



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

 ENTERED



FEB 16 2017

Colonel Eric H. Froehlich  
377 ABW/CC  
2000 Wyoming Blvd SE  
Kirtland AFB NM 87117-5000

Ms. Michelle Hunter, Bureau Chief  
Ground Water Quality Bureau (GWQB)  
New Mexico Environment Department (NMED)  
1190 St. Francis Drive, Harold Runnels Building  
Room N-2250  
Santa Fe NM 87502



Dear Ms. Hunter

Attached please find the *Final Corrective Action Report for the KAFB-106239 Development Water Release* associated with the Bulk Fuels Facility Spill, Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base (AFB), New Mexico. This report is submitted pursuant to 20.6.2.1203.A(6) NMAC, "Notification of Discharge-Removal." This report also satisfies the requirements in Part 1.27 of Kirtland AFB's 2010 Hazardous Waste Treatment Facility Operating Permit (HWTF Permit No. NM9570024423). The 150-gallon water release was originally reported to NMED via email on January 8, 2017, a few hours after the release occurred. The Air Force has implemented all planned corrective action activities identified in that notification and an Initial Report was submitted on January 23, 2017. Soil samples from pre- and post-excavation locations contain no detectable hazardous constituents and indicate that the water released from the storage tank did not impact the surrounding soil media. No further corrective action is recommended.

If you have any questions or concerns, please contact Mr. Scott Clark at (505) 846-9017 or at [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil).

Sincerely

ERIC H. FROEHLICH, Colonel, USAF  
Commander

Attachment:  
Final Corrective Action Report, KAFB-106239 Development Water Release

cc:  
NMED-HWB (Keiling, McQuillan)  
NMED-GWQB (Agnew, Pullen)  
EPA Region 6 (King, Ellinger)  
SAF-IEE (Lynnes)  
COA-EHD (Faris, Leonard)  
AFCEC/CZ (Bodour, Clark)  
USACE-ABQ District Office (Simpler, Phaneuf, Dreeland; Sanchez; Salazar)  
Public Info Repository, AR/IR, and File

KAFB4483



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

## **CORRECTIVE ACTION REPORT FOR EXTRACTION WELL KAFB-106239 DEVELOPMENT WATER RELEASE AT SOLID WASTE MANAGEMENT UNIT ST-106/SS-111, BULK FUELS FACILITY**

**FINAL**

**February 2017**



**377 MSG/CEANR  
2050 Wyoming Blvd. SE  
Kirtland AFB, New Mexico 87117-5270**

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

**FINAL CORRECTIVE ACTION REPORT  
FOR EXTRACTION WELL KAFB-106239  
DEVELOPMENT WATER RELEASE AT  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
BULK FUELS FACILITY**

**FEBRUARY 2017**

***Prepared for***

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Contract No. W912DR-12-D-0006/Delivery Order DM01

## **NOTICE**

This Corrective Action Report was prepared for the U.S. Army Corps of Engineers by EA Engineering, Science, and Technology, Inc., PBC to summarize the response to a development water release associated with the Kirtland Air Force Base (AFB) Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111. This work was performed under the U.S. Air Force Environmental Restoration Program under the requirements of the Resource Conservation and Recovery Act permit issued to Kirtland AFB, with the New Mexico Environment Department serving as the lead regulatory agency. This Corrective Action Report is submitted pursuant to 20.6.2.1203.A(6) NMAC, "Notification of Discharge-Removal" and addresses the activities related to the corrective actions taken after a release of development water on January 8, 2017.

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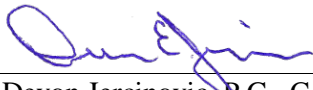
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9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Corps of Engineers—Albuquerque District 4101 Jefferson Plaza NE Albuquerque, New Mexico 87109-3435			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION / AVAILABILITY STATEMENT					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT This report describes the corrective action response to the release of 150 gallons of water from well development activities at KAFB-106239 associated with Solid Waste Management Unit ST-106/SS-111 at Kirtland Air Force Base, New Mexico. Approximately 2 cubic yards of wetted soil was removed from the release area. Soil samples were collected before and after soil removal and analyzed for ethylene dibromide (EDB) and benzene, toluene, ethylbenzene, and xylenes (BTEX) using U.S. Environmental Protection Agency Methods 8021B and 8260B and Resource Conservation and Recovery Act (RCRA) metals by EPA Methods 6010B/7471A. No EDB or BTEX compounds were detected in any primary soil samples. A water sample collected from the storage tank source was analyzed for EDB, BTEX, and RCRA metals and contained 0.056 micrograms per liter of EDB and 3.9 micrograms per liter of toluene. No further corrective action is recommended.					
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a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			19b. TELEPHONE NUMBER (include area code) 505-715-4248

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(Rev. 8-98) Prescribed by ANSI Std. Z39.18

## PREFACE

This Final Corrective Action Report for the extraction well KAFB-106239 development water release is prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) for the U.S. Army Corps of Engineers (USACE), under Contract Number W912DR-12-D-0006, Delivery Order DM01 and describes the corrective action response to the release of 150 gallons of development water associated with Solid Waste Management Unit ST-106/SS-111, Bulk Fuels Facility at Kirtland Air Force Base (AFB), New Mexico. This report was prepared in accordance 20.6.2.1203.A(6) NMAC, "Notification of Discharge-Removal" and also satisfies the requirements in Part 1.27 of the Kirtland AFB 2010 Hazardous Waste Treatment Facility Operating Permit (Permit Number NM9570024423).

Mr. Trent Simpler, PE, is the USACE–Albuquerque District Project Manager. The Environmental Restoration Section Chief for this program is Mr. Scott Clark of Kirtland AFB. This report was prepared by Devon Jercinovic, PG, PMP as the EA Project Manager.



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Devon Jercinovic, B.G., C.P.G., P.M.P.  
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## ACRONYMS AND ABBREVIATIONS

µg/L	microgram(s) per liter
AFB	Air Force Base
BTEX	benzene, toluene, ethylbenzene, and xylenes
BFF	Bulk Fuels Facility
EA	EA Engineering, Science, and Technology, Inc., PBC
EPA	U.S. Environmental Protection Agency
EDB	ethylene dibromide
ft	foot/feet
MCL	Maximum Contaminant Level
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
RCRA	Resource Conservation and Recovery Act
SE	Southeast
SWMU	Solid Waste Management Unit
USACE	U.S. Army Corps of Engineers

## EXECUTIVE SUMMARY

This Final Corrective Action Report for the extraction well KAFB-106239 development water release is prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) to describe the development water release and corrective actions associated with KAFB-106239, at Solid Waste Management Unit (SWMU) ST-106/SS-111, Bulk Fuels Facility (BFF) at Kirtland Air Force Base (AFB), New Mexico. The release and corrective actions took place on January 8-9, 2017.

Approximately 2 cubic yards of wetted soil was removed from the release area. Soil samples were collected before and after soil removal and analyzed for ethylene dibromide (EDB) and benzene, toluene, ethylbenzene, and xylenes (BTEX) using U.S. Environmental Protection Agency (EPA) Methods 8021B and 8260B and Resource Conservation and Recovery Act (RCRA) metals by EPA Methods 6010B/7471A. No EDB or BTEX compounds were detected in any primary soil samples. A water sample collected from the storage tank source was analyzed for EDB, BTEX, and RCRA metals and contained 0.056 micrograms per liter ( $\mu\text{g/L}$ ) of EDB and 3.9  $\mu\text{g/L}$  of toluene. Based on these soil analyses, no further corrective action is proposed. Waste profiles will be developed for the removed water and soil for final disposition.

## 1. INTRODUCTION

EA, under U.S. Army Corps of Engineers (USACE) Contract Number W912DR-12-D-0006, Delivery Order DM01, is performing installation and development of an extraction well at SWMU ST-106/SS-111, at Kirtland AFB, New Mexico. This SWMU is known as the BFF site. Environmental restoration efforts at the BFF site are being conducted under requirements set forth in the RCRA Hazardous Waste Treatment Facility Operating Permit (Number NM9570024423) (RCRA Permit) with the New Mexico Environment Department (NMED) serving as the lead regulatory agency (NMED 2010). An accidental release of water occurred from the storage tank and water was released onto the ground adjacent to the tank while performing development activities on January 8, 2017 from extraction well KAFB-106239. This report was prepared in accordance 20.6.2.1203.A(6) New Mexico Administrative Code, "Notification of Discharge-Removal," and also satisfies the requirements in Part 1.27 of the RCRA Permit.

### 1.1 Description of the Release

On January 8, 2017, Kirtland AFB was performing well development activities on extraction well KAFB-106239 located on Ridgecrest Drive Southeast (SE) just east of San Pedro Drive (Figure 1). KAFB-106239 is being constructed to extract dissolved-phase organic contaminated groundwater for treatment at the Kirtland AFB BFF groundwater treatment system. During well development, groundwater was pumped from the well as part of the well screen cleaning process to enhance well performance. All water pumped from the well was pumped directly into 21,000-gallon capacity, onsite storage tanks. The storage tanks were placed on portable, heavy duty vinyl, secondary containment structures with 1-foot (ft) high sides to capture leaks and small releases from the tank.

During pumping of the deepest portion of the well screen interval on January 8, 2017, the storage tank overflowed water from the top port of the tank (Appendix A, Photograph 1). The overflow began at 4:15 p.m. just as the pump was shut down to end the pumping cycle. The cover of the port was closed, but not locked down. Pressure in the pump line feeding the tank forced water to shoot outward from the port for approximately 15-20 seconds into the secondary containment structure and directly onto the ground (i.e., release was not direct overflow from the secondary containment structure). The secondary containment structure captured some of the overflow; however, due to the pumping pressure, it was limited to a few gallons that ran down the side of the tank. Most of the water overshot the edge of the secondary containment and was released onto the ground (Appendix A, Photograph 2). An estimated 150 gallons of water was released onto the soil adjacent to the tank. Water then flowed westward in the dirt right-of-way adjacent to the south side of Ridgecrest Drive SE, following the existing soil drainage contours for a measured distance of 170 ft to the west (toward San Pedro Drive SE). Figure 2 shows the approximate area of the impacted soil from the release. The width of the flow was contained in a 2- to 3-ft wide path for most of the flow length. At the spill point, water did cover a 9-ft wide area (Appendix A, Photograph 3; Figure 2). None of the released water reached any City of Albuquerque storm drains on either Ridgecrest Drive SE or San Pedro Drive SE. In addition, no private property was impacted.

### 1.2 Report Overview

This report describes the description of development water release and corrective actions taken immediately after the spill associated with well KAFB-106239 at ST-106/SS-111. The report consists of four sections:

- Section 1 includes an introduction, description of the water release from extraction well KAFB-106239, and this report overview.
- Section 2 describes the corrective actions taken immediately after the release, characterization sampling (pre-excavation and post-excavation), and soil removal procedure.
- Section 3 covers the water and soil sample analytical results.
- Section 4 provides a list of references cited.

Two appendices accompany this report. Photographs showing different steps of corrective actions are included as Appendix A, and laboratory analytical results of water and soil samples are included as Appendix B.

## 2. CORRECTIVE ACTIONS

Field personnel immediately responded by first ensuring the well pump was turned off. A small earthen berm was then constructed downslope of the flow near San Pedro Drive SE to prevent any water from leaving the dirt area south of Ridgecrest Drive SE or east of San Pedro Drive SE. Once the site spill was secured, Mr. Steve Pullen of the NMED Groundwater Quality Bureau was notified regarding the incident via email on January 8, 2017. Ms. Diane Agnew of the NMED Hazardous Waste Bureau was also notified by telephone and copied on the email notification.

One soil sample (SP-001) was collected on January 8, 2017 at the distal extent of the surface flow where water was ponding on the surface (Figure 2). The sample was collected within 2 hours of the release and analyzed for BTEX by EPA Method 8021bB, EDB by EPA Method 8011, and RCRA metals by EPA Methods 6010B/7471A at Hall Environmental Laboratories in Albuquerque, New Mexico. Soil sample results and project screening levels are provided in Table 1. Laboratory analytical reports are provided in Appendix B.

### 2.1 Characterization Sampling and Soil Removal on January 9, 2017

On the morning of January 9, 2017, the area of the surface release was first pin-flagged to clearly identify the impacted area in preparation for soil removal (Appendix A, Photograph 4). Two additional samples (pre-excavation) were then collected: one from the spill area near the storage tank (SP-002, Figure 2) and one liquid sample collected from the development water in tank (SP, Table 2). Samples were delivered to Hall Environmental Laboratories and analyzed for BTEX, EDB, and RCRA metals as described above for the soil sample. The water sample was analyzed for BTEX by EPA Method 8260B, EDB by EPA Method 8011, and RCRA metals by EPA Methods 6010B/7470A.

In order to determine how much soil should be removed in the release area, a shovel was used to dig into the soil to determine a visual depth of water infiltration. It was determined that along most of the primary flow path (approximately 150 linear ft) and at the base of the storage tank, the depth of water infiltration was within 1 inch of the surface. At the far distal (western) extent of the surface flow, previous snow melt infiltration combined with the release resulted in saturated soil approximately 2 inches in depth. Based on the saturation depth, a 2-inch depth of soil removal was initiated in this area (approximately 20 linear ft).

A buried utility line mark was observed along the path of the proposed excavation. Although the buried utility was deeper than 2 inches, to mitigate any risk, four, 2-inch deep trenches were hand-dug along the length of the proposed removal area and perpendicular to the utility trace. The trenches confirmed that the utility was not present at these depths.

Soil removal was performed using a Bobcat excavator with a 5-ft wide bucket (Appendix A, Photographs 5 and 6). A 1-inch deep cut was made into the soil the width of the bucket along the pathway of the spill. A second linear cut of approximately 3 ft was done to ensure capture of all the impacted area along the length of the spill. At the release point at the storage tank, an area of approximately 9 × 9 ft was removed to 1 inch deep. At the downslope end of the flow, an area 20 ft long ranging from 3 to 8 ft wide was removed to a depth of 2 inches. The soil removal area is shown on Figure 3.

All excavated soil was placed in a lined, 20-yard roll-off bin. Approximately 2 yards of soil was removed during the excavation. The soil was transported to the EA investigation-derived waste yard at Kirtland AFB for final waste disposition pending characterization.

## **2.2 Post-Excavation Confirmation Soil Sampling on January 9, 2017**

Upon completion of the soil excavation activities, six soil samples were collected along the length of the excavated area on January 9, 2017 (Figure 4; and Appendix A, Photographs 7 and 8). The purpose of the post-excavation sampling was to confirm all impacted soil was removed and that no soil contamination remained at the site or was associated with the release. The samples were sent Eurofins Lancaster Laboratories Environmental, Lancaster, Pennsylvania for BTEX, EDB, and RCRA metals analysis.

### 3. SAMPLE ANALYTICAL RESULTS

Table 1 provides the analytical results for two pre-excavation soil samples. Table 2 presents the analytical results for the well development water collected from the storage tank. Table 3 provides a summary of all the samples collected as part of this soil removal activity. Table 4 presents the analytical results of six soil samples collected after soil removal.

#### 3.1 Development Water

The data results from the development water released from the tank documented the sample to be non-hazardous. EDB was reported at 0.056 µg/L, which is slightly above the EPA Maximum Contaminant Level (MCL) of 0.05 µg/L. For the BTEX compounds analyzed, only toluene was detected at 3.9 µg/L, well below the New Mexico Water Quality Control Commission (NMWQCC) standard of 750 µg/L. The only metal detected in the development water was barium at 0.12 milligrams per liter, less than the EPA MCL. Water data were conservatively compared to EPA MCLs/NMWQCC Standards; however, no surface water, stormwater, or groundwater was impacted.

#### 3.2 Pre-Removal Soil Samples

Laboratory results for the two soil samples (SP001 and SP002) collected prior to excavation activities indicated the soil did not contain EDB or BTEX compounds above the method detection limit as all results were non-detect for these compounds. Metals in soil showed detected concentrations of barium, chromium, and lead that were below NMED residential soil screening levels.

#### 3.3 Post-Removal Soil Samples

Six soil samples (SP003 to SP 008) were collected after excavation activities. No EDB or BTEX compounds were detected in any of the six primary soil samples. The field duplicate for location SP-006 (Figure 4) contained an estimated toluene concentration of 2 micrograms per kilogram. Arsenic, barium, cadmium, chromium, and lead were detected in all six soil samples; however, the concentrations were below NMED residential soil screening levels.

#### 3.4 Summary and Recommendation

Soil samples contained no detectable hazardous constituents and indicated that the water released from the storage tank did not impact the surrounding soil media. No further corrective action is recommended.

## **4. REFERENCES**

New Mexico Environment Department (NMED). 2010. Hazardous Waste Treatment Facility Operating Permit, EPA ID Number NM9570024423, Issued to U.S. Air Force for the Open Detonation Unit Located at Kirtland Air Force Base, Bernalillo County, New Mexico, by the NMED Hazardous Waste Bureau. July.



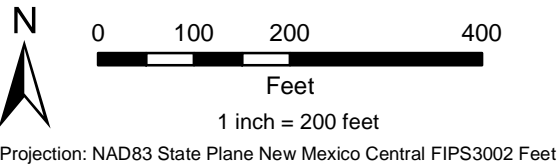
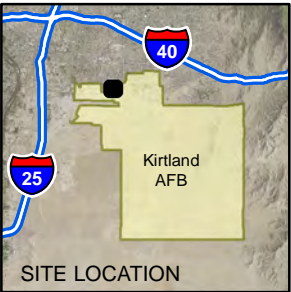
## **FIGURES**



Notes:  
Aerial Imagery from ESRI Online Map Service 2016

Legend

- Extraction Well
- Storage Tank



EXTRACTION WELL KAFB-106239  
WATER STORAGE TANK RELEASE REPORT  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1

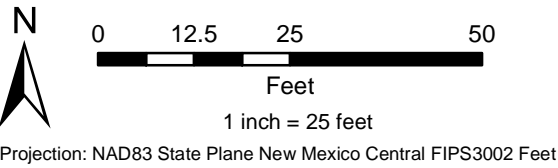
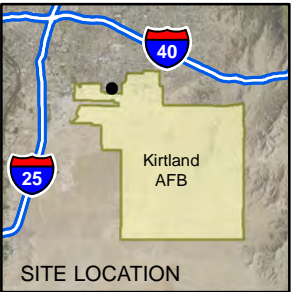
LOCATION OF EXTRACTION WELL  
KAFB-106239





**Legend**

- Pre-Removal Soil Sample Location  
January 8, 2017
- Development Water Sample
- ▲ Reference Point
- ▨ Impacted Soil Area



EXTRACTION WELL KAFB-106239  
WATER STORAGE TANK RELEASE REPORT  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

**FIGURE 2**

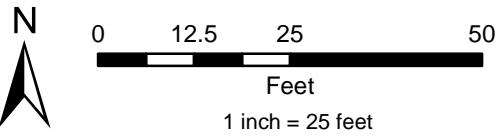
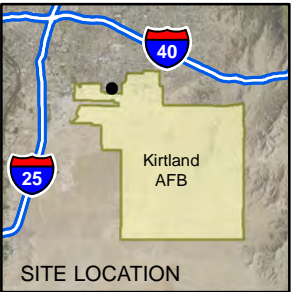
**EXTENT OF WATER RELEASE  
AND LOCATION OF PRE-REMOVAL  
SOIL SAMPLES**





**Legend**

- Area of 1" Soil Removal  
January 9, 2017
- Area of 2" Soil Removal  
January 9, 2017



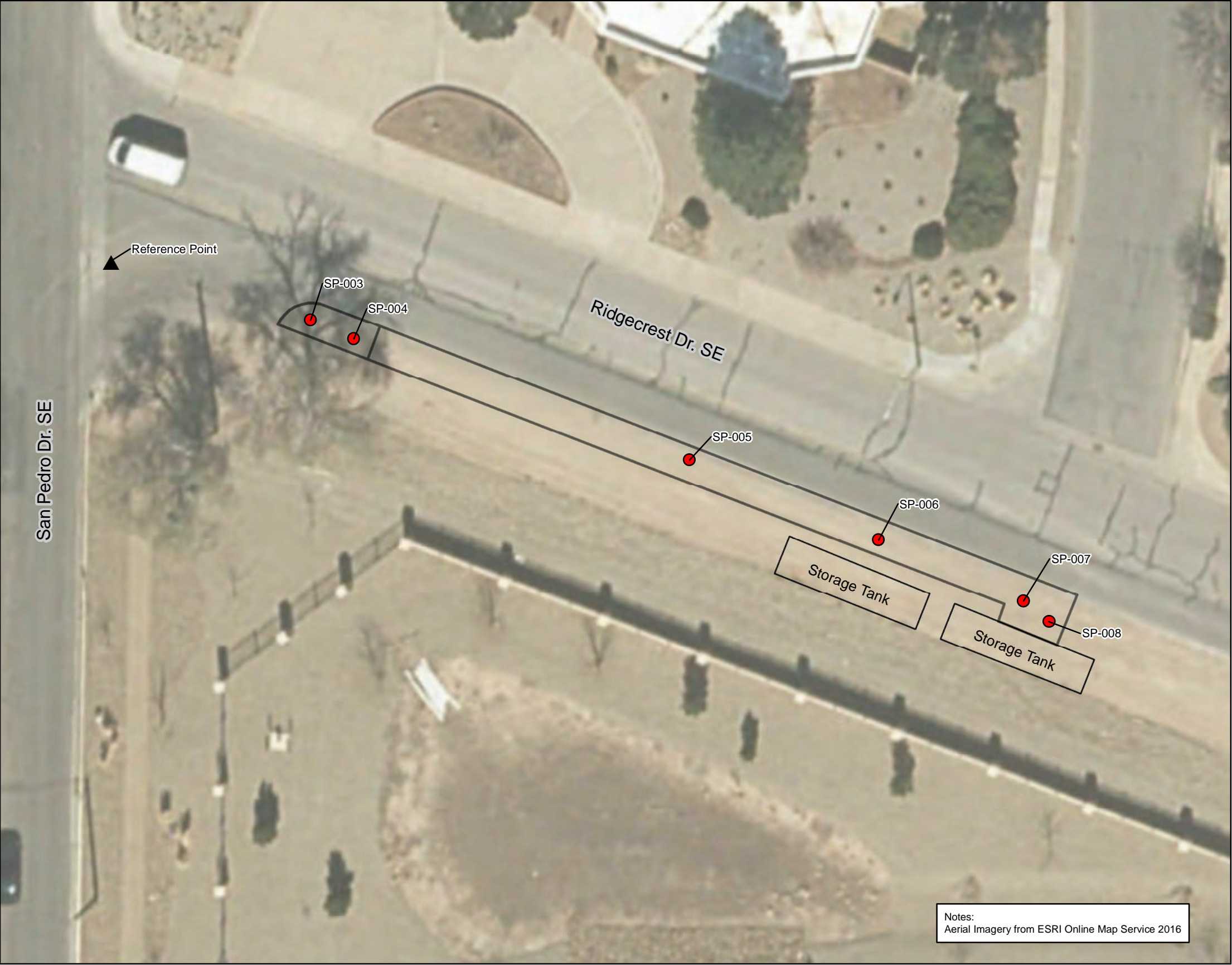
Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

EXTRACTION WELL KAFB-106239  
WATER STORAGE TANK RELEASE REPORT  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 3

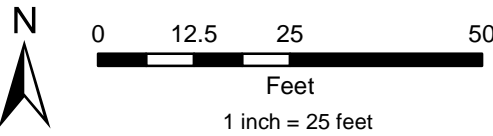
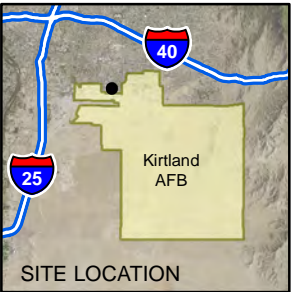
IMPACTED SOIL REMOVAL ACTION





**Legend**

- Post-Removal Soil Sample Location  
January 9, 2017
- ▲ Reference Point
- Soil Removal Area



Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

EXTRACTION WELL KAFB-106239  
WATER STORAGE TANK RELEASE REPORT  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

**FIGURE 4**

**LOCATION OF POST-REMOVAL  
ACTION SOIL SAMPLES**

Notes:  
Aerial Imagery from ESRI Online Map Service 2016

## TABLES

**Table 1**  
**Pre-Excavation Soil Analytical Results, January 8-9, 2017**

		Location ID:				KAFB-106239		KAFB-106239	
		Field Sample ID:				106239 SP-001		106239 SP-002	
		Sample Date:				1/8/2017		1/9/2017	
		Sample Type:				REG		REG	
		Sample Depth (ft bgs):				Surface		Surface	
		Notes				Soil Pre-Removal Action - Distal End		Soil Pre-Removal Action - Near Storage Tank	
Parameter	EPA Method	Analyte	CAS RN	NMED Residential SSL <sup>a</sup>	EPA Residential RSL <sup>b</sup>	Result (mg/kg)	PQL	Result (mg/kg)	PQL
EDB	SW8011	1,2-dibromoethane	106-93-4	0.672	0.36	ND	0.0001	ND	0.000096
						Result (mg/kg)	PQL	Result (mg/kg)	PQL
BTEX	SW8021B	Benzene	71-43-2	17.8	12	ND	0.024	ND	0.024
		Ethylbenzene	100-41-4	75.1	58	ND	0.048	ND	0.048
		Toluene	108-88-3	5,230	4900	ND	0.048	ND	0.048
		Xylenes, total	1330-20-7	871	650	ND	0.096	ND	0.096
						Result (mg/kg)	PQL	Result (mg/kg)	PQL
Total Metals	SW6010B	Arsenic	7440-38-2	4.25	6.8	ND	2.5	ND	2.5
		Barium	7440-39-3	15,600	15,000	71	0.10	95	0.098
		Cadmium	7440-43-9	70.5	71	ND	0.10	ND	0.098
		Chromium	7440-47-3	96.6	1,200,000	3.2	0.30	5.1	0.29
		Lead	7439-92-1	400	400	5.3	0.25	9.8	0.25
		Selenium	7782-49-2	391	390	ND	2.5	ND	2.5
		Silver	7440-22-4	391	390	ND	0.25	ND	0.25
	SW7471A	Mercury	7439-97-6	23.8	11	ND	0.031	ND	0.033

NOTES:

<sup>a</sup> Residential land use SSLs from the NMED Risk Assessment Guidance for Site Investigations and Remediation, Appendix A, Table A-1, NMED SSLs. July 2015.

<sup>b</sup> EPA RSLs for residential use scenario for hazard index = 1.0 for noncarcinogens and a 10<sup>-5</sup> cancer risk level for carcinogens. May 2016.

mg/kg = Milligram(s) per kilogram.

CASRN = Chemical Abstracts Service Registry Number.

EPA = U.S. Environmental Protection Agency.

ND = Not detected above the method detection limit.

NMED = New Mexico Environment Department.

PQL = Practical quantification limit.

RSL = Regional Screening Level.

SSL = Soil Screening Level.

SW = EPA SW-846 Test Methods for Evaluating Solid Waste, Third Edition, 1986 and Updates.

**Table 2**  
**Development Water Analytical Results, January 9, 2017**

		Well Location ID:				KAFB-106239			
		Field Sample ID:				106239 SP			
		Sample Date:				1/9/2017			
		Sample Type:				REG			
		Sample Depth (ft bgs):				Not Applicable			
						Notes		Development Water (Storage Tank)	
Parameter	EPA Method	Analyte	CAS RN	NMAC NMWQCC <sup>a</sup> (µg/L)	EPA MCL <sup>b</sup>	Result (µg/L)	PQL		
EDB	SW8011	1,2-dibromoethane	106-93-4	0.1	0.05	0.056	0.010		
BTEX	SW8260B	Benzene	71-43-2	10	5.0	Result (µg/L) ND	PQL 1.0		
		Ethylbenzene	100-41-4	750	700	ND	1.0		
		Toluene	108-88-3	750	1000	3.9	1.0		
		Xylenes, total	1330-20-7	620	10,000	ND	1.5		
				NMAC NMWQCC <sup>a</sup> (mg/L)	EPA MCL <sup>b</sup> (mg/L)	Results (mg/L)	PQL		
Total Metals	SW6010B	Arsenic	7440-38-2	0.1	0.01	ND	0.020		
		Barium	7440-39-3	1.0	2	0.12	0.020		
		Cadmium	7440-43-9	0.01	0.005	ND	0.0020		
		Chromium	7440-47-3	0.05	0.1	ND	0.0060		
		Lead	7439-92-1	0.05	0.015	ND	0.0050		
		Selenium	7782-49-2	0.05	0.05	ND	0.050		
		Silver	7440-22-4	0.05	NS	ND	0.0050		
	SW7470A	Mercury	7439-97-6	0.002	0.002	ND	0.00020		

NOTES:

<sup>a</sup> New Mexico Administrative Code Title 20.6.2.3103, Standards for Ground Water of 10,000 mg/L Total Dissolved Solids Concentration or Less (NMAC 2004).

For metals, the NMWQCC applies to dissolved metals and total mercury.

<sup>b</sup> USEPA National Primary Drinking Water Regulations, Maximum Contaminant Levels (MCLs) and Secondary MCLs, Title 40CFR Part 141, 143 (May 2009).

µg/L = microgram per liter.

mg/L = milligrams per liter.

CASRN = Chemical Abstracts Service Registry Number.

CFR = Code of Federal Regulations.

EDB = ethylene dibromide (1,2-dibromoethane).

EPA = U.S. Environmental Protection Agency.

MCL = maximum contaminant level.

ND = not detected above the method detection limit.

NMAC = New Mexico Administrative Code.

NMWQCC = New Mexico Water Quality Control Commission.

NS = not specified.

PQL = practical quantification limit.



**Table 3**  
**Sampling Locations, January 8-9, 2017**

Sample ID	Date Collected	Collection Timing	Reference Location <sup>a</sup>	Type	Laboratory	Notes
106239 SP-001	1/8/2017	Pre-soil removal	52'/2'	Soil	Hall <sup>b</sup>	Initial post -spill sample
106239 SP-002	1/9/2017	Pre-soil removal	210'/8.5'	Soil	Hall	At spill point at storage tank
106239 SP-003	1/9/2017	Post-soil removal	50'/2'	Soil	Eurofins <sup>c</sup>	Western most point of release flow
106239 SP-004	1/9/2017	Post-soil removal	57.5'/3.5'	Soil	Eurofins	Observed water ponded area on 1-8-17
106239 SP-005	1/9/2017	Post-soil removal	132'/2'	Soil	Eurofins	Along flow path
106239 SP-006	1/9/2017	Post-soil removal	178'/3'	Soil	Eurofins	Along flow path
106239 SP-007	1/9/2017	Post-soil removal	210'/5.5'	Soil	Eurofins	Flow path from tank to Ridgecrest Dr.
106239 SP-008	1/9/2017	Post-soil removal	215.5'/5.5'	Soil	Eurofins	Flow path from tank to Ridgecrest Dr.
106239SP	1/9/2017	Pre-soil removal	na	Water	Hall	Water sample from the storage tank

NOTES:

<sup>a</sup>Reference location: Distance east from edge of concrete gutter strip on San Pedro/Distance south from edge of Ridgecrest Drive (see Figures 2 and 4)

<sup>b</sup>Hall Environmental Analysis Laboratory Inc., Albuquerque, NM

<sup>c</sup>Eurofins Lancaster Laboratories Environmental, LLC., Lancaster, Pennsylvania

Table 4  
Post-Excavation Soil Analytical Results, January 9, 2017

				Well Location ID:		SP239-003			SP239-004			SP239-005			SP239-006			SP239-006			SP239-007			SP239-008		
				Field Sample ID:		SP239-003-171			SP239-004-171			SP239-005-171			SP239-006-171			SP239-006-571			SP239-007-171			SP239-008-171		
				Sample Date:		1/9/2017			1/9/2017			1/9/2017			1/9/2017			1/9/2017			1/9/2017			1/9/2017		
				Sample Type:		REG			REG			REG			REG			Field Duplicate			REG			REG		
Parameter	Analytical Method	Analyte	CAS RN	NMED Residential SSL <sup>a</sup>	EPA Residential RSL <sup>b</sup>	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD	Result	Val Qual	LOD
EDB	SW8011 (µg/kg)	1,2-dibromoethane	106-93-4	0.672	0.36	ND	U	0.42	ND	U	0.42	ND	U	0.42	ND	UJ	0.43	ND	U	0.44	ND	U	0.44	ND	U	0.43
BTEX	SW8021B (µg/kg)	Benzene	71-43-2	17.8	12	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2
		Ethylbenzene	100-41-4	75.1	58	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2
		Toluene	108-88-3	5,230	4900	ND	U	2	ND	U	2	ND	U	2	ND	U	2	2	J	2	ND	U	2	ND	U	2
		Xylenes, Total	1330-20-7	871	650	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2	ND	U	2
Total Metals	SW6010B (mg/kg)	Arsenic	7440-38-2	4.25	6.8	2.02	J	1.78	4.78		2.04	3.53	J	1.97	3.74	J	2.09	4.31		2.09	3.17		1.50	3.11	J	1.81
		Barium	7440-39-3	15,600	15,000	111	J-	0.111	101	J-	0.128	143	J-	0.123	138	J-	0.131	184	J-	0.131	101	J-	0.0939	89.8	J-	0.113
		Cadmium	7440-43-9	70.5	71	0.151	J	0.111	0.184	J	0.128	0.0967	J	0.123	0.0837	J	0.131	0.108	J	0.131	0.0564	J	0.0939	0.0822	J	0.113
		Chromium	7440-47-3	96.6	1,200,000	7.94	J	0.334	10.6	J	0.383	8.46	J	0.370	12.4	J	0.392	9.76	J	0.392	10.7	J	0.282	9.84	J	0.339
		Lead	7439-92-1	400	400	83.5	J	1.34	139	J	1.53	8.52	J	1.48	23.6	J	1.57	24.2	J	1.57	16.8	J	1.13	11.1	J	1.35
		Selenium	7782-49-2	391	390	ND	U	1.78	ND	U	2.04	ND	U	1.97	1.90	J	2.09	1.99	J	2.09	1.59	J	1.50	0.991	J	1.81
		Silver	7440-22-4	391	390	ND	U	0.445	ND	U	0.511	ND	U	0.493	ND	U	0.523	ND	U	0.523	ND	U	0.376	ND	U	0.452
	SW7471A (mg/kg)	Mercury	7439-97-6	23.8	11	ND	U	0.0181	ND	U	0.0178	ND	U	0.0179	ND	U	0.0187	ND	U	0.0172	ND	U	0.0175	ND	U	0.0179

NOTES:

<sup>a</sup> Residential land use SSLs from the NMED Risk Assessment Guidance for Site Investigations and Remediation, Appendix A, Table A-1, NMED SSLs. July 2015.

<sup>b</sup> EPA RSLs for residential use scenario for hazard index = 1.0 for noncarcinogens and a 10<sup>-5</sup> cancer risk level for carcinogens. May 2016.

mg/kg = Milligram(s) per kilogram.

CASRN = Chemical Abstracts Service Registry Number.

EDB = ethylene dibromide (1,2-dibromoethane)

EPA = U.S. Environmental Protection Agency.

ID = identification

LOD = limit of detection

ND = Not detected above the method detection limit.

NMED = New Mexico Environment Department.

REG = normal field sample

RSL = Regional Screening Level.

SSL = Soil Screening Level.

SW = EPA SW-846 Test Methods for Evaluating Solid Waste, Third Edition, 1986 and Updates.

Val Qual = validation qualifier

Shading = detected concentrations above the detection limit

**Bold/Shading = reported concentrations exceed the project screening level**

Val Quals based on independent data validation

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

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

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

# **APPENDIX A**

## **PHOTOGRAPHS**



Photograph 1 – Storage Tank Port that Overflowed



Photograph 2 – Impacted Soil Immediately after Release, 8 January 2017



Photograph 3 – Impacted Soil Area near the Storage Tank, 9 January 2017



Photograph 4 – Flagged Impacted Soil Area, 9 January 2017





Photograph 5 – Soil Removal Activities – 1-Inch Layer, 9 January 2017



Photograph 6 – Soil Excavation in Progress, 9 January 2017



Photograph 7 – Post-Soil Removal Site Conditions, 9 January 2017



Photograph 8 – Impacted Soil Area after Removal Activities, 9 January 2017





Photograph 9 – Final Site Demobilization - January 2017



**APPENDIX B**

**LABORATORY ANALYTICAL REPORTS**



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

January 12, 2017

Devon Jercinovic

EA Engineering Science & Technology  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL:  
FAX

RE: Kirtland BFF 106239

OrderNo.: 1701251

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/9/2017 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](http://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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1701251

Date Reported: 1/12/2017

**CLIENT:** EA Engineering Science & Technology

**Client Sample ID:** 106239SP-001

**Project:** Kirtland BFF 106239

**Collection Date:** 1/8/2017 6:20:00 PM

**Lab ID:** 1701251-001

**Matrix:** SOIL

**Received Date:** 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7471: MERCURY</b>							Analyst: <b>pmf</b>
Mercury	ND	0.031		mg/Kg	1	1/10/2017 5:46:17 PM	29617
<b>EPA METHOD 6010B: SOIL METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	2.5		mg/Kg	1	1/10/2017 2:50:48 PM	29595
Barium	71	0.10		mg/Kg	1	1/10/2017 2:50:48 PM	29595
Cadmium	ND	0.10		mg/Kg	1	1/10/2017 2:50:48 PM	29595
Chromium	3.2	0.30		mg/Kg	1	1/10/2017 2:50:48 PM	29595
Lead	5.3	0.25		mg/Kg	1	1/10/2017 2:50:48 PM	29595
Selenium	ND	2.5		mg/Kg	1	1/10/2017 2:50:48 PM	29595
Silver	ND	0.25		mg/Kg	1	1/10/2017 2:50:48 PM	29595
<b>EPA METHOD 8011/504.1 MODIFIED: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.10		µg/Kg	1	1/9/2017 1:13:21 PM	29590
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>DJF</b>
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	1/10/2017 12:53:23 PM	29591
Benzene	ND	0.024		mg/Kg	1	1/10/2017 12:53:23 PM	29591
Toluene	ND	0.048		mg/Kg	1	1/10/2017 12:53:23 PM	29591
Ethylbenzene	ND	0.048		mg/Kg	1	1/10/2017 12:53:23 PM	29591
Xylenes, Total	ND	0.096		mg/Kg	1	1/10/2017 12:53:23 PM	29591
Surr: 4-Bromofluorobenzene	93.7	80-120		%Rec	1	1/10/2017 12:53:23 PM	29591

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	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
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701251

12-Jan-17

**Client:** EA Engineering Science & Technology

**Project:** Kirtland BFF 106239

Sample ID	<b>MB-29590</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1 Modified: EDB</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>29590</b>	RunNo:	<b>39904</b>					
Prep Date:	<b>1/9/2017</b>	Analysis Date:	<b>1/9/2017</b>	SeqNo:	<b>1250677</b>	Units:	<b>µg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.10								

Sample ID	<b>LCS-29590</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1 Modified: EDB</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>29590</b>	RunNo:	<b>39904</b>					
Prep Date:	<b>1/9/2017</b>	Analysis Date:	<b>1/9/2017</b>	SeqNo:	<b>1250678</b>	Units:	<b>µg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	1.2	0.10	1.000	0	119	70	130			

Sample ID	<b>1701251-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8011/504.1 Modified: EDB</b>					
Client ID:	<b>106239SP-001</b>	Batch ID:	<b>29590</b>	RunNo:	<b>39904</b>					
Prep Date:	<b>1/9/2017</b>	Analysis Date:	<b>1/9/2017</b>	SeqNo:	<b>1250683</b>	Units:	<b>µg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.74	0.10	1.042	0	71.1	46.2	169			

Sample ID	<b>1701251-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8011/504.1 Modified: EDB</b>					
Client ID:	<b>106239SP-001</b>	Batch ID:	<b>29590</b>	RunNo:	<b>39904</b>					
Prep Date:	<b>1/9/2017</b>	Analysis Date:	<b>1/9/2017</b>	SeqNo:	<b>1250684</b>	Units:	<b>µg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.87	0.098	0.9831	0	88.3	46.2	169	15.9	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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701251

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	MB-29591		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBS		Batch ID: 29591		RunNo: 39932					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251686		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.0	80	120			

Sample ID	LCS-29591		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS		Batch ID: 29591		RunNo: 39932					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251687		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.98	0.10	1.000	0	97.7	65.7	116			
Benzene	1.1	0.025	1.000	0	110	75.2	115			
Toluene	0.98	0.050	1.000	0	98.4	80.7	112			
Ethylbenzene	0.94	0.050	1.000	0	94.3	78.9	117			
Xylenes, Total	2.8	0.10	3.000	0	93.7	79.2	115			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	80	120			

Sample ID	1701251-001AMS		SampType: MS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	106239SP-001		Batch ID: 29591		RunNo: 39932					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251688		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.92	0.098	0.9823	0	93.8	42.5	143			
Benzene	1.0	0.025	0.9823	0	106	61.5	138			
Toluene	1.0	0.049	0.9823	0	105	71.4	127			
Ethylbenzene	1.0	0.049	0.9823	0	103	70.9	132			
Xylenes, Total	3.0	0.098	2.947	0	103	76.2	123			
Surr: 4-Bromofluorobenzene	1.0		0.9823		104	80	120			

Sample ID	1701251-001AMSD		SampType: MSD		TestCode: EPA Method 8021B: Volatiles					
Client ID:	106239SP-001		Batch ID: 29591		RunNo: 39932					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251689		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.65	0.096	0.9634	0	67.8	42.5	143	34.1	20	R
Benzene	0.89	0.024	0.9634	0	92.4	61.5	138	15.4	20	
Toluene	0.96	0.048	0.9634	0	99.8	71.4	127	6.61	20	
Ethylbenzene	0.99	0.048	0.9634	0	102	70.9	132	2.92	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

R RPD outside accepted recovery limits

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 Detection Limit

W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701251

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID 1701251-001AMSD		SampType: MSD			TestCode: EPA Method 8021B: Volatiles					
Client ID: 106239SP-001	Batch ID: 29591			RunNo: 39932						
Prep Date: 1/9/2017	Analysis Date: 1/10/2017			SeqNo: 1251689		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	2.9	0.096	2.890	0	99.4	76.2	123	5.71	20	
Surr: 4-Bromofluorobenzene	0.99		0.9634		102	80	120	0	0	

### 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
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701251

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	MB-29617		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 29617		RunNo: 39944					
Prep Date:	1/10/2017		Analysis Date: 1/10/2017		SeqNo: 1251601		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID	LCS-29617		SampType: LCS		TestCode: EPA Method 7471: Mercury					
Client ID:	LCSS		Batch ID: 29617		RunNo: 39944					
Prep Date:	1/10/2017		Analysis Date: 1/10/2017		SeqNo: 1251602		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.17	0.033	0.1667	0	100	80	120			

### 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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701251

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	LCS-29595		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 29595		RunNo: 39935					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251459		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	95.9	80	120			
Barium	25	0.10	25.00	0	98.9	80	120			
Cadmium	25	0.10	25.00	0	98.3	80	120			
Chromium	25	0.30	25.00	0	98.2	80	120			
Lead	24	0.25	25.00	0	95.5	80	120			
Selenium	24	2.5	25.00	0	96.1	80	120			
Silver	5.1	0.25	5.000	0	102	80	120			

Sample ID	1701251-001AMS	SampType: MS			TestCode: EPA Method 6010B: Soil Metals					
Client ID:	106239SP-001	Batch ID: 29595			RunNo: 39935					
Prep Date:	1/9/2017	Analysis Date: 1/10/2017			SeqNo: 1251461		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	21	2.5	25.12	1.235	77.8	75	125			
Barium	85	0.10	25.12	70.73	57.2	75	125			S
Cadmium	21	0.10	25.12	0	82.6	75	125			
Chromium	24	0.30	25.12	3.220	82.8	75	125			
Lead	25	0.25	25.12	5.290	78.4	75	125			
Selenium	20	2.5	25.12	0	79.2	75	125			
Silver	4.3	0.25	5.024	0	84.8	75	125			

Sample ID	1701251-001AMSD		SampType: MSD		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	106239SP-001		Batch ID: 29595		RunNo: 39935					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251462		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	20	2.6	25.51	1.235	74.8	75	125	2.15	20	S
Barium	70	0.10	25.51	70.73	-1.43	75	125	19.0	20	S
Cadmium	20	0.10	25.51	0	79.8	75	125	2.01	20	
Chromium	22	0.31	25.51	3.220	75.2	75	125	6.93	20	
Lead	24	0.26	25.51	5.290	72.1	75	125	5.33	20	S
Selenium	19	2.6	25.51	0	72.6	75	125	7.04	20	S
Silver	4.2	0.26	5.102	0	82.4	75	125	1.32	20	

Sample ID	1701251-001APS		SampType: PS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	106239SP-001		Batch ID: 29595		RunNo: 39935					
Prep Date:			Analysis Date: 1/10/2017		SeqNo: 1251463		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	20	2.5	25.39	1.235	75.4	80	120			S

### 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
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701251

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	1701251-001APS	SampType: PS			TestCode: EPA Method 6010B: Soil Metals					
Client ID:	106239SP-001	Batch ID: 29595			RunNo: 39935					
Prep Date:		Analysis Date: 1/10/2017			SeqNo: 1251463		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	87	0.10	25.39	70.73	64.3	80	120			S
Lead	23	0.25	25.39	5.290	68.8	80	120			S
Selenium	18	2.5	25.39	0	69.4	80	120			S

Sample ID	MB-29595	SampType: MBLK		TestCode: EPA Method 6010B: Soil Metals						
Client ID:	PBS	Batch ID: 29595		RunNo: 39935						
Prep Date:	1/9/2017	Analysis Date: 1/10/2017		SeqNo: 1251479		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Lead	ND	0.25								
Selenium	ND	2.5								
Silver	ND	0.25								

### 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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified



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: 1701251

RcptNo: 1

Received by/date:	aj	1/9/17
Logged By:	Andy Jansson	1/9/2017 9:25:00 AM
Completed By:	Andy Jansson	1/9/17
Reviewed By:	LA	01/09/17

### Chain of Custody

- |  |   |                             |   |
|--|---|-----------------------------|---|
| 1. Custody seals intact on sample bottles? | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 2. Is Chain of Custody complete?           | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| 3. How was the sample delivered?           | Client                                  |                             |   |

### Log In

- |   |   |  |  |
|---|---|--|--|
| 4. Was an attempt made to cool the samples?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | NA <input type="checkbox"/>                      |
| 5. Were all samples received at a temperature of >0° C to 6.0°C                           | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | NA <input type="checkbox"/>                      |
| 6. Sample(s) in proper container(s)?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |
| 7. Sufficient sample volume for indicated test(s)?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |
| 8. Are samples (except VOA and ONG) properly preserved?                                   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |
| 9. Was preservative added to bottles?   | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> | NA <input type="checkbox"/>                      |
| 10. VOA vials have zero headspace?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/>            | No VOA Vials <input checked="" type="checkbox"/> |
| 11. Were any sample containers received broken?   | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |  |
| 12. Does paperwork match bottle labels?<br>(Note discrepancies on chain of custody)       | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |
| 13. Are matrices correctly identified on Chain of Custody?                                | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |
| 14. Is it clear what analyses were requested?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |
| 15. Were all holding times able to be met?<br>(If no, notify customer for authorization.) | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |  |

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
(<2 or >12 unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

<b>Chain-of-Custody Record</b>		Turn-Around Time:
Client: EA Engineering	<input type="checkbox"/> Standard	<del>A</del> Rush 24-hr
320 Gould SW #1300	Project Name: Kentland Bff 106239	
Mailing Address: ABQ, NM 87102		

Client:	EA Engineering	<input type="checkbox"/> Standard	<input checked="" type="checkbox"/> Rush	24-hr
	320 Gold SW #1300	Project Name:		
Mailing Address:	ABA, WM 87102	Kirtland BFF 106239		

Mailing Address: ABQ, NM 87102

Phone #: 505-715-4275

email or Fax#: [emorse@EAST.COM](mailto:emorse@EAST.COM)

QA/QC Package:

☒ Standard

☐ Level 4 (Full Validation)

Accreditation: ☐ NELAP ☐ Other \_\_\_\_\_  
☐ EDD (Type) \_\_\_\_\_

Date	Time	Matrix	Sample Request ID
1-8-17	1820	Soil	106239SP-001

[illegible][illegible]


[illegible][illegible][illegible]

Date:	-9-17 0255	Time:	9:12	Relinquished by:	[Signature]
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Date: 9-17	Time: 0925	Relinquished by: 
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If necessary, samples submitted to Hall Environmental may be sub-

Turn-Around Time:	<input type="checkbox"/> Standard	<input checked="" type="checkbox"/> Rush	24-hr
Project Name:	Kintland Bff 106239		

Project #: 62599Dmo1.1028

Project Manager:  
Devan Serunovic

Sampler: Earl Morse

On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Sample Temperature:	1.00C	

Container Type and #	Preservative Type	HEAL No.
		1721051

157.1011		
1001	5a	

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[illegible]

Received by:		Date	Time

Received by:                      Date 1-19-17 Time 07:55

and 1/21/70

THE UNIVERSITY OF CHICAGO



**HALL ENVIRONMENTAL  
ANALYSIS LABORATORY**

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

**Tel. 505-345-3975      Fax 505-345-4107**

## Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F <sup>-</sup> , Cl <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>-</sup> , SO <sub>4</sub> <sup>-</sup> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
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[illegible]

Remarks:

Date:	Time:	Relinquished by:	Received by:	Date	Time
1-9-17	0755	<i>E. W. [Signature]</i>	<i>[Signature]</i>	1-9-17	0755
1-9-17	0925	<i>[Signature]</i>	<i>[Signature]</i>	1-9-17	0925

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  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

January 12, 2017

Devon Jercinovic

EA Engineering Science & Technology  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL:  
FAX

RE: Kirtland BFF

OrderNo.: 1701252

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/9/2017 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](http://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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1701252

Date Reported: 1/12/2017

CLIENT: EA Engineering Science & Technology

Client Sample ID: 106239SP-002

Project: Kirtland BFF

Collection Date: 1/9/2017 7:50:00 AM

Lab ID: 1701252-001

Matrix: SOIL

Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7471: MERCURY</b>							Analyst: pmf
Mercury	ND	0.033		mg/Kg	1	1/10/2017 5:48:03 PM	29617
<b>EPA METHOD 6010B: SOIL METALS</b>							Analyst: pmf
Arsenic	ND	2.5		mg/Kg	1	1/10/2017 3:11:02 PM	29595
Barium	95	0.098		mg/Kg	1	1/10/2017 3:11:02 PM	29595
Cadmium	ND	0.098		mg/Kg	1	1/10/2017 3:11:02 PM	29595
Chromium	5.1	0.29		mg/Kg	1	1/10/2017 3:11:02 PM	29595
Lead	9.8	0.25		mg/Kg	1	1/10/2017 3:11:02 PM	29595
Selenium	ND	2.5		mg/Kg	1	1/10/2017 3:11:02 PM	29595
Silver	ND	0.25		mg/Kg	1	1/10/2017 3:11:02 PM	29595
<b>EPA METHOD 8011/504.1 MODIFIED: EDB</b>							Analyst: JME
1,2-Dibromoethane	ND	0.096		µg/Kg	1	1/9/2017 1:28:24 PM	29590
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: DJF
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	1/10/2017 1:17:06 PM	29591
Benzene	ND	0.024		mg/Kg	1	1/10/2017 1:17:06 PM	29591
Toluene	ND	0.048		mg/Kg	1	1/10/2017 1:17:06 PM	29591
Ethylbenzene	ND	0.048		mg/Kg	1	1/10/2017 1:17:06 PM	29591
Xylenes, Total	ND	0.096		mg/Kg	1	1/10/2017 1:17:06 PM	29591
Surr: 4-Bromofluorobenzene	93.2	80-120		%Rec	1	1/10/2017 1:17:06 PM	29591

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
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701252

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF

Sample ID	MB-29590		SampType:	MBLK		TestCode:	EPA Method 8011/504.1 Modified: EDB				
Client ID:	PBS		Batch ID:	29590		RunNo:	39904				
Prep Date:	1/9/2017		Analysis Date:	1/9/2017		SeqNo:	1250677		Units:	µg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,2-Dibromoethane	ND	0.10									

Sample ID	LCS-29590		SampType:	LCS		TestCode:	EPA Method 8011/504.1 Modified: EDB				
Client ID:	LCSS		Batch ID:	29590		RunNo:	39904				
Prep Date:	1/9/2017		Analysis Date:	1/9/2017		SeqNo:	1250678		Units:	µg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
1,2-Dibromoethane	1.2	0.10	1.000	0	119	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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701252

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF

Sample ID	MB-29591		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBS		Batch ID: 29591		RunNo: 39932					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251686		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.0	80	120			

Sample ID	LCS-29591		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS		Batch ID: 29591		RunNo: 39932					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251687		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.98	0.10	1.000	0	97.7	65.7	116			
Benzene	1.1	0.025	1.000	0	110	75.2	115			
Toluene	0.98	0.050	1.000	0	98.4	80.7	112			
Ethylbenzene	0.94	0.050	1.000	0	94.3	78.9	117			
Xylenes, Total	2.8	0.10	3.000	0	93.7	79.2	115			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	80	120			

### 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
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701252

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF

Sample ID	MB-29617		SampType: MBLK		TestCode: EPA Method 7471: Mercury					
Client ID:	PBS		Batch ID: 29617		RunNo: 39944					
Prep Date:	1/10/2017		Analysis Date: 1/10/2017		SeqNo: 1251601		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.033								

Sample ID	LCS-29617			SampType:	LCS		TestCode:	EPA Method 7471: Mercury			
Client ID:	LCSS			Batch ID:	29617		RunNo:	39944			
Prep Date:	1/10/2017			Analysis Date:	1/10/2017		SeqNo:	1251602		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.17	0.033	0.1667	0	100	80	120				

### 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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701252

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF

Sample ID	LCS-29595		SampType: LCS		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	LCSS		Batch ID: 29595		RunNo: 39935					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251459		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	24	2.5	25.00	0	95.9	80	120			
Barium	25	0.10	25.00	0	98.9	80	120			
Cadmium	25	0.10	25.00	0	98.3	80	120			
Chromium	25	0.30	25.00	0	98.2	80	120			
Lead	24	0.25	25.00	0	95.5	80	120			
Selenium	24	2.5	25.00	0	96.1	80	120			
Silver	5.1	0.25	5.000	0	102	80	120			

Sample ID	MB-29595		SampType: MBLK		TestCode: EPA Method 6010B: Soil Metals					
Client ID:	PBS		Batch ID: 29595		RunNo: 39935					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251479		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	2.5								
Barium	ND	0.10								
Cadmium	ND	0.10								
Chromium	ND	0.30								
Lead	ND	0.25								
Selenium	ND	2.5								
Silver	ND	0.25								

### 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
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



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: 1701252

RcptNo: 1

Received by/date: aj 1/9/17

Logged By: Andy Jansson 1/9/2017 9:25:00 AM aj

Completed By: Andy Jansson 1/9/17

Reviewed By: RA 01/09/17

### Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
( $<2$  or  $>12$  unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

## HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE - Albuquerque, NM 87109  
Tel. 505-345-3975 Fax 505-345-4107  
www.hallenvironmental.com

## Analysis Request

[illegible]

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  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

January 12, 2017

Devon Jercinovic

EA Engineering Science & Technology  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL:  
FAX

RE: Kirtland BFF 106239

OrderNo.: 1701256

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/9/2017 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](http://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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1701256

Date Reported: 1/12/2017

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106239SP

Project: Kirtland BFF 106239

Collection Date: 1/9/2017 7:35:00 AM

Lab ID: 1701256-001

Matrix: AQUEOUS

Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>MED</b>
Mercury	ND	0.00020		mg/L	1	1/10/2017 12:20:49 PM	29607
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	0.020		mg/L	1	1/10/2017 6:25:50 PM	29596
Barium	0.12	0.020		mg/L	1	1/10/2017 6:25:50 PM	29596
Cadmium	ND	0.0020		mg/L	1	1/10/2017 6:25:50 PM	29596
Chromium	ND	0.0060		mg/L	1	1/10/2017 6:25:50 PM	29596
Lead	ND	0.0050		mg/L	1	1/10/2017 6:25:50 PM	29596
Selenium	ND	0.050		mg/L	1	1/10/2017 6:25:50 PM	29596
Silver	ND	0.0050		mg/L	1	1/10/2017 6:25:50 PM	29596
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	0.056	0.010		µg/L	1	1/10/2017 10:40:55 AM	29609
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>BCN</b>
Benzene	ND	1.0		µg/L	1	1/10/2017 12:13:00 PM	R39923
Toluene	3.9	1.0		µg/L	1	1/10/2017 12:13:00 PM	R39923
Ethylbenzene	ND	1.0		µg/L	1	1/10/2017 12:13:00 PM	R39923
Xylenes, Total	ND	1.5		µg/L	1	1/10/2017 12:13:00 PM	R39923
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	1/10/2017 12:13:00 PM	R39923
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	1/10/2017 12:13:00 PM	R39923
Surr: Dibromofluoromethane	102	70-130		%Rec	1	1/10/2017 12:13:00 PM	R39923
Surr: Toluene-d8	98.4	70-130		%Rec	1	1/10/2017 12:13:00 PM	R39923

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	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
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701256

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	MB-29609	SampType:	MBLK	TestCode:	EPA Method 8011/504.1: EDB					
Client ID:	PBW	Batch ID:	29609	RunNo:	39918					
Prep Date:	1/10/2017	Analysis Date:	1/10/2017	SeqNo:	1251243	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-29609	SampType:	LCS	TestCode:	EPA Method 8011/504.1: EDB					
Client ID:	LCSW	Batch ID:	29609	RunNo:	39918					
Prep Date:	1/10/2017	Analysis Date:	1/10/2017	SeqNo:	1251245	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.094	0.010	0.1000	0	93.8	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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701256

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	LCSW	Batch ID:	R39923	RunNo:	39923					
Prep Date:		Analysis Date:	1/10/2017	SeqNo:	1251276	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	97.9	70	130			
Toluene	19	1.0	20.00	0	96.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.8		10.00		98.5	70	130			

Sample ID	vsb deli	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	R39923	RunNo:	39923					
Prep Date:		Analysis Date:	1/10/2017	SeqNo:	1251277	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								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.3	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	9.9		10.00		98.6	70	130			

### 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
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701256

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	MB-29607		SampType:	MBLK		TestCode:	EPA Method 7470: Mercury				
Client ID:	PBW		Batch ID:	29607		RunNo:	39928				
Prep Date:	1/9/2017		Analysis Date:	1/10/2017		SeqNo:	1251289		Units:	mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	ND	0.00020									

Sample ID	LCS-29607		SampType: LCS		TestCode: EPA Method 7470: Mercury					
Client ID:	LCSW		Batch ID: 29607		RunNo: 39928					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251290		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	105	80	120			

Sample ID	1701256-001CMS		SampType: MS		TestCode: EPA Method 7470: Mercury					
Client ID:	KAFB-106239SP		Batch ID: 29607		RunNo: 39928					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251294		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	.00006117	102	75	125			

Sample ID	1701256-001CMSD		SampType: MSD		TestCode: EPA Method 7470: Mercury					
Client ID:	KAFB-106239SP		Batch ID: 29607		RunNo: 39928					
Prep Date:	1/9/2017		Analysis Date: 1/10/2017		SeqNo: 1251295		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	.00006117	104	75	125	1.73	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  
R RPD outside accepted recovery limits  
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 Detection Limit  
W Sample container temperature is out of limit as specified



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1701256

12-Jan-17

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF 106239

Sample ID	MB-29596		SampType: MBLK		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	PBW		Batch ID: 29596		RunNo: 39943					
Prep Date:	1/10/2017		Analysis Date: 1/10/2017		SeqNo: 1251576		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	LCS-29596		SampType: LCS		TestCode: EPA 6010B: Total Recoverable Metals					
Client ID:	LCSW		Batch ID: 29596		RunNo: 39943					
Prep Date:	1/10/2017		Analysis Date: 1/10/2017		SeqNo: 1251577		Units: mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.45	0.020	0.5000	0	90.5	80	120			
Barium	0.46	0.020	0.5000	0	91.0	80	120			
Cadmium	0.45	0.0020	0.5000	0	90.0	80	120			
Chromium	0.45	0.0060	0.5000	0	90.7	80	120			
Lead	0.44	0.0050	0.5000	0	87.6	80	120			
Selenium	0.44	0.050	0.5000	0	87.9	80	120			
Silver	0.092	0.0050	0.1000	0	91.7	80	120			

### 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
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



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: 1701256

RcptNo: 1

Received by/date: AS 01/09/17

Logged By: Anne Thorne

1/9/2017 9:25:00 AM

*Anne Thorne*

Completed By: Anne Thorne

1/9/2017 10:08:08 AM

*Anne Thorne*

Reviewed By: RA 01/09/17

### Chain of Custody

1. Custody seals intact on sample bottles?

Yes ☐

No ☐

Not Present ☒

2. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

3. How was the sample delivered?

Client

### Log In

4. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

5. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$

Yes ☒

No ☐

NA ☐

6. Sample(s) in proper container(s)?

Yes ☒

No ☐

7. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

8. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

9. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

10. VOA vials have zero headspace?

Yes ☒

No ☐

No VOA Vials ☐

11. Were any sample containers received broken?

Yes ☐

No ☒

12. Does paperwork match bottle labels?

Yes ☒

No ☐

(Note discrepancies on chain of custody)

13. Are matrices correctly identified on Chain of Custody?

Yes ☒

No ☐

14. Is it clear what analyses were requested?

Yes ☒

No ☐

15. Were all holding times able to be met?

Yes ☒

No ☐

(If no, notify customer for authorization.)

# of preserved bottles checked for pH: 1

( $<2$  or  $>12$  unless noted)

Adjusted? No

Checked by: Re

### Special Handling (if applicable)

16. 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: \_\_\_\_\_

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			



## ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental  
2425 New Holland Pike  
Lancaster, PA 17601

Prepared for:

EA Engineering, Science & Tech  
Building C, Suite 100  
405 State Highway 121 Bypass  
Lewisville TX 75067-8192

Report Date: February 01, 2017

**Project: Kirtland AFB**

Submittal Date: 01/10/2017

Group Number: 1752214

SDG: KR120

PO Number: 14800

State of Sample Origin: NM

Client Sample Description

	Lancaster Labs (LL) #
SP239-006-171 Soil	8778682
SP239-006-571 Soil	8778683
SP239-007-171 Soil	8778684
TB-171-01 Water	8778685
SP239-008-171 Soil	8778686
SP239-003-171 Soil	8778687
SP239-004-171 Soil	8778688
SP239-005-171 Soil	8778689
TB-171-02 Water	8778690

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	EA Science & Technology	Attn: Katie Morrison
Electronic Copy To	EA Science & Technology	Attn: Amanda Smith
Electronic Copy To	EA Science & Technology	Attn: Tara Lamond
Electronic Copy To	EA Engineering, Science & Tech	Attn: Pamela Moss

REVISED

Respectfully Submitted,



Kay Hower

(717) 556-7364

Sample Description: SP239-006-171 Soil

LL Sample # SW 8778682

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:48 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23961 SDG#: KR120-01BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.6	2	6	1.01
11995	Ethylbenzene	100-41-4	2 U	1	2	6	1.01
11995	Toluene	108-88-3	2 U	1	2	6	1.01
11995	Xylene (Total)	1330-20-7	2 U	1	2	6	1.01
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.43 U	0.22	0.43	0.54	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	3.74 J	1.02	2.09	4.19	1
06946	Barium	7440-39-3	138	0.0345	0.131	1.05	1
06949	Cadmium	7440-43-9	0.0837 J	0.0513	0.131	1.05	1
06951	Chromium	7440-47-3	12.4	0.147	0.392	3.14	1
06955	Lead	7439-92-1	23.6	0.576	1.57	3.14	1
06936	Selenium	7782-49-2	1.90 J	0.942	2.09	4.19	1
06966	Silver	7440-22-4	0.523 U	0.157	0.523	1.05	1
<b>SW-846 7471B</b>							
00159	Mercury 7471B	7439-97-6	0.0187 U	0.0112	0.0187	0.112	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	10.7	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	A170112AA	01/11/2017 22:55	Patrick T Herres	1.01
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:57	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 15:39	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-006-171 Soil

LL Sample # SW 8778682

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:48 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23961 SDG#: KR120-01BKG

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 22:42	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 07:54	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result

Sample Description: SP239-006-571 Soil

LL Sample # SW 8778683

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:48 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass  
Lewisville TX 75067-8192

23965 SDG#: KR120-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.6	2	6	0.98
11995	Ethylbenzene	100-41-4	2 U	1	2	6	0.98
11995	Toluene	108-88-3	2 J	1	2	6	0.98
11995	Xylene (Total)	1330-20-7	2 U	1	2	6	0.98
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.44 U	0.22	0.44	0.55	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	4.31	1.01	2.09	4.18	1
06946	Barium	7440-39-3	184	0.0345	0.131	1.05	1
06949	Cadmium	7440-43-9	0.108 J	0.0512	0.131	1.05	1
06951	Chromium	7440-47-3	9.76	0.146	0.392	3.14	1
06955	Lead	7439-92-1	24.2	0.575	1.57	3.14	1
06936	Selenium	7782-49-2	1.99 J	0.941	2.09	4.18	1
06966	Silver	7440-22-4	0.523 U	0.157	0.523	1.05	1
<b>SW-846 7471B</b>							
00159	Mercury 7471B	7439-97-6	0.0172 U	0.0103	0.0172	0.103	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	10.6	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	A170112AA	01/12/2017 00:03	Patrick T Herres	0.98
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:56	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 16:27	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result



REVISED

Sample Description: SP239-006-571 Soil

LL Sample # SW 8778683

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:48 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23965 SDG#: KR120-02

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 23:03	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 08:12	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-007-171 Soil

LL Sample # SW 8778684

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:57 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23971 SDG#: KR120-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.5	2	5	0.95
11995	Ethylbenzene	100-41-4	2 U	1	2	5	0.95
11995	Toluene	108-88-3	2 U	1	2	5	0.95
11995	Xylene (Total)	1330-20-7	2 U	1	2	5	0.95
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.44 U	0.22	0.44	0.55	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	3.17	0.729	1.50	3.01	1
06946	Barium	7440-39-3	101	0.0248	0.0939	0.752	1
06949	Cadmium	7440-43-9	0.0564 J	0.0368	0.0939	0.752	1
06951	Chromium	7440-47-3	10.7	0.105	0.282	2.25	1
06955	Lead	7439-92-1	16.8	0.413	1.13	2.25	1
06936	Selenium	7782-49-2	1.59 J	0.676	1.50	3.01	1
06966	Silver	7440-22-4	0.376 U	0.113	0.376	0.752	1
<b>SW-846 7471B</b>							
00159	Mercury 7471B	7439-97-6	0.0175 U	0.0105	0.0175	0.105	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	10.7	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	B170161AA	01/16/2017 13:59	Jennifer K Howe	0.95
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:05	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:46	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 16:43	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-007-171 Soil

LL Sample # SW 8778684

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:57 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23971 SDG#: KR120-03

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 23:06	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 08:15	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: TB-171-01 Water

LL Sample # WW 8778685

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 16:12 by JB

EA Engineering, Science & Tech

Building C, Suite 100

Submitted: 01/10/2017 09:50

405 State Highway 121 Bypass

Reported: 02/01/2017 13:20

Lewisville TX 75067-8192

239T1 SDG#: KR120-04TB

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260C</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
11997	Benzene	71-43-2	1 U	0.5	1	1	1
11997	Ethylbenzene	100-41-4	1 U	0.5	1	1	1
11997	Toluene	108-88-3	1 U	0.5	1	1	1
11997	Xylene (Total)	1330-20-7	1 U	0.5	1	1	1
<b>Volatiles by Extraction</b>	<b>SW-846 8011</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
10398	Ethylene dibromide	106-93-4	0.019 U	0.0095	0.019	0.028	1

### Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	BTEX 8260C Water	SW-846 8260C	1	L170152AA	01/15/2017 14:12	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	L170152AA	01/15/2017 14:12	Angela D Sneeringer	1
10398	EDB 8011 Water	SW-846 8011	1	170100015A	01/17/2017 18:36	Heather M Miller	1
07786	EDB Extraction (8011)	SW-846 8011	1	170100015A	01/11/2017 08:00	Kayla A Yuditsky	1

\*=This limit was used in the evaluation of the final result

Sample Description: SP239-008-171 Soil

LL Sample # SW 8778686

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 15:02 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23981 SDG#: KR120-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.5	2	5	0.98
11995	Ethylbenzene	100-41-4	2 U	1	2	5	0.98
11995	Toluene	108-88-3	2 U	1	2	5	0.98
11995	Xylene (Total)	1330-20-7	2 U	1	2	5	0.98
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.43 U	0.22	0.43	0.54	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	3.11 J	0.876	1.81	3.61	1
06946	Barium	7440-39-3	89.8	0.0298	0.113	0.903	1
06949	Cadmium	7440-43-9	0.0822 J	0.0443	0.113	0.903	1
06951	Chromium	7440-47-3	9.84	0.126	0.339	2.71	1
06955	Lead	7439-92-1	11.1	0.497	1.35	2.71	1
06936	Selenium	7782-49-2	0.991 J	0.813	1.81	3.61	1
06966	Silver	7440-22-4	0.452 U	0.135	0.452	0.903	1
<b>SW-846 7471B</b>							
00159	Mercury 7471B	7439-97-6	0.0179 U	0.0107	0.0179	0.107	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	8.5	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	A170112AA	01/12/2017 00:48	Patrick T Herres	0.98
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:48	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 16:58	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-008-171 Soil

LL Sample # SW 8778686

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 15:02 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23981 SDG#: KR120-05

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 23:16	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 08:17	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-003-171 Soil

LL Sample # SW 8778687

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:25 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23935 SDG#: KR120-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.6	2	6	1.02
11995	Ethylbenzene	100-41-4	2 U	1	2	6	1.02
11995	Toluene	108-88-3	2 U	1	2	6	1.02
11995	Xylene (Total)	1330-20-7	2 U	1	2	6	1.02
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.42 U	0.21	0.42	0.52	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	2.02 J	0.864	1.78	3.56	1
06946	Barium	7440-39-3	111	0.0294	0.111	0.891	1
06949	Cadmium	7440-43-9	0.151 J	0.0437	0.111	0.891	1
06951	Chromium	7440-47-3	7.94	0.125	0.334	2.67	1
06955	Lead	7439-92-1	83.5	0.490	1.34	2.67	1
06936	Selenium	7782-49-2	1.78 U	0.802	1.78	3.56	1
06966	Silver	7440-22-4	0.445 U	0.134	0.445	0.891	1
<b>SW-846 7471B</b>							
00159	Mercury 7471B	7439-97-6	0.0181 U	0.0109	0.0181	0.109	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	8.0	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	A170112AA	01/12/2017 01:11	Patrick T Herres	1.02
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:50	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 17:14	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-003-171 Soil

LL Sample # SW 8778687

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:25 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23935 SDG#: KR120-06

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 23:20	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 08:20	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result



Sample Description: SP239-004-171 Soil

LL Sample # SW 8778688

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:35 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass  
Lewisville TX 75067-8192

23941 SDG#: KR120-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.5	2	5	1
11995	Ethylbenzene	100-41-4	2 U	1	2	5	1
11995	Toluene	108-88-3	2 U	1	2	5	1
11995	Xylene (Total)	1330-20-7	2 U	1	2	5	1
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.42 U	0.21	0.42	0.53	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	4.78	0.991	2.04	4.09	1
06946	Barium	7440-39-3	101	0.0337	0.128	1.02	1
06949	Cadmium	7440-43-9	0.184 J	0.0501	0.128	1.02	1
06951	Chromium	7440-47-3	10.6	0.143	0.383	3.07	1
06955	Lead	7439-92-1	139	0.562	1.53	3.07	1
06936	Selenium	7782-49-2	2.04 U	0.920	2.04	4.09	1
06966	Silver	7440-22-4	0.511 U	0.153	0.511	1.02	1
00159	Mercury 7471B	7439-97-6	0.0178 U	0.0107	0.0178	0.107	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	7.7	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	A170112AA	01/12/2017 01:33	Patrick T Herres	1
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:59	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 18:02	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-004-171 Soil

LL Sample # SW 8778688

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:35 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23941 SDG#: KR120-07

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 23:23	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 08:22	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result

Sample Description: SP239-005-171 Soil

LL Sample # SW 8778689

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:40 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23951 SDG#: KR120-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Detection Limit*	Dry Limit of Detection	Dry Limit of Quantitation	DF
<b>GC/MS Volatiles</b>							
11995	Benzene	71-43-2	2 U	0.5	2	5	1.01
11995	Ethylbenzene	100-41-4	2 U	1	2	5	1.01
11995	Toluene	108-88-3	2 U	1	2	5	1.01
11995	Xylene (Total)	1330-20-7	2 U	1	2	5	1.01
<b>Volatiles by Extraction</b>							
13214	Ethylene dibromide	106-93-4	0.42 U	0.21	0.42	0.53	1
<b>Metals</b>							
06935	Arsenic	7440-38-2	3.53 J	0.957	1.97	3.95	1
06946	Barium	7440-39-3	143	0.0326	0.123	0.986	1
06949	Cadmium	7440-43-9	0.0967 J	0.0483	0.123	0.986	1
06951	Chromium	7440-47-3	8.46	0.138	0.370	2.96	1
06955	Lead	7439-92-1	8.52	0.543	1.48	2.96	1
06936	Selenium	7782-49-2	1.97 U	0.888	1.97	3.95	1
06966	Silver	7440-22-4	0.493 U	0.148	0.493	0.986	1
<b>SW-846 7471B</b>							
00159	Mercury 7471B	7439-97-6	0.0179 U	0.0108	0.0179	0.108	1
<b>Wet Chemistry</b>							
00111	Moisture	n.a.	7.0	0.50	0.50	0.50	1
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

## Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	BTEX 8260C Soil	SW-846 8260C	1	A170112AA	01/12/2017 01:56	Patrick T Herres	1.01
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
00374	GC/MS - Bulk Soil Prep	SW-846 5035A Modified	2	201701043995	01/10/2017 13:06	Katelyn C Shober	n.a.
06646	GC/MS HL Bulk Sample Prep	SW-846 5035A Modified	1	201701043995	01/10/2017 12:53	Katelyn C Shober	n.a.
13214	EDB Soil 8011	SW-846 8011	1	170120006A	01/16/2017 18:18	Heather M Miller	1
13218	EDB Soil Extraction	SW-846 8011	1	170120006A	01/13/2017 14:30	Shawn J McMullen	1
06935	Arsenic	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: SP239-005-171 Soil

LL Sample # SW 8778689

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 14:40 by JB

EA Engineering, Science & Tech

Submitted: 01/10/2017 09:50

Building C, Suite 100

Reported: 02/01/2017 13:20

405 State Highway 121 Bypass

Lewisville TX 75067-8192

23951 SDG#: KR120-08

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	170110637001	01/12/2017 23:27	Elaine F Stoltzfus	1
00159	Mercury 7471B	SW-846 7471B	1	170110638001	01/12/2017 08:25	Damary Valentin	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	170110637001	01/11/2017 15:25	JoElla L Rice	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	170110638001	01/11/2017 16:30	JoElla L Rice	1
00111	Moisture	SM 2540 G-1997	1	17012820005B	01/12/2017 18:24	Scott W Freisher	1

\*=This limit was used in the evaluation of the final result

REVISED

Sample Description: TB-171-02 Water

LL Sample # WW 8778690

Project Name: Kirtland AFB

LL Group # 1752214

Account # 31675

Collected: 01/09/2017 16:15 by JB

EA Engineering, Science & Tech

Building C, Suite 100

Submitted: 01/10/2017 09:50

405 State Highway 121 Bypass

Reported: 02/01/2017 13:20

Lewisville TX 75067-8192

239T2 SDG#: KR120-09TB

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260C</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
11997	Benzene	71-43-2	1 U	0.5	1	1	1
11997	Ethylbenzene	100-41-4	1 U	0.5	1	1	1
11997	Toluene	108-88-3	1 U	0.5	1	1	1
11997	Xylene (Total)	1330-20-7	1 U	0.5	1	1	1
<b>Volatiles by Extraction</b>	<b>SW-846 8011</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
10398	Ethylene dibromide	106-93-4	0.019 U	0.0095	0.019	0.028	1

### Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	BTEX 8260C Water	SW-846 8260C	1	L170152AA	01/15/2017 14:33	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	L170152AA	01/15/2017 14:33	Angela D Sneeringer	1
10398	EDB 8011 Water	SW-846 8011	1	170100015A	01/17/2017 18:52	Heather M Miller	1
07786	EDB Extraction (8011)	SW-846 8011	1	170100015A	01/11/2017 08:00	Kayla A Yuditsky	1

\*=This limit was used in the evaluation of the final result

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 02/01/2017 13:20

Group Number: 1752214

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Method Blank

Analysis Name	Result	DL**	LOD	LOQ
	ug/kg	ug/kg	ug/kg	ug/kg
Batch number: A170112AA	Sample number(s): 8778682-8778683, 8778686-8778689			
Benzene	2 U	0.5	2	5
Ethylbenzene	2 U	1	2	5
Toluene	2 U	1	2	5
Xylene (Total)	2 U	1	2	5
Batch number: B170161AA	Sample number(s): 8778684			
Benzene	2 U	0.5	2	5
Ethylbenzene	2 U	1	2	5
Toluene	2 U	1	2	5
Xylene (Total)	2 U	1	2	5
	ug/l	ug/l	ug/l	ug/l
Batch number: L170152AA	Sample number(s): 8778685, 8778690			
Benzene	1 U	0.5	1	1
Ethylbenzene	1 U	0.5	1	1
Toluene	1 U	0.5	1	1
Xylene (Total)	1 U	0.5	1	1
	ug/kg	ug/kg	ug/kg	ug/kg
Batch number: 170120006A	Sample number(s): 8778682-8778684, 8778686-8778689			
Ethylene dibromide	0.40 U	0.20	0.40	0.50
	ug/l	ug/l	ug/l	ug/l
Batch number: 170100015A	Sample number(s): 8778685, 8778690			
Ethylene dibromide	0.020 U	0.010	0.020	0.030
	mg/kg	mg/kg	mg/kg	mg/kg
Batch number: 170110637001	Sample number(s): 8778682-8778684, 8778686-8778689			
Arsenic	2.00 U	0.970	2.00	4.00
Barium	0.125 U	0.0330	0.125	1.00
Cadmium	0.125 U	0.0490	0.125	1.00
Chromium	0.375 U	0.140	0.375	3.00
Lead	1.50 U	0.550	1.50	3.00
Selenium	2.00 U	0.900	2.00	4.00
Silver	0.500 U	0.150	0.500	1.00
Batch number: 170110638001	Sample number(s): 8778682-8778684, 8778686-8778689			
Mercury 7471B	0.0167 U	0.0100	0.0167	0.100

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 02/01/2017 13:20

Group Number: 1752214

### LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: A170112AA	Sample number(s): 8778682-8778683, 8778686-8778689								
Benzene	20	21.73	20	22.2	109	111	77-121	2	20
Ethylbenzene	20	22.76	20	23.17	114	116	76-122	2	20
Toluene	20	21.44	20	21.6	107	108	77-121	1	20
Xylene (Total)	60	68.02	60	69.71	113	116	78-124	2	20
Batch number: B170161AA	Sample number(s): 8778684								
Benzene	20	20.85	20	22.79	104	114	77-121	9	20
Ethylbenzene	20	21.58	20	23.61	108	118	76-122	9	20
Toluene	20	20.71	20	22.82	104	114	77-121	10	20
Xylene (Total)	60	64.85	60	71.33	108	119	78-124	10	20
	ug/l	ug/l	ug/l	ug/l					
Batch number: L170152AA	Sample number(s): 8778685, 8778690								
Benzene	20	19.72	20	19.78	99	99	79-120	0	20
Ethylbenzene	20	18.12	20	17.91	91	90	79-121	1	20
Toluene	20	18.32	20	18.19	92	91	80-121	1	20
Xylene (Total)	60	55.23	60	53.94	92	90	79-121	2	20
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 170120006A	Sample number(s): 8778682-8778684, 8778686-8778689								
Ethylene dibromide	4.50	3.29	4.50	3.19	73	71	60-140	3	20
	ug/l	ug/l	ug/l	ug/l					
Batch number: 170100015A	Sample number(s): 8778685, 8778690								
Ethylene dibromide	0.128	0.117	0.128	0.124	92	96	60-140	5	20
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 170110637001	Sample number(s): 8778682-8778684, 8778686-8778689								
Arsenic	15	14.14			94		82-111		
Barium	200	196.63			98		83-113		
Cadmium	5.00	5.00			100		82-113		
Chromium	20	20.11			101		85-113		
Lead	15	15.57			104		81-112		
Selenium	15	14.41			96		78-111		
Silver	5.00	5.07			101		82-112		
Batch number: 170110638001	Sample number(s): 8778682-8778684, 8778686-8778689								
Mercury 7471B	0.100	0.0886			89		80-124		
	%	%	%	%					
Batch number: 17012820005B	Sample number(s): 8778682-8778684, 8778686-8778689								
Moisture	89.5	89.41			100		99-101		

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 02/01/2017 13:20

Group Number: 1752214

### MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: A170112AA	Sample number(s): 8778682-8778683,8778686-8778689 UNSPK: 8778682									
Benzene	2 U	19.8	18.45	20.45	22.78	93	111	77-121	21*	20
Ethylbenzene	2 U	19.8	16.74	20.45	23.84	85	117	76-122	35*	20
Toluene	2 U	19.8	17.36	20.45	22.97	88	112	77-121	28*	20
Xylene (Total)	2 U	59.41	48.54	61.35	71.07	82	116	78-124	38*	20
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 170120006A	Sample number(s): 8778682-8778684,8778686-8778689 UNSPK: 8778682									
Ethylene dibromide	0.38 U	4.41	2.48	4.37	2.65	56*	61	60-140	7	20
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: 170100015A	Sample number(s): 8778685,8778690 UNSPK: P768288									
Ethylene dibromide	0.019 U	0.122	0.119			98		60-140		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 170110637001	Sample number(s): 8778682-8778684,8778686-8778689 UNSPK: 8778682									
Arsenic	3.34	14.85	17.87	11.54	13.5	98	88	82-111	28*	20
Barium	122.81	198.02	327.44	153.85	231.86	103	71*	83-113	34*	20
Cadmium	0.0748	4.95	4.47	3.85	3.56	89	91	82-113	23*	20
Chromium	11.06	19.8	30.66	15.38	21.78	99	70*	85-113	34*	20
Lead	21.11	14.85	46.57	11.54	28.3	171*	62*	81-112	49*	20
Selenium	1.70	14.85	15.79	11.54	11.65	95	86	78-111	30*	20
Silver	0.467 U	4.95	4.71	3.85	3.78	95	98	82-112	22*	20
Batch number: 170110638001	Sample number(s): 8778682-8778684,8778686-8778689 UNSPK: 8778682									
Mercury 7471B	0.0167 U	0.154	0.138	0.161	0.161	90	100	80-124	15	20

### Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc ug/l	DUP Conc ug/l	DUP RPD	DUP RPD Max
Batch number: 170100015A	Sample number(s): 8778685,8778690 BKG: P773271			
Ethylene dibromide	0.019 U	0.019 U	0 (1)	30
	mg/kg	mg/kg		
Batch number: 170110637001	Sample number(s): 8778682-8778684,8778686-8778689 BKG: 8778682			
Arsenic	3.34	2.02	49* (1)	20
Barium	122.81	64.1	63*	20
Cadmium	0.0748	0.0920	21* (1)	20
Chromium	11.06	5.49	67* (1)	20

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 02/01/2017 13:20

Group Number: 1752214

### Laboratory Duplicate (continued)

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Lead	21.11	14.38	38*	20
Selenium	1.70	1.77 U	200* (1)	20
Silver	0.467 U	0.442 U	0 (1)	20
Batch number: 170110638001	Sample number(s): 8778682-8778684, 8778686-8778689 BKG: 8778682			
Mercury 7471B	0.0167 U	0.0164 U	0 (1)	20
	%	%		
Batch number: 17012820005B	Sample number(s): 8778682-8778684, 8778686-8778689 BKG: 8778682			
Moisture	10.66	11.62	9*	5

### Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: BTEX 8260C Soil  
Batch number: A170112AA

	Dibromofluoromethane %Rec LOD (ug/kg)		1,2-Dichloroethane-d4 %Rec LOD (ug/kg)		Toluene-d8 %Rec LOD (ug/kg)		4-Bromofluorobenzene %Rec LOD (ug/kg)	
8778682	110	5	108	5	99	5	85	5
8778683	108	5	109	5	100	5	87	5
8778686	110	5	107	5	99	5	88	5
8778687	112	5	109	5	101	5	81	5
8778688	112	5	107	5	100	5	84	5
8778689	112	5	111	5	99	5	84	5
Blank	107	5	109	5	98	5	90	5
LCS	102	5	107	5	101	5	100	5
LCSD	101	5	104	5	102	5	99	5
MS	104	5	109	5	102	5	99	5
MSD	101	5	102	5	103	5	98	5
Limits:	78-119		71-136		85-116		79-119	

Analysis Name: BTEX 8260C Soil  
Batch number: B170161AA

	Dibromofluoromethane %Rec LOD (ug/kg)		1,2-Dichloroethane-d4 %Rec LOD (ug/kg)		Toluene-d8 %Rec LOD (ug/kg)		4-Bromofluorobenzene %Rec LOD (ug/kg)	
8778684	103	5	107	5	97	5	97	5
Blank	100	5	100	5	98	5	96	5
LCS	101	5	103	5	100	5	100	5
LCSD	100	5	103	5	100	5	100	5

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 02/01/2017 13:20

Group Number: 1752214

### Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: BTEX 8260C Soil  
Batch number: B170161AA

Limits: 78-119 71-136 85-116 79-119

Analysis Name: BTEX 8260C Water  
Batch number: L170152AA

	Dibromofluoromethane		1,2-Dichloroethane-d4		Toluene-d8		4-Bromofluorobenzene	
	%Rec	LOD	%Rec	LOD	%Rec	LOD	%Rec	LOD
	(ug/l)		(ug/l)		(ug/l)		(ug/l)	
8778685	110	1	102	1	95	1	98	1
8778690	111	1	104	1	94	1	99	1
Blank	111	1	104	1	93	1	99	1
LCS	110	1	101	1	96	1	101	1
LCSD	110	1	102	1	95	1	100	1
Limits:	80-119		81-118		89-112		85-114	

Analysis Name: EDB 8011 Water  
Batch number: 170100015A

	1,1,2,2-Tetrachloroethane	
	%Rec	LOD
	(ug/l)	
8778685	105	0.0066
8778690	108	0.0066
Blank	92	0.0070
DUP	95	0.0066
LCS	90	0.0070
LCSD	92	0.0070
MS	90	0.0067
Limits:	46-136	

Analysis Name: EDB Soil 8011  
Batch number: 170120006A

	1,1,2,2-Tetrachloroethane	
	%Rec	LOD
	(ug/kg)	
8778682	109	0.16
8778683	105	0.17
8778684	107	0.17
8778686	123	0.17
8778687	108	0.16
8778688	106	0.17
8778689	111	0.17
Blank	119	0.17
LCS	100	0.17
LCSD	102	0.17

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

## Quality Control Summary

Client Name: EA Engineering, Science & Tech  
Reported: 02/01/2017 13:20

Group Number: 1752214

### Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: EDB Soil 8011

Batch number: 170120006A

1,1,2,2-Tetrachloroethane  
%Rec LOD  
(ug/kg)

MS	79	0.17
MSD	98	0.17

Limits: 60-140

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

31625 1752214 8778682-90


<div style="font-size: 8px; margin-top: 5px;"> 225 Schilling Circle Suite  400 Hunt Valley MD  Tel No: (410) 584-7000  Fax No: (410) 771-1625 </div>		CHAIN-OF-CUSTODY RECORD										COC NUMBER	
												COG 239-171A YEAR: 2017 QUARTER: 1	
PROJECT NAME: Kirtland AFB Bulk Fuels Facility		PROJECT NUMBER: 62599DM01		LABORATORY NAME AND CONTACT: Eurofins Lancaster Laboratories 2425 New Holland Pike Lancaster PA 17601				FAX AND MAIL REPORTS/EDD TO: Tara Lamond: tlamond@eaest.com EA Amanda Smith: asmith@eaest.com EA					
								FAX AND MAIL REPORTS/EDD TO: Pam Moss: pmoss@eaest.com EA					
PROJECT SITE AND PHASE: ST106/SS110				LAB PO NUMBER: 14800				LAB CONTACT: Kay Hower KayHower@eurofinsUS.com Eurofins 1 (717) 556-7258					

ITEM	SAMPLE IDENTIFIER	DATE COLLECTED	TIME COLLECTED	Total Number of Bottles	ANALYSIS REQUIRED (Specify number of bottles)										COMMENTS		
					VOCs (8260C)	BTEX (8260C)	BTEXN (8260C)	EDB (8011)	Total As, Pb, Ca, K, Na, Mg (6020A/6010C)	Dissolved Fe, Mn (6010C)	Chloride, bromide, sulfate (300.0)	Nitrate-Nitrite (353.2)	Ammonia (SM4500NH3)	Sulfide (SM4500SCF)		Alkalinity (SM2320B)	RCRA Metals
1	SP239-006-171	1/9/17	1448	2		X		X		*						X	
2	SP239-006-571	1/9/17	1448	6		3		3								3	
3	SP239-007-171	1/9/17	1457	2		X		X								X	
4	TB-171-01	1/9/17	1612	4		2		2									
5																	
6																	

COMMENTS: \*Dissolved Fe, Mn aliquot was field filtered.  
RCRA metals = (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)  
Please analyze for BTEX, EDB, + RCRA & metals  
RUSH TAT TB-171-01

SAMPLER(S): Joshua Brown				COURIER AND SHIPPING NUMBER: Fed Ex 809 58994 1138			
RELINQUISHED BY:		DATE	TIME	RECEIVED BY:		DATE	TIME
Printed Name and Signature: Joshua Brown		1/9/17	1700	Printed Name and Signature: Carlos Montoya		1/9/17	1700
Printed Name and Signature: Carlos Montoya		1/9/17	1800	Printed Name and Signature:		1/9/17	
Printed Name and Signature:				Printed Name and Signature:			
Printed Name and Signature:				Printed Name and Signature: Porsia Hill		1/10/17	950

 225 Schilling Circle Suite 400 Hunt Valley MD Tel No: (410) 584-7000 Fax No: (410) 771-1625		<h1>CHAIN-OF-CUSTODY RECORD</h1>				COC NUMBER COC-SP239-171B			
PROJECT NAME: <b>Kirtland AFB Bulk Fuels Facility</b>		PROJECT NUMBER: <b>62599DM01</b>		LABORATORY NAME AND CONTACT: <b>Eurofins Lancaster Laboratories</b> <b>2425 New Holland Pike Lancaster PA 17601</b>		FAX AND MAIL REPORTS/EDD TO: Tara Lamond: tlamond@eaest.com EA Amanda Smith: asmith@eaest.com EA FAX AND MAIL REPORTS/EDD TO: Pam Moss: pmoss@eaest.com EA		YEAR: 2017	
PROJECT SITE AND PHASE: <b>ST106/SS110</b>		LAB PO NUMBER: <b>14800</b>		LAB CONTACT: Kay Hower KayHower@eurofinsUS.com Eurofins 1 (717) 556-7258		QUARTER: 1			

ITEM	SAMPLE IDENTIFIER	DATE COLLECTED	TIME COLLECTED	ANALYSIS REQUIRED (Specify number of bottles)										COMMENTS			
				Total Number of Bottles	VOCs (8260C)	BTEX (8260C)	BTExN (8260C)	EDB (8011)	Total As, Pb, Cd, K, Na, Mg (6020A/6010C)	Dissolved Fe, Mn (6010C)	Chloride, bromide, sulfate (300.0)	Nitrate-Nitrite (333.2)	Ammonia (SM4500NH3)		Sulfide (SM4500S2CF)	Alkalinity (SM2320B)	RLRA Metals
1	SP 239-008-171	1/9/17	1502	2		X		X			*					X	
2	SP 239-003-171	1/9/17	1425	2		X		X								X	
3	SP 239-004-171	1/9/17	1435	2		X		X								X	
4	SP 239-005-171	1/9/17	1440	2		X		X								X	
5	TB-171-02	1/9/17	1615	4		2		2								X	
6																	

COMMENT'S: \*Dissolved Fe, Mn aliquot was field filtered.

COMMENTS: \*Dissolved Fe, Mn aliquot was field filtered.

RCRA metals = (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)

Please analyze Samples for BTEX, EDB, + RCRA 8 metals.

AMPLER(S): Jeshua Brown

RUSH TAT

COURIER AND SHIPPING NUMBER:

FedEx 8095 8994 1127

Printed Name and Signature:

RELINQUISHED BY:

DATE \_\_\_\_\_

TIME

RECEIVED BY:

DATE \_\_\_\_\_

TIME

Joshua Brown

11/9/17	1700
---------	------

Printed Name and Signature:

Carlos Montoya

1/9/17	1700
--------	------

Printed Name and Signature:

Carlos Montoya

1/9/17	1800
--------	------

Printed Name and Signature:

Printed Name and Signature:

Printed Name and Signature:

ited Name and Signature:

Printed Name and Signature:

Pesha Hill

1/10/17	9:50
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Client: EA

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Delivery and Receipt Information

Delivery Method:	<u>Fed Ex</u>	Arrival Timestamp:	<u>01/10/2017 9:50</u>
Number of Packages:	<u>2</u>	Number of Projects:	<u>1</u>

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## Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace $\geq$ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	8
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

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Unpacked by Porsha Hill (12046) at 10:41 on 01/10/2017

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## Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	0.7	IR	Wet	Y	Bagged	N
2	32170023	1.3	IR	Wet	Y	Bagged	N

# Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

<b>BMQL</b>	Below Minimum Quantitation Level	<b>mg</b>	milligram(s)
<b>C</b>	degrees Celsius	<b>mL</b>	milliliter(s)
<b>cfu</b>	colony forming units	<b>MPN</b>	Most Probable Number
<b>CP Units</b>	cobalt-chloroplatinate units	<b>N.D.</b>	none detected
<b>F</b>	degrees Fahrenheit	<b>ng</b>	nanogram(s)
<b>g</b>	gram(s)	<b>NTU</b>	nephelometric turbidity units
<b>IU</b>	International Units	<b>pg/L</b>	picogram/liter
<b>kg</b>	kilogram(s)	<b>RL</b>	Reporting Limit
<b>L</b>	liter(s)	<b>TNTC</b>	Too Numerous To Count
<b>lb.</b>	pound(s)	<b>µg</b>	microgram(s)
<b>m3</b>	cubic meter(s)	<b>µL</b>	microliter(s)
<b>meq</b>	milliequivalents	<b>umhos/cm</b>	micromhos/cm
<b>&lt;</b>	less than		
<b>&gt;</b>	greater than		
<b>ppm</b>	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

## Laboratory Data Qualifiers:

- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value  $\geq$  the Method Detection Limit (MDL or DL) and  $<$  the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column  $>40\%$ . The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column  $>100\%$ . The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

**Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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