0.00016	R	0.00011	0.00022	R	0.0001	0.00014	J	0.000092	0.00015	J
		Nitrogen (Ammonia As N)	77	--	0.16	80	R	0.14	80	R	0.14	78	--	0.12	78	--
		Oxygen	19	--	0.043	20	R	0.039	20	R	0.038	20	--	0.034	20	--
		Pentane	0.17	--	0.00025	0.00006	R	0.00023	ND	R	0.00023	0.11	--	0.0002	0.1	--
		Propane	0.00016	J	0.00025	ND	R	0.00023	ND	R	0.00023	ND	U	0.0002	ND	U

Table 4
Field Duplicate Sample Results

		Location ID: 60	KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			
		Field Sample ID: 5	KAFB-106V1 160			KAFB-106V1 160 DUP			KAFB-106V1-160			KAFB-106V1-160-DUP			
		Sample Date:	11/5/2019			11/5/2019			1/13/2020			1/13/2020			
		Sample Type:	REG			Field Duplicate			REG			Field Duplicate			
Parameter	Analytical Method	Analyte	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	2,100	ND	U	2,200	ND	U	2,100	ND	U	3,900	ND	U	7,200
		1,1-Dichloroethane	1,100	ND	U	1,100	ND	U	1,100	ND	U	2,000	ND	U	3,800
		1,2,4-Trichlorobenzene	10,000	ND	U	10,000	ND	U	10,000	ND	U	14,000	ND	U	26,000
		1,2,4-Trimethylbenzene	1,300	78,000	J	1,400	74,000	J	1,300	46,000	J	2,500	40,000	--	4,600
		1,2-Dibromoethane	2,100	2,600	J	2,200	3,100	J	2,100	1,700	J	3,900	2,100	J	7,200
		1,2-Dichlorobenzene	1,600	ND	U	1,700	ND	U	1,600	ND	U	3,000	ND	U	5,700
		1,3,5-Trimethylbenzene	1,300	26,000	J	1,400	25,000	J	1,300	18,000	J	2,500	16,000	--	4,600
		1,3-Butadiene	600	ND	U	630	ND	U	610	ND	U	1,100	ND	U	2,100
		1,4-Dioxane	4,900	ND	U	5,100	ND	U	4,900	ND	U	6,800	ND	U	13,000
		2-Butanone	4,000	120,000	J	4,200	130,000	J	4,000	87,000	J	5,600	95,000	--	10,000
		2-Hexanone	5,600	ND	U	5,800	ND	U	5,600	ND	U	7,700	ND	U	14,000
		4-Methyl-2-Pentanone	1,100	ND	U	1,200	ND	U	1,100	ND	U	2,100	ND	U	3,900
		Acetone	3,200	2,900,000	J	3,400	2,900,000	J	3,300	2,500,000	J	4,500	2,800,000	--	8,400
		Benzene	870	1,500,000	J	900	1,500,000	J	880	1,100,000	J	1,600	1,100,000	--	3,000
		Bromodichloromethane	1,800	ND	U	1,900	ND	U	1,800	ND	U	3,400	ND	U	6,300
		Bromoform	2,800	ND	U	2,900	ND	U	2,800	ND	U	5,200	ND	U	9,800
		Carbon Disulfide	4,200	ND	U	4,400	ND	U	4,300	ND	U	5,900	ND	U	11,000
		Carbon Tetrachloride	1,700	ND	U	1,800	ND	U	1,700	ND	U	3,200	ND	U	5,900
		Chloroethane	3,600	ND	U	3,700	ND	U	3,600	ND	U	5,000	ND	U	9,300
		Chloroform	1,300	ND	U	1,400	ND	U	1,300	ND	U	2,500	ND	U	4,600
		Chloromethane	2,800	ND	U	2,900	ND	U	2,800	ND	U	3,900	ND	U	7,300
		Cyclohexane	940	4,300,000	J	980	4,300,000	J	940	3,000,000	J	1,700	3,300,000	--	3,200
		Dibromochloromethane	2,300	ND	U	2,400	ND	U	2,300	ND	U	4,300	ND	U	8,000
		Dichlorodifluoromethane	1,400	ND	U	1,400	ND	U	1,400	ND	U	2,500	ND	U	4,700
		Ethanol	2,600	88,000	J	2,700	87,000	J	2,600	69,000	J	3,600	58,000	--	6,700
		Ethyl Acetate	6,600	ND	U	6,800	ND	U	6,600	ND	U	9,100	ND	U	17,000
		Ethylbenzene	1,200	360,000	J	1,200	380,000	J	1,200	280,000	J	2,200	240,000	--	4,100
		Hexane	960	5,800,000	J	1,000	5,700,000	J	970	3,700,000	J	1,800	4,100,000	--	3,300
		Isopropyl Alcohol	3,400	340,000	J	3,500	340,000	J	3,400	290,000	J	4,600	280,000	--	8,700
		m- & p-Xylenes	1,200	740,000	J	1,200	770,000	J	1,200	610,000	J	2,200	480,000	--	4,100
		Methylene Chloride	4,700	ND	U	4,900	ND	U	4,800	ND	U	6,600	ND	U	12,000
		Naphthalene	950	1,200	J	990	ND	U	960	ND	U	1,300	ND	U	2,500
		n-Heptane	1,100	4,400,000	J	1,200	4,300,000	J	1,100	2,900,000	J	2,100	3,000,000	--	3,900
		o-Xylene	1,200	220,000	J	1,200	220,000	J	1,200	170,000	J	2,200	140,000	--	4,100
		Propylene (Propene)	2,300	ND	U	2,400	ND	U	2,400	ND	U	3,200	ND	U	6,100
		Styrene	1,200	ND	U	1,200	ND	U	1,200	ND	U	2,100	ND	U	4,000
		Tetrachloroethene	1,800	ND	U	1,900	ND	U	1,900	ND	U	3,400	ND	U	6,400
		Tetrahydrofuran	800	ND	U	840	ND	U	810	ND	U	1,500	ND	U	2,800
		Toluene	1,000	3,000,000	J	1,100	2,900,000	J	1,000	2,200,000	J	1,900	2,100,000	--	3,600
		Trichloroethene	1,500	ND	U	1,500	ND	U	1,500	ND	U	2,700	ND	U	5,100
		Trichlorofluoromethane	1,500	ND	U	1,600	ND	U	1,500	ND	U	2,800	ND	U	5,300
		Vinyl Chloride	700	ND	U	720	ND	U	700	ND	U	1,300	ND	U	2,400
		Xylenes, Total	2,000	960,000	J	2,000	990,000	J	2,000	780,000	J	5,500	620,000	--	10,000
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	150,000	110,000,000	--	190,000	110,000,000	--	190,000	92,000,000	--	290,000	100,000,000	--	150,000
Fixed Gases	Method D1945 (%)	Butane	0.0002	0.00048	J	0.00021	0.00046	J	0.0002	ND	U	0.00022	ND	U	0.0002
		Carbon Dioxide	0.0087	0.44	--	0.0091	0.44	--	0.0088	0.52	--	0.012	0.51	--	0.011
		Carbon Monoxide	0.0087	ND	U	0.0091	ND	U	0.0088	ND	U	0.012	ND	U	0.011
		Ethane	0.0002	ND	U	0.00021	ND	U	0.0002	ND	U	0.00022	ND	U	0.0002
		Hydrogen	0.011	ND	U	0.012	ND	U	0.011	ND	U	0.016	ND	U	0.015
		Methane	0.000091	0.00014	J	0.000094	0.00013	J	0.000092	ND	U	0.00012	ND	U	0.00012
		Nitrogen (Ammonia As N)	0.12	78	--	0.13	78	--	0.12	78	--	0.17	80	--	0.16
		Oxygen	0.034	20	--	0.035	20	--	0.034	20	--	0.046	19	--	0.044
		Pentane	0.0002	0.11	--	0.00021	0.11	--	0.0002	0.022	--	0.00022	0.023	--	0.0002
		Propane	0.0002	ND	U	0.00021	ND	U	0.0002	ND	U	0.00022	ND	U	0.0002

Table 4
Field Duplicate Sample Results

		Location ID:	KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			KAFB-106V1-160			
		Field Sample ID:	KAFB-106V1-160			KAFB-106V1-160-DUP			KAFB-106V1-160			KAFB-106V1-160-DUP			KAFB-106V1-160
		Sample Date:	4/6/2020			4/6/2020			6/30/2020			6/30/2020			
		Sample Type:	REG			Field Duplicate			REG			Field Duplicate			
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	3,600	ND	U	3,700	ND	U	3,000	ND	U	3,100	ND
		1,1-Dichloroethane	ND	U	1,900	ND	U	2,000	ND	U	1,600	ND	U	1,600	ND
		1,2,4-Trichlorobenzene	ND	U	17,000	ND	U	18,000	ND	U	11,000	ND	U	11,000	ND
		1,2,4-Trimethylbenzene	91,000	--	2,300	75,000	J	2,400	210,000	--	1,900	190,000	--	2,000	77,000
		1,2-Dibromoethane	1,600	J	3,600	1,600	J	3,700	1,700	J	3,000	1,400	J	3,100	1,300
		1,2-Dichlorobenzene	ND	U	2,800	ND	U	2,900	ND	U	2,400	ND	U	2,400	ND
		1,3,5-Trimethylbenzene	32,000	--	2,300	28,000	J	2,400	57,000	--	1,900	52,000	--	2,000	24,000
		1,3-Butadiene	ND	U	1,000	ND	U	1,100	ND	U	870	ND	U	900	ND
		1,4-Dioxane	ND	U	8,500	ND	U	8,800	ND	U	5,300	ND	U	5,500	ND
		2-Butanone	79,000	--	6,900	66,000	J	7,200	66,000	--	4,400	66,000	--	4,500	43,000
		2-Hexanone	ND	U	9,600	ND	U	10,000	ND	U	6,000	ND	U	6,300	ND
		4-Methyl-2-Pentanone	ND	U	1,900	ND	U	2,000	ND	U	1,600	ND	U	1,700	ND
		Acetone	2,600,000	--	5,600	2,400,000	J	5,800	2,000,000	--	3,500	2,000,000	--	3,600	1,400,000
		Benzene	850,000	--	1,500	760,000	J	1,600	450,000	--	1,200	450,000	--	1,300	240,000
		Bromodichloromethane	ND	U	3,200	ND	U	3,200	ND	U	2,600	ND	U	2,700	ND
		Bromoform	ND	U	4,900	ND	U	5,000	ND	U	4,100	ND	U	4,200	ND
		Carbon Disulfide	ND	U	7,300	ND	U	7,600	ND	U	4,600	ND	U	4,800	ND
		Carbon Tetrachloride	ND	U	3,000	ND	U	3,000	ND	U	2,500	ND	U	2,600	ND
		Chloroethane	ND	U	6,200	ND	U	6,400	ND	U	4,700	ND	U	4,800	ND
		Chloroform	ND	U	2,300	ND	U	2,400	ND	U	1,900	ND	U	2,000	ND
		Chloromethane	ND	U	4,900	ND	U	5,000	ND	U	3,000	ND	U	3,200	ND
		Cyclohexane	2,700,000	--	1,600	2,400,000	J	1,700	1,700,000	--	1,400	1,700,000	--	1,400	920,000
		Dibromochloromethane	ND	U	4,000	ND	U	4,100	ND	U	3,400	ND	U	3,500	ND
		Dichlorodifluoromethane	ND	U	2,300	ND	U	2,400	ND	U	1,900	ND	U	2,000	ND
		Ethanol	66,000	--	4,400	55,000	J	4,600	80,000	--	2,800	86,000	--	2,900	45,000
		Ethyl Acetate	ND	U	11,000	ND	U	12,000	ND	U	7,100	ND	U	7,400	ND
		Ethylbenzene	280,000	--	2,000	280,000	J	2,100	310,000	--	1,700	300,000	--	1,800	220,000
		Hexane	2,400,000	--	1,600	2,100,000	J	1,700	1,000,000	--	1,400	1,000,000	--	1,400	350,000
		Isopropyl Alcohol	290,000	--	5,800	200,000	J	6,000	310,000	--	3,600	320,000	--	3,800	160,000
		m- & p-Xylenes	600,000	--	2,000	590,000	J	2,100	710,000	--	1,700	680,000	--	1,800	430,000
		Methylene Chloride	ND	U	8,200	ND	U	8,400	ND	U	5,100	ND	U	5,300	ND
		Naphthalene	ND	U	1,200	ND	U	1,300	18,000	--	1,000	12,000	--	1,100	2,300
		n-Heptane	2,800,000	--	1,900	2,500,000	J	2,000	2,200,000	--	1,600	2,200,000	--	1,700	1,400,000
		o-Xylene	180,000	--	2,000	170,000	J	2,100	230,000	--	1,700	220,000	--	1,800	140,000
		Propylene (Propene)	ND	U	4,000	ND	U	4,200	ND	U	2,500	ND	U	2,600	ND
		Styrene	ND	U	2,000	ND	U	2,100	ND	U	1,700	ND	U	1,700	ND
		Tetrachloroethene	ND	U	3,200	ND	U	3,300	ND	U	2,700	ND	U	2,800	ND
		Tetrahydrofuran	ND	U	1,400	ND	U	1,400	ND	U	1,200	ND	U	1,200	ND
		Toluene	2,100,000	--	1,800	1,900,000	J	1,800	1,600,000	--	1,500	1,600,000	--	1,500	1,300,000
		Trichloroethene	ND	U	2,500	ND	U	2,600	ND	U	2,100	ND	U	2,200	ND
		Trichlorofluoromethane	ND	U	2,600	ND	U	2,700	ND	U	2,200	ND	U	2,300	ND
		Vinyl Chloride	ND	U	1,200	ND	U	1,200	ND	U	1,000	ND	U	1,000	ND
		Xylenes, Total	780,000	--	6,800	780,000	J	7,000	920,000	--	4,300	910,000	--	4,400	580,000
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	77,000,000	--	92,000	78,000,000	--	59,000	56,000,000	--	80,000	56,000,000	--	83,000	34,000,000
Fixed Gases	Method D1945 (%)	Butane	ND	U	0.00016	ND	U	0.00017	ND	U	0.00017	ND	U	0.00018	ND
		Carbon Dioxide	0.53	--	0.0071	0.55	--	0.0074	0.77	--	0.0075	0.79	--	0.0078	0.67
		Carbon Monoxide	ND	U	0.0071	ND	U	0.0074	ND	U	0.0075	ND	U	0.0078	ND
		Ethane	ND	U	0.00016	ND	U	0.00017	ND	U	0.00017	ND	U	0.00018	ND
		Hydrogen	ND	U	0.012	ND	U	0.012	ND	U	0.012	ND	U	0.013	ND
		Methane	ND	U	0.000094	ND	U	0.000097	ND	U	0.000098	ND	U	0.0001	ND
		Nitrogen (Ammonia As N)	79	--	0.1	79	--	0.11	80	--	0.11	80	--	0.11	80
		Oxygen	20	--	0.01	20	--	0.011	19	--	0.011	19	--	0.011	19
		Pentane	0.002	--	0.00016	0.002	--	0.00017	0.0008	J	0.00017	0.00082	J	0.00018	0.00039
		Propane	ND	U	0.00016	ND	U	0.00017	ND	U	0.00017	ND	U	0.00018	ND

Table 4
Field Duplicate Sample Results

Parameter	Analytical Method	Location ID: FB-106V1-160			KAFB-106V1-160			KAFB-106V2-117			KAFB-106V2-117		
		Field Sample ID: FB-106V1-160			KAFB-106V1-160-DUP			KAFB-106V2 117.1			KAFB-106V2 117.1 DUP		
		Sample Date: 9/29/2020			9/29/2020			4/11/2019			4/11/2019		
		Sample Type: REG			Field Duplicate			REG			Field Duplicate		
		Analyte	Val	Qual	LOD	Result	Val	Qual	LOD	Result	Val	Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	U		2,900	ND	U		3,000	ND	U		2,200
		1,1-Dichloroethane	U		1,500	ND	U		1,600	ND	U		1,200
		1,2,4-Trichlorobenzene	U		7,100	ND	U		7,300	ND	U		7,200
		1,2,4-Trimethylbenzene	--		1,900	90,000	--		1,900	6,500	--		1,400
		1,2-Dibromoethane	J		2,900	1,300	J		3,000	9,700	--		2,200
		1,2-Dichlorobenzene	U		2,300	ND	U		2,400	ND	U		1,800
		1,3,5-Trimethylbenzene	--		1,900	28,000	--		1,900	3,900	--		1,400
		1,3-Butadiene	U		840	ND	U		870	ND	U		650
		1,4-Dioxane	U		3,400	ND	U		3,500	ND	U		3,500
		2-Butanone	--		2,800	46,000	--		2,900	270,000	--		2,900
		2-Hexanone	U		3,900	ND	U		4,000	ND	U		4,000
		4-Methyl-2-Pentanone	UJ		1,600	ND	UJ		1,600	ND	U		1,200
		Acetone	--		2,300	1,500,000	--		2,300	1,500,000	--		2,300
		Benzene	--		1,200	250,000	--		1,200	1,800,000	--		930
		Bromodichloromethane	U		2,600	ND	U		2,600	ND	U		2,000
		Bromoform	U		3,900	ND	U		4,000	ND	U		3,000
		Carbon Disulfide	U		3,000	ND	U		3,000	ND	U		3,000
		Carbon Tetrachloride	U		2,400	ND	U		2,500	ND	U		1,800
		Chloroethane	U		2,500	ND	U		2,600	ND	U		2,600
		Chloroform	U		1,900	ND	U		1,900	ND	U		1,400
		Chloromethane	U		2,000	ND	U		2,000	ND	U		2,000
		Cyclohexane	--		1,300	980,000	--		1,300	5,600,000	J		1,000
		Dibromochloromethane	U		3,200	ND	U		3,300	ND	U		2,500
		Dichlorodifluoromethane	U		1,900	ND	U		1,900	ND	U		1,400
		Ethanol	--		2,200	49,000	--		2,300	11,000	--		1,800
		Ethyl Acetate	U		6,900	ND	U		7,100	ND	U		7,000
		Ethylbenzene	--		1,600	260,000	--		1,700	390,000	--		1,300
		Hexane	--		1,300	370,000	--		1,400	7,100,000	J		1,000
		Isopropyl Alcohol	--		2,300	190,000	--		2,400	65,000	--		2,400
		m- & p-Xylenes	--		1,600	520,000	--		1,700	970,000	--		1,300
		Methylene Chloride	U		3,300	ND	U		3,400	ND	U		3,400
		Naphthalene	J		1,000	3,400	J		1,000	ND	UJ		5,100
		n-Heptane	--		1,600	1,600,000	--		1,600	5,100,000	J		1,200
		o-Xylene	--		1,600	170,000	--		1,700	230,000	--		1,300
		Propylene (Propene)	U		1,600	ND	U		1,700	30,000	--		1,700
		Styrene	U		1,600	ND	U		1,700	ND	U		1,200
		Tetrachloroethene	U		2,600	ND	U		2,600	ND	U		2,000
		Tetrahydrofuran	U		1,100	ND	U		1,200	ND	U		860
		Toluene	--		1,400	1,400,000	--		1,500	3,300,000	--		1,100
		Trichloroethene	U		2,000	ND	U		2,100	ND	U		1,600
		Trichlorofluoromethane	U		2,100	ND	U		2,200	ND	U		1,600
		Vinyl Chloride	U		980	ND	U		1,000	ND	U		750
		Xylenes, Total	--		4,100	690,000	--		4,200	1,200,000	--		2,100
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	--		62,000	38,000,000	--		64,000	180,000,000	--		320,000
Fixed Gases	Method D1945 (%)	Butane	U		0.00016	ND	U		0.00017	0.0093	--		0.00021
		Carbon Dioxide	--		0.0072	0.71	--		0.0074	13	--		0.0094
		Carbon Monoxide	U		0.0072	ND	U		0.0074	ND	U		0.0094
		Ethane	U		0.00016	ND	U		0.00017	0.0028	--		0.00021
		Hydrogen	U		0.012	ND	U		0.012	ND	U		0.012
		Methane	U		0.000096	ND	U		0.000098	0.02	--		9.8E-05
		Nitrogen (Ammonia As N)	--		0.1	80	--		0.11	84	--		0.13
		Oxygen	--		0.01	19	--		0.011	1.3	--		0.036
		Pentane	J		0.00016	0.00041	J		0.00017	0.21	--		0.00021
		Propane	U		0.00016	ND	U		0.00017	0.0014	J		0.00021

Table 4
Field Duplicate Sample Results

		Location ID:	KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117		
		Field Sample ID:	KAFB-106V2 117.1			KAFB-106V2 117.1 DUP			KAFB-106V2 117.1			KAFB-106V2 117.1 DUP			KAFB-106V2 117.1		
		Sample Date:	5/9/2019			5/9/2019			7/5/2019			7/5/2019			10/15/2019		
		Sample Type:	REG			Field Duplicate			REG			Field Duplicate			REG		
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	9,200	ND	U	8,200	ND	U	3,600	ND	U	3,600	ND	U	8,800
		1,1-Dichloroethane	ND	U	4,800	ND	U	4,300	ND	U	1,900	ND	U	1,900	ND	U	4,600
		1,2,4-Trichlorobenzene	ND	U	30,000	ND	U	26,000	ND	U	11,000	ND	U	11,000	ND	U	42,000
		1,2,4-Trimethylbenzene	140,000	--	5,900	130,000	--	5,300	240,000	J	2,300	240,000	J	2,300	150,000	J	5,600
		1,2-Dibromoethane	9,900	J	9,200	8,900	J	8,200	17,000	J	3,600	16,000	J	3,600	19,000	J	8,800
		1,2-Dichlorobenzene	ND	U	7,200	ND	U	6,400	ND	U	2,800	ND	U	2,800	ND	U	6,900
		1,3,5-Trimethylbenzene	60,000	--	5,900	61,000	--	5,300	90,000	J	2,300	86,000	J	2,300	60,000	J	5,600
		1,3-Butadiene	ND	U	2,600	ND	U	2,400	ND	U	1,000	ND	U	1,000	ND	U	2,500
		1,4-Dioxane	ND	U	14,000	ND	U	13,000	ND	U	5,600	ND	U	5,600	ND	U	21,000
		2-Butanone	350,000	--	12,000	340,000	--	10,000	710,000	J	4,600	730,000	J	4,600	800,000	J	17,000
		2-Hexanone	ND	U	16,000	ND	U	15,000	ND	U	6,300	ND	U	6,300	ND	U	23,000
		4-Methyl-2-Pentanone	14,000	--	4,900	15,000	--	4,400	ND	U	1,900	ND	U	1,900	10,000	J	4,700
		Acetone	2,200,000	--	9,500	2,100,000	--	8,500	4,000,000	J	3,700	4,100,000	J	3,700	3,800,000	J	14,000
		Benzene	2,100,000	--	3,800	2,000,000	--	3,400	2,300,000	J	2,000	2,200,000	--	2,000	3,600,000	J	3,700
		Bromodichloromethane	ND	U	8,000	ND	U	7,200	ND	U	3,100	ND	U	3,100	ND	U	7,700
		Bromoform	ND	U	12,000	ND	U	11,000	ND	U	4,800	ND	U	4,800	ND	U	12,000
		Carbon Disulfide	ND	U	12,000	ND	U	11,000	1,700	J	4,800	1,700	J	4,800	ND	U	18,000
		Carbon Tetrachloride	ND	U	7,600	ND	U	6,700	ND	U	2,900	ND	U	2,900	ND	U	7,200
		Chloroethane	ND	U	10,000	ND	U	9,400	ND	U	4,100	ND	U	4,100	ND	U	15,000
		Chloroform	ND	U	5,800	ND	U	5,200	ND	U	2,300	ND	U	2,300	ND	U	5,600
		Chloromethane	ND	U	8,300	ND	U	7,400	ND	U	3,200	ND	U	3,200	ND	U	12,000
		Cyclohexane	6,100,000	--	4,100	6,100,000	--	3,700	6,000,000	J	1,600	6,000,000	J	1,600	9,900,000	J	3,900
		Dibromochloromethane	ND	U	10,000	ND	U	9,100	ND	U	3,900	ND	U	3,900	ND	U	9,800
		Dichlorodifluoromethane	ND	U	5,900	ND	U	5,300	ND	U	2,300	ND	U	2,300	ND	U	5,700
		Ethanol	11,000	J	7,500	11,000	J	6,700	8,200	J	2,900	8,900	J	2,900	3,400	J	11,000
		Ethyl Acetate	ND	U	29,000	ND	U	26,000	ND	U	7,400	ND	U	7,400	ND	U	28,000
		Ethylbenzene	350,000	--	5,200	320,000	--	4,600	430,000	J	2,000	440,000	J	2,000	540,000	J	5,000
		Hexane	7,700,000	--	4,200	7,700,000	--	3,800	5,500,000	J	1,600	5,900,000	J	1,600	12,000,000	J	4,000
		Isopropyl Alcohol	75,000	--	9,800	70,000	--	8,800	90,000	J	3,800	95,000	J	3,800	61,000	J	14,000
		m- & p-Xylenes	1,200,000	--	5,200	1,000,000	--	4,600	1,200,000	J	2,000	1,200,000	J	2,000	1,500,000	J	5,000
		Methylene Chloride	ND	U	14,000	ND	U	12,000	ND	U	5,400	ND	U	5,400	ND	U	20,000
		Naphthalene	ND	UJ	6,300	ND	UJ	5,600	ND	U	5,400	ND	U	5,400	ND	U	4,000
		n-Heptane	5,900,000	--	4,900	5,700,000	--	4,400	6,000,000	J	1,900	6,200,000	J	1,900	9,800,000	J	4,700
		o-Xylene	390,000	--	5,200	340,000	--	4,600	380,000	J	2,000	370,000	J	2,000	410,000	J	5,000
		Propylene (Propene)	21,000	--	6,900	20,000	--	6,100	29,000	J	2,600	29,000	J	2,600	29,000	J	9,900
		Styrene	ND	U	5,100	ND	U	4,600	ND	U	2,000	ND	U	2,000	ND	U	4,900
		Tetrachloroethene	ND	U	8,100	ND	U	7,300	ND	U	3,100	ND	U	3,100	64,000	J	7,800
		Tetrahydrofuran	ND	U	3,500	ND	U	3,200	ND	U	1,400	ND	U	1,400	ND	U	3,400
		Toluene	3,900,000	J	4,500	3,800,000	J	4,000	5,200,000	J	2,300	4,200,000	J	2,300	7,000,000	J	4,300
		Trichloroethene	ND	U	6,400	ND	U	5,800	ND	U	2,500	ND	U	2,500	ND	U	6,200
		Trichlorofluoromethane	ND	U	6,700	ND	U	6,000	ND	U	2,600	ND	U	2,600	ND	U	6,400
		Vinyl Chloride	ND	U	3,100	ND	U	2,700	ND	U	1,200	ND	U	1,200	ND	U	2,900
		Xylenes, Total	1,600,000	--	8,700	1,400,000	--	7,800	1,600,000	J	2,200	1,500,000	J	2,200	1,900,000	J	8,300
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	210,000,000	--	200,000	210,000,000	--	180,000	220,000,000	--	280,000	210,000,000	--	280,000	240,000,000	--	310,000
Fixed Gases	Method D1945 (%)	Butane	0.0069	--	0.00026	0.0067	--	0.00024	0.0062	--	2,300	0.006	--	2,300	0.006	--	0.00021
		Carbon Dioxide	9.7	--	0.012	9.6	--	0.01	11	--	0.0099	11	--	0.0099	11	--	0.0092
		Carbon Monoxide	ND	U	0.012	ND	U	0.01	ND	U	0.0099	ND	U	0.0099	ND	U	0.0092
		Ethane	0.0021	J	0.00026	0.002	J	0.00024	0.0026	--	2,300	0.0025	--	2,300	0.0024	--	0.00021
		Hydrogen	ND	U	0.015	ND	U	0.013	ND	U	0.013	ND	U	0.013	ND	U	0.012
		Methane	0.017	--	0.00012	0.016	--	0.00011	0.021	--	0.0001	0.02	--	0.0001	0.017	--	0.000096
		Nitrogen (Ammonia As N)	83	--	0.16	83	--	0.14	82	--	0.14	82	--	0.14	81	--	0.13
		Oxygen	5.1	--	0.044	5.1	--	0.04	4.2	--	0.038	4.3	--	0.038	4.8	--	0.035
		Pentane	0.21	--	0.00026	0.2	--	0.00024	0.2	--	0.00023	0.18	--	0.00023	0.2	--	0.00021
		Propane	0.0011	J	0.00026	0.0011	J	0.00024	0.0016	J	0.00023	0.0015	J	0.00023	0.0015	J	0.00021

Table 4
Field Duplicate Sample Results

		Location ID:	KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117	
		Field Sample ID:	KAFB-106V2 117.1 DUP			KAFB-106V2 117.1			KAFB-106V2 117.1 DUP			KAFB-106V2 117.1			KAFB-106V2 117.1	
		Sample Date:	10/15/2019			10/22/2019			10/22/2019			10/31/2019			10/31/2019	
		Sample Type:	Field Duplicate			REG			Field Duplicate			REG			Field Duplicate	
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	9,000	ND	U	11,000	ND	U	11,000	ND	U	8,700	ND	U
		1,1-Dichloroethane	ND	U	4,800	ND	U	5,600	ND	U	5,600	ND	U	4,600	ND	U
		1,2,4-Trichlorobenzene	ND	U	44,000	ND	U	51,000	ND	U	51,000	ND	U	42,000	ND	U
		1,2,4-Trimethylbenzene	160,000	J	5,800	69,000	--	6,800	59,000	--	6,800	12,000	--	5,600	12,000	--
		1,2-Dibromoethane	19,000	J	9,000	21,000	--	11,000	19,000	--	11,000	9,000	J	8,800	11,000	J
		1,2-Dichlorobenzene	ND	U	7,100	ND	U	8,300	ND	U	8,300	ND	U	6,800	ND	U
		1,3,5-Trimethylbenzene	66,000	J	5,800	33,000	--	6,800	29,000	--	6,800	6,400	J	5,600	7,000	J
		1,3-Butadiene	ND	U	2,600	ND	U	3,100	ND	U	3,100	ND	U	2,500	ND	U
		1,4-Dioxane	ND	U	21,000	ND	U	25,000	ND	U	25,000	ND	U	20,000	ND	U
		2-Butanone	780,000	J	17,000	880,000	--	20,000	820,000	--	20,000	720,000	--	17,000	960,000	--
		2-Hexanone	ND	U	24,000	ND	U	28,000	ND	U	28,000	ND	U	23,000	ND	U
		4-Methyl-2-Pentanone	18,000	J	4,800	ND	U	5,700	ND	U	5,700	13,000	--	4,700	16,000	--
		Acetone	3,700,000	J	14,000	4,200,000	--	16,000	4,200,000	--	16,000	4,200,000	--	14,000	5,800,000	--
		Benzene	3,700,000	J	3,800	3,900,000	--	4,400	3,900,000	--	4,400	2,700,000	--	3,600	3,400,000	--
		Bromodichloromethane	ND	U	7,900	ND	U	9,300	ND	U	9,300	ND	U	7,600	ND	U
		Bromoform	ND	U	12,000	ND	U	14,000	ND	U	14,000	ND	U	12,000	ND	U
		Carbon Disulfide	ND	U	18,000	ND	U	22,000	ND	U	22,000	ND	U	18,000	ND	U
		Carbon Tetrachloride	ND	U	7,400	ND	U	8,700	ND	U	8,700	ND	U	7,200	ND	U
		Chloroethane	ND	U	16,000	ND	UJ	18,000	ND	UJ	18,000	ND	U	15,000	ND	U
		Chloroform	ND	U	5,700	ND	U	6,800	ND	U	6,800	ND	U	5,600	ND	U
		Chloromethane	ND	U	12,000	ND	U	14,000	ND	U	14,000	ND	U	12,000	ND	U
		Cyclohexane	10,000,000	J	4,000	11,000,000	--	4,800	11,000,000	--	4,800	7,600,000	--	3,900	9,500,000	--
		Dibromochloromethane	ND	U	10,000	ND	U	12,000	ND	U	12,000	ND	U	9,700	ND	U
		Dichlorodifluoromethane	ND	U	5,800	ND	U	6,800	ND	U	6,800	ND	U	5,600	ND	U
		Ethanol	ND	U	11,000	ND	U	13,000	ND	U	13,000	6,100	J	11,000	8,900	J
		Ethyl Acetate	ND	U	28,000	ND	U	33,000	ND	U	33,000	ND	U	27,000	ND	U
		Ethylbenzene	530,000	J	5,100	450,000	--	6,000	450,000	--	6,000	150,000	--	4,900	170,000	--
		Hexane	12,000,000	J	4,100	12,000,000	--	4,900	13,000,000	--	4,900	11,000,000	--	4,000	14,000,000	J
		Isopropyl Alcohol	51,000	J	14,000	72,000	--	17,000	49,000	--	17,000	77,000	--	14,000	100,000	--
		m- & p-Xylenes	1,400,000	J	5,100	1,200,000	--	6,000	1,200,000	--	6,000	360,000	--	5,000	410,000	--
		Methylene Chloride	ND	U	20,000	ND	U	24,000	ND	U	24,000	ND	U	20,000	ND	U
		Naphthalene	ND	U	4,100	ND	U	4,800	ND	U	4,800	ND	U	4,000	ND	U
		n-Heptane	9,900,000	J	4,800	11,000,000	--	5,700	11,000,000	--	5,700	5,500,000	--	4,700	6,700,000	--
		o-Xylene	400,000	J	5,100	320,000	--	6,000	310,000	--	6,000	91,000	--	5,000	100,000	--
		Propylene (Propene)	26,000	J	10,000	30,000	--	12,000	30,000	--	12,000	25,000	--	9,800	32,000	--
		Styrene	ND	U	5,000	ND	U	5,900	ND	U	5,900	ND	U	4,800	ND	U
		Tetrachloroethene	38,000	J	8,000	ND	U	9,400	ND	U	9,400	ND	U	7,700	ND	U
		Tetrahydrofuran	ND	U	3,500	ND	UJ	4,100	ND	UJ	4,100	ND	U	3,400	ND	U
		Toluene	7,100,000	J	4,400	7,500,000	--	5,200	7,600,000	--	5,200	3,400,000	--	4,300	4,200,000	--
		Trichloroethene	ND	U	6,300	ND	U	7,400	ND	U	7,400	ND	U	6,100	ND	U
		Trichlorofluoromethane	ND	U	6,600	ND	U	7,800	ND	U	7,800	ND	U	6,400	ND	U
		Vinyl Chloride	ND	U	3,000	ND	U	3,500	ND	U	3,500	ND	U	2,900	ND	U
		Xylenes, Total	1,800,000	J	8,500	1,500,000	--	10,000	1,500,000	--	10,000	460,000	--	8,200	510,000	--
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	260,000,000	--	320,000	230,000,000	--	450,000	220,000,000	--	300,000	150,000,000	--	310,000	150,000,000	--
Fixed Gases	Method D1945 (%)	Butane	0.0062	--	0.00022	0.0046	--	0.0003	0.0047	--	0.0003	0.0045	--	0.00021	0.0046	--
		Carbon Dioxide	11	--	0.0094	7.9	--	0.013	7.8	--	0.013	5.4	--	0.0091	5.3	--
		Carbon Monoxide	ND	U	0.0094	ND	U	0.013	ND	U	0.013	ND	U	0.0091	ND	U
		Ethane	0.0025	--	0.00022	0.0016	J	0.0003	0.0017	J	0.0003	0.00099	J	0.00021	0.001	J
		Hydrogen	ND	U	0.012	ND	U	0.017	ND	U	0.017	ND	U	0.012	ND	U
		Methane	0.018	--	0.00098	0.0087	--	0.00014	0.009	--	0.00014	0.0052	--	0.00095	0.0052	--
		Nitrogen (Ammonia As N)	81	--	0.13	78	--	0.19	78	--	0.19	77	--	0.13	78	--
		Oxygen	4.9	--	0.036	11	--	0.051	11	--	0.051	15	--	0.035	15	--
		Pentane	0.23	--	0.00022	0.15	--	0.0003	0.16	--	0.0003	0.14	--	0.00021	0.14	--
		Propane	0.0015	J	0.00022	0.0012	J	0.0003	0.0012	J	0.0003	0.0011	J	0.00021	0.0011	J

Table 4
Field Duplicate Sample Results

		Location ID: 7	KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			
		Field Sample ID: DUP	KAFB-106V2-117			KAFB-106V2-117 DUP			KAFB-106V2-117			KAFB-106V2-117-DUP			
		Sample Date:	11/5/2019			11/5/2019			1/13/2020			1/13/2020			
		Sample Type:	REG			Field Duplicate			REG			Field Duplicate			
Parameter	Analytical Method	Analyte	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	8,800	ND	U	11,000	ND	U	11,000	ND	U	5,400	ND	U	17,000
		1,1-Dichloroethane	4,600	ND	U	5,700	ND	U	5,900	ND	U	2,900	ND	U	8,800
		1,2,4-Trichlorobenzene	42,000	ND	U	52,000	ND	U	54,000	ND	U	20,000	ND	U	60,000
		1,2,4-Trimethylbenzene	5,600	72,000	--	6,900	95,000	--	7,200	14,000	J	3,500	22,000	--	11,000
		1,2-Dibromoethane	8,800	21,000	--	11,000	24,000	--	11,000	9,800	J	5,400	12,000	J	17,000
		1,2-Dichlorobenzene	6,900	ND	U	8,500	ND	U	8,800	ND	U	4,200	ND	U	13,000
		1,3,5-Trimethylbenzene	5,600	36,000	--	6,900	44,000	--	7,200	6,500	J	3,500	8,900	J	11,000
		1,3-Butadiene	2,500	ND	U	3,100	ND	U	3,200	ND	U	1,600	ND	U	4,800
		1,4-Dioxane	21,000	ND	U	25,000	ND	U	26,000	ND	U	9,600	ND	U	29,000
		2-Butanone	17,000	780,000	--	21,000	1,000,000	--	22,000	440,000	J	7,800	480,000	--	24,000
		2-Hexanone	23,000	ND	U	29,000	ND	U	30,000	ND	U	11,000	ND	U	33,000
		4-Methyl-2-Pentanone	4,700	ND	U	5,800	ND	U	6,000	ND	U	2,900	ND	U	8,900
		Acetone	14,000	5,000,000	--	17,000	6,000,000	--	17,000	3,400,000	J	6,300	3,800,000	--	19,000
		Benzene	3,700	4,200,000	--	4,500	4,400,000	--	4,700	2,400,000	J	2,300	2,500,000	--	6,900
		Bromodichloromethane	7,700	ND	U	9,400	ND	U	9,800	ND	U	4,700	ND	U	14,000
		Bromoform	12,000	ND	U	14,000	ND	U	15,000	ND	U	7,300	ND	U	22,000
		Carbon Disulfide	18,000	ND	U	22,000	ND	U	23,000	1,800	J	8,300	ND	U	25,000
		Carbon Tetrachloride	7,200	ND	U	8,900	ND	U	9,200	ND	U	4,400	ND	U	14,000
		Chloroethane	15,000	ND	U	19,000	ND	U	19,000	ND	U	7,000	ND	U	21,000
		Chloroform	5,600	ND	U	6,900	ND	U	7,100	ND	U	3,400	ND	U	10,000
		Chloromethane	12,000	ND	U	14,000	ND	U	15,000	ND	U	5,500	ND	U	17,000
		Cyclohexane	3,900	12,000,000	--	4,800	13,000,000	--	5,000	6,600,000	J	2,400	6,800,000	--	7,500
		Dibromochloromethane	9,800	ND	U	12,000	ND	U	12,000	ND	U	6,000	ND	U	18,000
		Dichlorodifluoromethane	5,700	ND	U	7,000	ND	U	7,200	ND	U	3,500	ND	U	11,000
		Ethanol	11,000	ND	U	13,000	ND	U	14,000	ND	U	5,000	ND	U	15,000
		Ethyl Acetate	28,000	ND	U	34,000	ND	U	35,000	ND	U	13,000	ND	U	39,000
		Ethylbenzene	5,000	510,000	--	6,100	560,000	--	6,400	220,000	J	3,100	270,000	--	9,400
		Hexane	4,000	17,000,000	J	5,000	18,000,000	J	5,200	10,000,000	J	2,500	10,000,000	--	7,600
		Isopropyl Alcohol	14,000	ND	U	17,000	ND	U	18,000	46,000	J	6,500	50,000	--	20,000
		m- & p-Xylenes	5,000	1,300,000	--	6,100	1,500,000	--	6,400	520,000	J	3,100	690,000	--	9,400
		Methylene Chloride	20,000	ND	U	24,000	ND	U	25,000	ND	U	9,200	ND	U	28,000
		Naphthalene	4,000	ND	U	4,900	ND	U	5,100	ND	U	1,800	ND	U	5,700
		n-Heptane	4,700	12,000,000	--	5,800	12,000,000	--	6,000	5,200,000	J	2,900	5,300,000	--	8,900
		o-Xylene	5,000	360,000	--	6,100	400,000	--	6,400	120,000	J	3,100	170,000	--	9,400
		Propylene (Propene)	9,900	26,000	--	12,000	29,000	--	12,000	24,000	J	4,600	24,000	--	14,000
		Styrene	4,900	ND	U	6,000	ND	U	6,200	ND	U	3,000	ND	U	9,200
		Tetrachloroethene	7,800	ND	U	9,600	ND	U	9,900	ND	U	4,800	ND	U	15,000
		Tetrahydrofuran	3,400	ND	U	4,200	ND	U	4,300	ND	U	2,100	ND	U	6,400
		Toluene	4,300	7,500,000	--	5,300	7,900,000	--	5,500	3,700,000	J	2,700	4,000,000	--	8,200
		Trichloroethene	6,200	ND	U	7,600	ND	U	7,900	ND	U	3,800	ND	U	12,000
		Trichlorofluoromethane	6,400	ND	U	7,900	ND	U	8,200	ND	U	4,000	ND	U	12,000
		Vinyl Chloride	2,900	ND	U	3,600	ND	U	3,700	ND	U	1,800	ND	U	5,500
		Xylenes, Total	8,300	1,700,000	--	10,000	1,900,000	--	10,000	650,000	J	7,700	870,000	--	24,000
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	310,000	250,000,000	--	240,000	260,000,000	--	250,000	240,000,000	--	350,000	220,000,000	--	360,000
Fixed Gases	Method D1945 (%)	Butane	0.00021	0.005	--	0.00026	0.0051	--	0.00027	0.0078	--	0.00018	0.008	--	0.00019
		Carbon Dioxide	0.0092	5.3	--	0.011	5.3	--	0.012	6.8	--	0.01	6.4	--	0.01
		Carbon Monoxide	0.0092	ND	U	0.011	ND	U	0.012	ND	U	0.01	ND	U	0.01
		Ethane	0.00021	0.00095	J	0.00026	0.00095	J	0.00027	0.0013	J	0.00018	0.0012	J	0.00019
		Hydrogen	0.012	ND	U	0.014	ND	U	0.015	0.003	J	0.013	0.0042	J	0.013
		Methane	0.000096	0.0052	--	0.00012	0.0053	--	0.00012	0.0048	--	0.00011	0.0046	--	0.00011
		Nitrogen (Ammonia As N)	0.13	77	--	0.16	76	--	0.16	77	--	0.14	77	--	0.15
		Oxygen	0.035	15	--	0.044	16	--	0.045	14	--	0.039	14	--	0.04
		Pentane	0.00021	0.16	--	0.00026	0.17	--	0.00027	0.23	--	0.00018	0.24	--	0.00019
		Propane	0.00021	0.0011	J	0.00026	0.0011	J	0.00027	0.0014	J	0.00018	0.0013	J	0.00019

Table 4
Field Duplicate Sample Results

Location ID:		KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117			KAFB-106V2-117		
Field Sample ID:		KAFB-106V2-117			KAFB-106V2-117-DUP			KAFB-106V2-117			KAFB-106V2-117-DUP			KAFB-106V2-117		
Sample Date:		4/6/2020			4/6/2020			6/30/2020			6/30/2020			9/29/2020		
Sample Type:		REG			Field Duplicate			REG			Field Duplicate			REG		
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	16,000	ND	U	12,000	ND	U	19,000	ND	U	19,000	ND	U
		1,1-Dichloroethane	ND	U	8,300	ND	U	6,100	ND	U	10,000	ND	U	10,000	ND	U
		1,2,4-Trichlorobenzene	ND	U	76,000	ND	U	56,000	ND	U	69,000	ND	U	70,000	ND	U
		1,2,4-Trimethylbenzene	110,000	--	10,000	120,000	J	7,400	78,000	--	12,000	190,000	--	12,000	84,000	--
		1,2-Dibromoethane	23,000	J	16,000	22,000	J	12,000	18,000	J	19,000	20,000	J	19,000	21,000	--
		1,2-Dichlorobenzene	ND	U	12,000	ND	U	9,000	ND	U	15,000	ND	U	15,000	ND	U
		1,3,5-Trimethylbenzene	57,000	--	10,000	58,000	J	7,400	39,000	--	12,000	67,000	--	12,000	36,000	--
		1,3-Butadiene	ND	U	4,600	ND	U	3,300	ND	U	5,500	ND	U	5,600	ND	U
		1,4-Dioxane	ND	U	37,000	ND	U	27,000	ND	U	34,000	ND	U	34,000	ND	U
		2-Butanone	560,000	--	30,000	540,000	J	22,000	360,000	--	28,000	480,000	--	28,000	480,000	--
		2-Hexanone	ND	U	42,000	ND	U	31,000	ND	U	38,000	ND	U	39,000	ND	U
		4-Methyl-2-Pentanone	18,000	--	8,400	ND	U	6,200	ND	U	10,000	ND	U	10,000	ND	UJ
		Acetone	5,000,000	--	24,000	4,600,000	J	18,000	3,300,000	--	22,000	3,800,000	--	22,000	4,200,000	--
		Benzene	4,900,000	--	6,600	4,400,000	J	4,800	4,000,000	--	7,900	4,100,000	--	8,100	4,400,000	--
		Bromodichloromethane	ND	U	14,000	ND	U	10,000	ND	U	17,000	ND	U	17,000	ND	U
		Bromoform	ND	U	21,000	ND	U	16,000	ND	U	26,000	ND	U	26,000	ND	U
		Carbon Disulfide	ND	U	32,000	ND	U	23,000	ND	U	29,000	ND	U	30,000	ND	U
		Carbon Tetrachloride	ND	U	13,000	ND	U	9,500	ND	U	16,000	ND	U	16,000	ND	U
		Chloroethane	ND	U	27,000	ND	U	20,000	ND	U	30,000	ND	U	30,000	ND	U
		Chloroform	ND	U	10,000	ND	U	7,400	ND	U	12,000	ND	U	12,000	ND	U
		Chloromethane	ND	U	21,000	ND	U	16,000	ND	U	19,000	ND	U	20,000	ND	U
		Cyclohexane	14,000,000	--	7,100	13,000,000	J	5,200	12,000,000	--	8,600	12,000,000	--	8,700	12,000,000	--
		Dibromochloromethane	ND	U	18,000	ND	U	13,000	ND	U	21,000	ND	U	22,000	ND	U
		Dichlorodifluoromethane	ND	U	10,000	ND	U	7,400	ND	U	12,000	ND	U	12,000	ND	U
		Ethanol	ND	U	19,000	ND	U	14,000	ND	U	18,000	ND	U	18,000	ND	U
		Ethyl Acetate	ND	U	50,000	ND	U	36,000	ND	U	45,000	ND	U	46,000	ND	U
		Ethylbenzene	640,000	--	8,900	630,000	J	6,500	500,000	--	11,000	610,000	--	11,000	500,000	--
		Hexane	20,000,000	--	7,300	18,000,000	J	5,300	17,000,000	--	8,800	18,000,000	--	8,900	16,000,000	J
		Isopropyl Alcohol	57,000	--	25,000	59,000	J	18,000	37,000	--	23,000	50,000	--	23,000	56,000	--
		m- & p-Xylenes	1,800,000	--	8,900	1,700,000	J	6,500	1,300,000	--	11,000	1,700,000	--	11,000	1,200,000	--
		Methylene Chloride	ND	U	36,000	ND	U	26,000	ND	U	32,000	ND	U	33,000	ND	U
		Naphthalene	ND	U	5,400	ND	U	3,900	ND	U	6,500	ND	U	6,600	ND	UJ
		n-Heptane	12,000,000	--	8,400	11,000,000	J	6,200	11,000,000	--	10,000	12,000,000	--	10,000	11,000,000	--
		o-Xylene	470,000	--	8,900	470,000	J	6,500	330,000	--	11,000	460,000	--	11,000	340,000	--
		Propylene (Propene)	26,000	--	18,000	22,000	J	13,000	20,000	J	16,000	21,000	J	16,000	ND	U
		Styrene	ND	U	8,800	ND	U	6,400	ND	U	10,000	ND	U	11,000	ND	U
		Tetrachloroethene	ND	U	14,000	ND	U	10,000	ND	U	17,000	ND	U	17,000	ND	U
		Tetrahydrofuran	ND	U	6,100	ND	U	4,400	ND	U	7,300	ND	U	7,500	ND	U
		Toluene	8,800,000	--	7,800	8,200,000	J	5,700	7,000,000	--	9,400	7,500,000	--	9,600	7,800,000	--
		Trichloroethene	ND	U	11,000	ND	U	8,100	ND	U	13,000	ND	U	14,000	ND	U
		Trichlorofluoromethane	ND	U	12,000	ND	U	8,500	ND	U	14,000	ND	U	14,000	ND	U
		Vinyl Chloride	ND	U	5,300	ND	U	3,800	ND	U	6,400	ND	U	6,500	ND	U
		Xylenes, Total	2,200,000	--	30,000	2,200,000	J	22,000	1,600,000	--	27,000	2,200,000	--	28,000	1,600,000	--
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	230,000,000	--	170,000	230,000,000	--	160,000	240,000,000	--	120,000	230,000,000	--	200,000	270,000,000	--
Fixed Gases	Method D1945 (%)	Butane	0.0071	--	0.00018	0.0061	--	0.00017	0.0058	--	0.00017	0.0058	--	0.00017	0.0021	J
		Carbon Dioxide	5.2	--	0.0078	4.7	--	0.0076	4.6	--	0.0076	4.3	--	0.0077	2	--
		Carbon Monoxide	ND	U	0.0078	ND	U	0.0076	ND	U	0.0076	ND	U	0.0077	ND	U
		Ethane	0.00065	J	0.00018	0.00057	J	0.00017	0.00043	J	0.00017	0.00043	J	0.00017	0.00022	J
		Hydrogen	ND	U	0.013	ND	U	0.012	0.0044	J	0.012	0.005	J	0.012	ND	U
		Methane	0.0024	--	0.0001	0.002	--	0.0001	0.0016	--	0.0001	0.0016	--	0.0001	0.002	--
		Nitrogen (Ammonia As N)	76	--	0.11	76	--	0.11	77	--	0.11	76	--	0.11	77	--
		Oxygen	16	--	0.011	16	--	0.011	16	--	0.011	17	--	0.011	18	--
		Pentane	0.26	--	0.00018	0.23	--	0.00017	0.22	--	0.00017	0.23	--	0.00017	0.14	--
		Propane	0.00096	J	0.00018	0.0008	J	0.00017	0.00068	J	0.00017	0.00065	J	0.00017	0.00019	J

Table 4
Field Duplicate Sample Results

		Location ID:	117	KAFB-106V2-117			KAFB-106V2-252		
		Field Sample ID:	117	KAFB-106V2-117-DUP			KAFB-106V2 252.2		
		Sample Date:		9/29/2020			4/11/2019		
		Sample Type:		Field Duplicate			REG		
Parameter	Analytical Method	Analyte	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	14,000	ND	U	14,000	ND	U	2,300
		1,1-Dichloroethane	7,200	ND	U	7,400	ND	U	1,200
		1,2,4-Trichlorobenzene	33,000	ND	U	34,000	ND	U	7,500
		1,2,4-Trimethylbenzene	8,800	78,000	--	9,000	65,000	--	1,500
		1,2-Dibromoethane	14,000	21,000	--	14,000	12,000	--	2,300
		1,2-Dichlorobenzene	11,000	ND	U	11,000	ND	U	1,800
		1,3,5-Trimethylbenzene	8,800	32,000	--	9,000	21,000	--	1,500
		1,3-Butadiene	3,900	ND	U	4,100	ND	U	670
		1,4-Dioxane	16,000	ND	U	16,000	ND	U	3,600
		2-Butanone	13,000	460,000	--	14,000	340,000	J	3,000
		2-Hexanone	18,000	ND	U	19,000	ND	U	4,100
		4-Methyl-2-Pentanone	7,300	ND	UJ	7,500	ND	U	1,200
		Acetone	10,000	4,000,000	--	11,000	2,300,000	--	2,400
		Benzene	5,700	4,300,000	--	5,900	650,000	--	970
		Bromodichloromethane	12,000	ND	U	12,000	ND	U	2,000
		Bromoform	18,000	ND	U	19,000	ND	U	3,100
		Carbon Disulfide	14,000	ND	U	14,000	ND	U	3,100
		Carbon Tetrachloride	11,000	ND	U	12,000	ND	U	1,900
		Chloroethane	12,000	ND	U	12,000	ND	U	2,700
		Chloroform	8,700	ND	U	9,000	ND	U	1,500
		Chloromethane	9,200	ND	U	9,500	ND	U	2,100
		Cyclohexane	6,100	12,000,000	--	6,300	2,600,000	--	1,000
		Dibromochloromethane	15,000	ND	U	16,000	ND	U	2,600
		Dichlorodifluoromethane	8,800	ND	U	9,100	ND	U	1,500
		Ethanol	10,000	ND	U	11,000	13,000	--	1,900
		Ethyl Acetate	32,000	ND	U	33,000	ND	U	7,300
		Ethylbenzene	7,700	490,000	--	8,000	230,000	--	1,300
		Hexane	6,300	15,000,000	--	6,500	1,700,000	--	1,100
		Isopropyl Alcohol	11,000	52,000	--	11,000	130,000	--	2,500
		m- & p-Xylenes	7,700	1,200,000	--	8,000	540,000	--	1,300
		Methylene Chloride	15,000	ND	U	16,000	ND	U	3,500
		Naphthalene	4,700	ND	UJ	4,800	890	J	5,300
		n-Heptane	7,300	11,000,000	--	7,500	4,700,000	J	1,200
		o-Xylene	7,700	320,000	--	8,000	140,000	--	1,300
		Propylene (Propene)	7,700	ND	U	7,900	37,000	--	1,700
		Styrene	7,600	ND	U	7,800	ND	U	1,300
		Tetrachloroethene	12,000	ND	U	12,000	ND	U	2,000
		Tetrahydrofuran	5,300	ND	U	5,400	ND	U	890
		Toluene	6,700	7,600,000	--	6,900	3,400,000	--	1,100
		Trichloroethene	9,600	ND	U	9,900	ND	U	1,600
		Trichlorofluoromethane	10,000	ND	U	10,000	ND	U	1,700
		Vinyl Chloride	4,600	ND	U	4,700	ND	U	770
		Xylenes, Total	19,000	1,500,000	--	20,000	680,000	--	2,200
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	220,000	280,000,000	--	220,000	90,000,000	--	330,000
Fixed Gases	Method D1945 (%)	Butane	0.00019	0.002	J	0.0002	0.0018	J	0.00022
		Carbon Dioxide	0.0085	1.9	--	0.0087	7.6	--	0.0097
		Carbon Monoxide	0.0085	ND	U	0.0087	ND	U	0.0097
		Ethane	0.00019	0.00025	J	0.0002	0.0021	--	0.00022
		Hydrogen	0.014	ND	U	0.014	ND	U	0.012
		Methane	0.00011	0.0019	--	0.00012	0.0032	--	0.0001
		Nitrogen (Ammonia As N)	0.12	78	--	0.13	84	--	0.14
		Oxygen	0.012	18	--	0.013	7.9	--	0.037
		Pentane	0.00019	0.13	--	0.0002	0.027	--	0.00022
		Propane	0.00019	0.0002	J	0.0002	0.002	J	0.00022

Table 4
Field Duplicate Sample Results

		Location ID:	KAFB-106V2-252		
		Field Sample ID:	KAFB-106V2 252.2 DUP		
		Sample Date:	4/11/2019		
		Sample Type:	Field Duplicate		
Parameter	Analytical Method	Analyte	Result	Val Qual	LOD
VOCs	Method TO-15 (µg/m³)	1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	U	2,300
		1,1-Dichloroethane	ND	U	1,200
		1,2,4-Trichlorobenzene	ND	U	7,400
		1,2,4-Trimethylbenzene	73,000	--	1,500
		1,2-Dibromoethane	14,000	--	2,300
		1,2-Dichlorobenzene	ND	U	1,800
		1,3,5-Trimethylbenzene	24,000	--	1,500
		1,3-Butadiene	ND	U	660
		1,4-Dioxane	ND	U	3,600
		2-Butanone	340,000	J	2,900
		2-Hexanone	ND	U	4,100
		4-Methyl-2-Pentanone	ND	U	1,200
		Acetone	2,300,000	--	2,400
		Benzene	660,000	--	960
		Bromodichloromethane	ND	U	2,000
		Bromoform	ND	U	3,100
		Carbon Disulfide	ND	U	3,100
		Carbon Tetrachloride	ND	U	1,900
		Chloroethane	ND	U	2,600
		Chloroform	ND	U	1,500
		Chloromethane	ND	U	2,100
		Cyclohexane	2,500,000	--	1,000
		Dibromochloromethane	ND	U	2,600
		Dichlorodifluoromethane	ND	U	1,500
		Ethanol	12,000	--	1,900
		Ethyl Acetate	ND	U	7,200
		Ethylbenzene	270,000	--	1,300
		Hexane	1,600,000	--	1,000
		Isopropyl Alcohol	130,000	--	2,400
		m- & p-Xylenes	640,000	--	1,300
		Methylene Chloride	ND	U	3,500
		Naphthalene	1,300	J	5,200
		n-Heptane	4,900,000	J	1,200
		o-Xylene	170,000	--	1,300
		Propylene (Propene)	37,000	--	1,700
		Styrene	ND	U	1,300
		Tetrachloroethene	ND	U	2,000
		Tetrahydrofuran	ND	U	880
		Toluene	3,600,000	--	1,100
		Trichloroethene	ND	U	1,600
		Trichlorofluoromethane	ND	U	1,700
		Vinyl Chloride	ND	U	770
		Xylenes, Total	810,000	--	2,200
TPH	Method TO-03 (µg/m³)	TPH-GRO (C6-C10)	90,000,000	--	330,000
Fixed Gases	Method D1945 (%)	Butane	0.0018	J	0.00022
		Carbon Dioxide	7.5	--	0.0096
		Carbon Monoxide	ND	U	0.0096
		Ethane	0.002	--	0.00022
		Hydrogen	ND	U	0.012
		Methane	0.0032	--	0.0001
		Nitrogen (Ammonia As N)	84	--	0.14
		Oxygen	8	--	0.037
		Pentane	0.028	--	0.00022
		Propane	0.002	J	0.00022

Table 4
Field Duplicate Sample Results

% = percentage
µg/m³ = microgram per cubic meter
GRO = gasoline range organics
ID = identifier Analytical Method
KAFB = Kirtland Air Force Base
LOD = limit of detection
ND = not detected
REG = normal field sample
TPH = total petroleum hydrocarbon
Val Qual = validation qualifier
VOC = volatile organic compound
Shading = detected concentrations above the detection limit
Val Quals based on independent data validation
J = Qualifier denotes the analyte was positively identified, but the associated numerical value is estimated.
R = Qualifier denotes the data was rejected based on a data usability assessment and evaluation of data comparability to previous and subsequent data collected for the same well and intervals.
U = Qualifier denotes the analyte was analyzed but not detected above the detection limit. The value associated with the U-qualifier is the limit of detection.
-- = Validation qualifier not assigned.

Table 5
Technical Data Completeness

Analytical Parameter	Field/Field Duplicate Sample Analytes	Qualified Analytes (J and UJ)	Qualified Analytes (R)	Percent Technical Completeness^a
VOCs (TO-15)	6,622	895	215	97
TPH (TO-3)	154	0	5	97
Fixed Gases (D1945)	1,540	0	50	97

Notes:

^a Percent technical completeness including analytes qualified as estimated. Rejected data does not achieve technical completeness.

J = estimated detect

R = rejected data

TPH = total petroleum hHydrocarbons (gasoline range organics)

UJ = estimated nondetect

VOCs = volatile organic compounds

APPENDIX F

**BIODEGRADATION, OXYGEN DEMAND FLOW RATE, AND RADIUS
OF INFLUENCE CALCULATIONS**

Calculation F-1-1
Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and
Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V1-102

 k_B = biodegradation rate (mg/kg-day)

 $k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.03	0.09	0.05	0.01
k_0 =	Oxygen utilization rate (% per hour)	0.0014	0.0037	0.0021	0.0006
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @ 20°C in ABQ	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.02	0.05	0.03	0.01	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1
Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and
Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V1-113 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.13	0.13	0.10	0.08
k_0 =	Oxygen utilization rate (% per hour)	0.0054	0.0053	0.0043	0.0033
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.08	0.07	0.06	0.05	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V1-160
 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.15	0.13	0.12	0.12
k_0 =	Oxygen utilization rate (% per hour)	0.0062	0.0056	0.0049	0.0051
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.09	0.08	0.07	0.07	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1
Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and
Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V1-217
 $k_B = \text{biodegradation rate (mg/kg-day)}$
 $k_B = [-k_0 \theta_{\text{air}} \rho_{O_2} C(0.01)] / \rho_k$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
$k_0 =$	Oxygen utilization rate (% per day)	0.18	0.31	0.08	0.14
$k_0 =$	Oxygen utilization rate (% per hour)	0.0076	0.0129	0.0031	0.0057
$\theta_{\text{air}} =$	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
$\rho_{O_2} =$	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
$\rho_k =$	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
$k_B \text{ (mg/kg-day)} =$	0.11	0.18	0.04	0.08	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V1-252

 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.09	0.09	0.06	0.04
k_0 =	Oxygen utilization rate (% per hour)	0.0039	0.0038	0.0025	0.0018
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.06	0.05	0.04	0.03	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1
Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and
Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V1-263
 k_B = biodegradation rate (mg/kg-day)

 $k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.12	0.09	0.06	0.01
k_0 =	Oxygen utilization rate (% per hour)	0.0050	0.0037	0.0026	0.0005
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.07	0.05	0.04	0.01	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V2-102

 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.07	0.13	0.05	0.02
k_0 =	Oxygen utilization rate (% per hour)	0.0029	0.0053	0.0020	0.0010
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.04	0.08	0.03	0.01	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well 106V2-117

k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.81	0.10	0.15	-0.37
k_0 =	Oxygen utilization rate (% per hour)	0.0339	0.0042	0.0064	-0.0154
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.48	0.06	0.09	NC	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V2-160

 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.15	0.11	0.09	0.11
k_0 =	Oxygen utilization rate (% per hour)	0.0062	0.0045	0.0038	0.0045
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.09	0.06	0.05	0.06	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V2-217
 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.10	0.09	0.08	0.06
k_0 =	Oxygen utilization rate (% per hour)	0.0043	0.0039	0.0032	NA
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.06	0.05	0.05	0.03	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1 Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V2-252
 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.12	0.08	0.06	0.06
k_0 =	Oxygen utilization rate (% per hour)	0.0049	0.0033	0.0024	0.0025
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.07	0.05	0.03	0.03	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-1
Calculation of Biodegradation Rate, Oxygen Demand Flowrate, and
Oxygen Radius of Influence - 106V1-102

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Biodegradation Rate, Air Flow Rate, and Oxygen Radius of Influence:

Test Well

106V2-270 k_B = biodegradation rate (mg/kg-day)

$$k_B = [-k_0 \theta_{air} \rho_{O_2} C(0.01)] / \rho_k$$

Eq. 1

Input Data:

		<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>
k_0 =	Oxygen utilization rate (% per day)	0.17	0.14	0.08	0.04
k_0 =	Oxygen utilization rate (% per hour)	0.0072	0.0060	0.0035	0.0016
θ_{air} =	Air-filled porosity (fractional)	0.3	0.3	0.3	0.3
ρ_{O_2} =	Density of oxygen in air (mg/L _{air}) @	1,104	1,104	1,104	1,104
ρ_k =	Soil bulk density (g/cm ³)	1.6	1.6	1.6	1.6
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286	0.286	0.286	0.286

Calculations:

	<u>January 2020</u>	<u>March/April 2020</u>	<u>June 2020</u>	<u>September 2020</u>	
k_B (mg/kg-day)=	0.10	0.09	0.05	0.02	Eq. 1

k_0 was derived respiration testing.

Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.

Calculation F-1-13
Calculation of Oxygen Demand Flowrate and
Oxygen Radius of Influence for Air Injection Wells

Reference:

Leeson, Andrea and Robert Hinchee, 1996. Principal and Practices of Bioventing Volume II: Bioventing Design. Battelle Memorial Institute. September 29.

Calculation of Air Flow Rate, and Oxygen Radius of Influence:

Q_T = Total oxygen demand air flow rate (ft³/min)
 $Q_T = (k_0 \cdot V \cdot \theta_{air}) / [(20.9\% - 5\%)60 \text{ min/hr}]$ Eq.2

R_i = Oxygen radius of influence (ft)
 $R_i = [(Q_d \cdot (20.9\% - 5\%)) / (\pi \cdot h \cdot k_0 \cdot \theta_{air})]^{1/2}$ Eq. 3

Input Data:					
k_0 =	Oxygen utilization rate (% per day)	Jan-20	Mar/Apr-20	Jun-20	Sep-20
k_0 =	Oxygen utilization rate (% per hour)	0.0075	0.0050	0.0033	0.0025
θ_{air} =	Air-filled porosity (fractional)	0.3			
C =	Mass ratio hydrocarbons to oxygen for mineralization (1:3.5)	0.286			
average of 106V1 and 106V2					
V =	Volume impacted soil (ft ³) is equal to the aerated thickness multiplied by the area defined by a 70-foot control radius(farthest distance between injection and observation points)				
Q_d =	Design Flow Rate (ft ³ /min) (per well)				
Q_d =	Design Flow Rate (ft ³ /day) (per well)				
h =	Aerated thickness (ft)				

Calculations:

January 2020									
Injection Well ID	SVMW-10-100	SVMW-10-150	SVMW-10-250	SVMW-11-100	SVMW-11-250	SVMW-11-260	SVEW-01-260	SVEW-02/03-160	SVEW-04/05-313
V =	121,660	146,300	158,620	126,280	112,420	346,500	400,400	446,600	385,000
Q_d =	2.5	2	2.8	3.3	2.5	3	12	15	10
Q_d =	3,600	2,880	4,032	4,752	3,600	4,320	17,280	21,600	14,400
h =	7.9	9.5	10.3	8.2	7.3	22.5	26	29	25
Eq.2	Q_T (ft ³ /min)	0.287	0.345	0.374	0.298	0.265	0.817	0.944	1.053
Eq. 3	R_i (FT) =	207	169	192	233	215	134	250	264
									232

March/April 2020									
Injection Well ID	SVMW-10-100	SVMW-10-150	SVMW-10-250	SVMW-11-100	SVMW-11-250	SVMW-11-260	SVEW-01-260	SVEW-02/03-160	SVEW-04/05-313
V =	121,660	146,300	158,620	126,280	112,420	346,500	400,400	446,600	385,000
Q_d =	2.5	2	2.8	3.3	2.5	3	12	15	10
Q_d =	3,600	2,880	4,032	4,752	3,600	4,320	17,280	21,600	14,400
h =	7.9	9.5	10.3	8.2	7.3	22.5	26	29	25
Eq.2	Q_T (ft ³ /min)	0.191	0.230	0.249	0.199	0.177	0.545	0.630	0.702
Eq. 3	R_i (FT) =	253	206	235	286	263	164	306	324
									285

June 2020									
Injection Well ID	SVMW-10-100	SVMW-10-150	SVMW-10-250	SVMW-11-100	SVMW-11-250	SVMW-11-260	SVEW-01-260	SVEW-02/03-160	SVEW-04/05-313
V =	121,660	146,300	158,620	126,280	112,420	346,500	400,400	446,600	385,000
Q_d =	2.5	2	2.8	3.3	2.5	3	12	15	10
Q_d =	3,600	2,880	4,032	4,752	3,600	4,320	17,280	21,600	14,400
h =	7.9	9.5	10.3	8.2	7.3	22.5	26	29	25
Eq.2	Q_T (ft ³ /min)	0.128	0.153	0.166	0.132	0.118	0.363	0.420	0.468
Eq. 3	R_i (FT) =	310	253	287	350	323	201	374	396
									349

September 2020									
Injection Well ID	SVMW-10-100	SVMW-10-150	SVMW-10-250	SVMW-11-100	SVMW-11-250	SVMW-11-260	SVEW-01-260	SVEW-02/03-160	SVEW-04/05-313
V =	121,660	146,300	158,620	126,280	112,420	346,500	400,400	446,600	385,000
Q_d =	2.5	2	2.8	3.3	2.5	3	12	15	10
Q_d =	3,600	2,880	4,032	4,752	3,600	4,320	17,280	21,600	14,400
h =	7.9	9.5	10.3	8.2	7.3	22.5	26	29	25
Eq.2	Q_T (ft ³ /min)	0.096	0.115	0.125	0.099	0.088	0.272	0.315	0.351
Eq. 3	R_i (FT) =	358	292	332	404	372	232	432	458
									403

k_0 was derived during respiration testing.
Volume of impacted soil is the area of the control radius multiplied by the aerated thickness.
Air fill porosity is typically assumed to be between 0.2 and 0.3. (Leeson and Hinchee). Due to the low observed soil moisture content (average of 12.3% from wells KAFB-106V1 and KAFB-106V2) the water filled moisture content is likely low. Therefore, an air filled porosity of 0.3 was used for calculations.