ENTERED

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

Mr. Scott Clark, Chief
Environmental Restoration
377 MSG/CEIR
2050 Wyoming Blvd SE
Kirtland AFB NM 87117-5270

APR 7 2017

Ms. Michelle Hunter
Ground Water Quality Bureau (GWQB)
New Mexico Environment Department (NMED)
Harrold Runnels Building
1190 Saint Francis Drive
Santa Fe, New Mexico 87502

Dear Ms. Hunter

This letter serves as the Corrective Action Report for the extraction well KAFB-106239 drilling fluids leak 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". The 50-gallon leak of drilling fluid (water) from the lined roll off stored on-Base was originally reported to NMED via email on March 20, 2017, a few hours after the release was discovered.

The leak occurred from a double-lined roll off stored in the investigation-derived waste yard south of Ridgecrest Drive SE at Kirtland AFB. The leak soaked into an area approximately three to four feet in width, 20 ft in length and approximately four to six inches in depth. Immediately upon discovery, soil was bermed to stop spread of fluid, and absorbent placed immediately beneath the leak location to prevent additional migration. Advance Chemical Transport, Inc. was contacted (roll off leased from firm) to mobilize a replacement roll off that was delivered on March 20, 2017. Drilling fluid was transferred to new (lined) roll off via vacuum truck and all soil in contact with drilling fluid was removed and placed in new storage container pending waste disposal approval. Approximately one cubic yard of soil was removed from the surface release area after the roll off was moved – four inches deep in majority of footprint, and six inches directly beneath the former roll off location. Soil was placed in cubic yard soil box (Attachment 1). All wet soil was removed and noted to be predominantly silty soil; damp soil below the excavation depth was left in place. Prior to the leak, the drilling fluids had been sampled and analyzed to support waste disposal as follows:

- EPA Method 6010B/7470 for total metals
- EPA Method 8260B for volatile organic compounds
- EPA Method 8270C for semivolatile organic compounds
- EPA Method 9012B for reactive cyanide
- EPA Method 9034-9030B for reactive sulfide
- EPA Method 9040C for corrosivity by pH
- EPA Method D93/1010A for flashpoint)

KAFB4552

The drilling fluid contained no hazardous constituents (Attachment 2). There was a detection of chloroform at 2.7 µg/L (PQL is 2.0 µg/L) which is suspected laboratory contamination. Since the laboratory data confirm that the discharge contained no oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, Kirtland AFB is proposing no further corrective action.

If you have any questions or concerns, please contact me at (505) 846-9017 or at scott.clark@us.af.mil or Ms. Holly O'Grady at (505) 853-3484 or at holly.ogrady@us.af.mil

Sincerely

Scott Clark
Chief, Environmental Restoration

Attachments:

Attachment 1 – Photographs of the Corrective Action
Attachment 2 – Laboratory Analytical Report for Drilling Fluids

cc:
NMED-GWQB (Agnew, Pullen)
NMED-HWB (Kieling)
EPA Region 6 (King, Ellinger)
SAF-IEE (Lynnes)
AFCEC/CZ (Bodour, Clark, Devergie, O'Grady)
USACE-ABQ District Office (Simpler, Phaneuf, Dreeland; Sanchez; Salazar)
Public Info Repository, AR/IR, and File

ACT2072
4200

RIB

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

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

January 17, 2017

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

RE: KAFB BFF OrderNo.: 1701260

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 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 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 qualifers 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology
Project: KAFB BFF
Lab ID: 1701260-001 **Matrix:** AQUEOUS

Client Sample ID: KAFB-106239 LC
Collection Date: 1/8/2017 12:10:00 PM
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 7470: MERCURY						Analyst:	**MED**
Mercury	ND	0.00040		mg/L	1	1/10/2017 12:35:16 PM	29607
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst:	**pmf**
Arsenic	ND	0.10		mg/L	1	1/10/2017 6:24:12 PM	29596
Barium	2.9	0.10		mg/L	1	1/10/2017 6:24:12 PM	29596
Cadmium	ND	0.010		mg/L	1	1/10/2017 6:24:12 PM	29596
Chromium	0.16	0.030		mg/L	1	1/10/2017 6:24:12 PM	29596
Lead	0.033	0.025		mg/L	1	1/10/2017 6:24:12 PM	29596
Selenium	ND	0.25		mg/L	1	1/10/2017 6:24:12 PM	29596
Silver	ND	0.025		mg/L	1	1/10/2017 6:24:12 PM	29596
EPA METHOD 8270C: SEMIVOLATILES						Analyst:	**DAM**
Acenaphthene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Acenaphthylene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Aniline	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Anthracene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Azobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Benz(a)anthracene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Benzo(a)pyrene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Benzo(b)fluoranthene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Benzo(g,h,i)perylene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Benzo(k)fluoranthene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Benzoic acid	ND	200		µg/L	1	1/13/2017 8:25:21 PM	29601
Benzyl alcohol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Bis(2-chloroethoxy)methane	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Bis(2-chloroethyl)ether	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Bis(2-chloroisopropyl)ether	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Bis(2-ethylhexyl)phthalate	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4-Bromophenyl phenyl ether	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Butyl benzyl phthalate	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Carbazole	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4-Chloro-3-methylphenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4-Chloroaniline	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2-Chloronaphthalene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2-Chlorophenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4-Chlorophenyl phenyl ether	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Chrysene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Di-n-butyl phthalate	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Di-n-octyl phthalate	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Dibenz(a,h)anthracene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology
Project: KAFB BFF
Lab ID: 1701260-001 **Matrix:** AQUEOUS

Client Sample ID: KAFB-106239 LC
Collection Date: 1/8/2017 12:10:00 PM
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Dibenzofuran	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
1,2-Dichlorobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
1,3-Dichlorobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
1,4-Dichlorobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
3,3´-Dichlorobenzidine	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Diethyl phthalate	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Dimethyl phthalate	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2,4-Dichlorophenol	ND	200		µg/L	1	1/13/2017 8:25:21 PM	29601
2,4-Dimethylphenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4,6-Dinitro-2-methylphenol	ND	200		µg/L	1	1/13/2017 8:25:21 PM	29601
2,4-Dinitrophenol	ND	200		µg/L	1	1/13/2017 8:25:21 PM	29601
2,4-Dinitrotoluene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2,6-Dinitrotoluene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Fluoranthene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Fluorene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Hexachlorobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Hexachlorobutadiene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Hexachlorocyclopentadiene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Hexachloroethane	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Indeno(1,2,3-cd)pyrene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Isophorone	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
1-Methylnaphthalene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2-Methylnaphthalene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2-Methylphenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
3+4-Methylphenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
N-Nitrosodi-n-propylamine	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
N-Nitrosodimethylamine	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
N-Nitrosodiphenylamine	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Naphthalene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2-Nitroaniline	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
3-Nitroaniline	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4-Nitroaniline	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Nitrobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2-Nitrophenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
4-Nitrophenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Pentachlorophenol	ND	200		µg/L	1	1/13/2017 8:25:21 PM	29601
Phenanthrene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Phenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Pyrene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601

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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, Inc.

CLIENT: EA Engineering Science & Technology
Project: KAFB BFF
Lab ID: 1701260-001 **Matrix:** AQUEOUS

Client Sample ID: KAFB-106239 LC
Collection Date: 1/8/2017 12:10:00 PM
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8270C: SEMIVOLATILES						Analyst: **DAM**	
Pyridine	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
1,2,4-Trichlorobenzene	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2,4,5-Trichlorophenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
2,4,6-Trichlorophenol	ND	100		µg/L	1	1/13/2017 8:25:21 PM	29601
Surr: 2-Fluorophenol	32.8	15-98.1		%Rec	1	1/13/2017 8:25:21 PM	29601
Surr: Phenol-d5	28.5	15-80.7		%Rec	1	1/13/2017 8:25:21 PM	29601
Surr: 2,4,6-Tribromophenol	55.0	15-112		%Rec	1	1/13/2017 8:25:21 PM	29601
Surr: Nitrobenzene-d5	56.0	27.2-90.7		%Rec	1	1/13/2017 8:25:21 PM	29601
Surr: 2-Fluorobiphenyl	40.1	23.3-85.6		%Rec	1	1/13/2017 8:25:21 PM	29601
Surr: 4-Terphenyl-d14	26.9	27.6-107	S	%Rec	1	1/13/2017 8:25:21 PM	29601
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Toluene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Ethylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Methyl tert-butyl ether (MTBE)	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2,4-Trimethylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,3,5-Trimethylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2-Dichloroethane (EDC)	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2-Dibromoethane (EDB)	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Naphthalene	ND	4.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1-Methylnaphthalene	ND	8.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
2-Methylnaphthalene	ND	8.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Acetone	ND	20	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Bromobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Bromodichloromethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Bromoform	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Bromomethane	ND	6.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
2-Butanone	ND	20	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Carbon disulfide	ND	20	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Carbon Tetrachloride	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Chlorobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Chloroethane	ND	4.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Chloroform	2.7	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Chloromethane	ND	6.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
2-Chlorotoluene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
4-Chlorotoluene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
cis-1,2-DCE	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
cis-1,3-Dichloropropene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2-Dibromo-3-chloropropane	ND	4.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912

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

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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, Inc.

CLIENT: EA Engineering Science & Technology
Project: KAFB BFF
Lab ID: 1701260-001 **Matrix:** AQUEOUS

Client Sample ID: KAFB-106239 LC
Collection Date: 1/8/2017 12:10:00 PM
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**
Dibromochloromethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Dibromomethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2-Dichlorobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,3-Dichlorobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,4-Dichlorobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Dichlorodifluoromethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1-Dichloroethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1-Dichloroethene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2-Dichloropropane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,3-Dichloropropane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
2,2-Dichloropropane	ND	4.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1-Dichloropropene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Hexachlorobutadiene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
2-Hexanone	ND	20	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Isopropylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
4-Isopropyltoluene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
4-Methyl-2-pentanone	ND	20	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Methylene Chloride	ND	6.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
n-Butylbenzene	ND	6.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
n-Propylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
sec-Butylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Styrene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
tert-Butylbenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1,1,2-Tetrachloroethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1,2,2-Tetrachloroethane	ND	4.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Tetrachloroethene (PCE)	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
trans-1,2-DCE	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
trans-1,3-Dichloropropene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2,3-Trichlorobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2,4-Trichlorobenzene	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1,1-Trichloroethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,1,2-Trichloroethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Trichloroethene (TCE)	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Trichlorofluoromethane	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
1,2,3-Trichloropropane	ND	4.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Vinyl chloride	ND	2.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Xylenes, Total	ND	3.0	D	µg/L	2	1/9/2017 8:18:32 PM	W39912
Surr: 1,2-Dichloroethane-d4	101	70-130	D	%Rec	2	1/9/2017 8:18:32 PM	W39912
Surr: 4-Bromofluorobenzene	86.0	70-130	D	%Rec	2	1/9/2017 8:18:32 PM	W39912

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology
Client Sample ID: KAFB-106239 LC
Project: KAFB BFF
Collection Date: 1/8/2017 12:10:00 PM
Lab ID: 1701260-001
Matrix: AQUEOUS
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **DJF**
Surr: Dibromofluoromethane	113	70-130	D	%Rec	2	1/9/2017 8:18:32 PM	W39912
Surr: Toluene-d8	90.8	70-130	D	%Rec	2	1/9/2017 8:18:32 PM	W39912

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology
Client Sample ID: Trip Blank
Project: KAFB BFF
Collection Date:
Lab ID: 1701260-002
Matrix: AQUEOUS
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Toluene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Ethylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Naphthalene	ND	2.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1-Methylnaphthalene	ND	4.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
2-Methylnaphthalene	ND	4.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Acetone	ND	10		µg/L	1	1/9/2017 8:48:00 PM	W39912
Bromobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Bromodichloromethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Bromoform	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Bromomethane	ND	3.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
2-Butanone	ND	10		µg/L	1	1/9/2017 8:48:00 PM	W39912
Carbon disulfide	ND	10		µg/L	1	1/9/2017 8:48:00 PM	W39912
Carbon Tetrachloride	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Chlorobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Chloroethane	ND	2.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Chloroform	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Chloromethane	ND	3.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
2-Chlorotoluene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
4-Chlorotoluene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
cis-1,2-DCE	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Dibromochloromethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Dibromomethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,1-Dichloroethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,1-Dichloroethene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2-Dichloropropane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,3-Dichloropropane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
2,2-Dichloropropane	ND	2.0		µg/L	1	1/9/2017 8:48:00 PM	W39912

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology
Client Sample ID: Trip Blank
Project: KAFB BFF
Collection Date:
Lab ID: 1701260-002
Matrix: AQUEOUS
Received Date: 1/9/2017 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Hexachlorobutadiene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
2-Hexanone	ND	10		µg/L	1	1/9/2017 8:48:00 PM	W39912
Isopropylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
4-Isopropyltoluene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
4-Methyl-2-pentanone	ND	10		µg/L	1	1/9/2017 8:48:00 PM	W39912
Methylene Chloride	ND	3.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
n-Butylbenzene	ND	3.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
n-Propylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
sec-Butylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Styrene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
tert-Butylbenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
trans-1,2-DCE	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Trichlorofluoromethane	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Vinyl chloride	ND	1.0		µg/L	1	1/9/2017 8:48:00 PM	W39912
Xylenes, Total	ND	1.5		µg/L	1	1/9/2017 8:48:00 PM	W39912
Surr: 1,2-Dichloroethane-d4	98.4	70-130		%Rec	1	1/9/2017 8:48:00 PM	W39912
Surr: 4-Bromofluorobenzene	86.2	70-130		%Rec	1	1/9/2017 8:48:00 PM	W39912
Surr: Dibromofluoromethane	115	70-130		%Rec	1	1/9/2017 8:48:00 PM	W39912
Surr: Toluene-d8	90.0	70-130		%Rec	1	1/9/2017 8:48:00 PM	W39912

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

Wet Chemistry by Method 9012 B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.00500	1	01/11/2017 00:53	WG942128

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Reactive Sulfide	1.25		0.0500	1	01/10/2017 18:57	WG942096

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.90		1	01/12/2017 10:23	WG942433

Sample Narrative:
9040C L882873-01 WG942433: 9.90 at 17.7c

Wet Chemistry by Method D93/1010A

Analyte	Result deg F	Qualifier	Dilution	Analysis date / time	Batch
Flashpoint	DNF at 170 F		1	01/11/2017 01:19	WG942008

Method Blank (MB)

(MB) R3189873-1 01/11/17 00:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Cyanide	U		0.0018	0.00500

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

(LCS) R3189873-2 01/11/17 00:24 • (LCSD) R3189873-3 01/11/17 00:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	0.100	0.110	0.105	110	105	85-115			5	20

QUALITY CONTROL SUMMARY

L882873-01

Method Blank (MB)

(MB) R3189848-1 01/10/17 18:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Reactive Sulfide	U		0.00650	0.0500

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

(LCS) R3189848-2 01/10/17 18:51 • (LCSD) R3189848-3 01/10/17 18:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	0.500	0.548	0.549	110	110	85.0-115			0.000	20

QUALITY CONTROL SUMMARY

L882873-01

L882301-01 Original Sample (OS) • Duplicate (DUP)

(OS) L882301-01 01/12/17 10:23 • (DUP) WG942433-3 01/12/17 10:23

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
Corrosivity by pH	4.07	4.08	1	0.245		1

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

(LCS) WG942433-1 01/12/17 10:23 • (LCSD) WG942433-2 01/12/17 10:23

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	su	su	su	%	%	%			%	%
Corrosivity by pH	6.07	6.09	6.07	100	100	98.4-102			0.329	1

L882979-07 Original Sample (OS) • Duplicate (DUP)

(OS) L882979-07 01/11/17 01:19 • (DUP) WG942008-3 01/11/17 01:19

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	deg F	deg F		%		%
Flashpoint	DNF at 170 F	DNF at 170 F	1	0.000		20

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

(LCS) WG942008-1 01/11/17 01:19 • (LCSD) WG942008-2 01/11/17 01:19

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	deg F	deg F	deg F	%	%	%			%	%
Flashpoint	82.0	82.7	82.7	101	101	96.0-104			0.000	7

GLOSSARY OF TERMS

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Rec.	Recovery.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **W39912**	RunNo: **39912**	
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1250932**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

Sample ID **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **W39912**	RunNo: **39912**
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1250932** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.1		10.00		91.4	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.2	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.5	70	130			
Surr: Toluene-d8	8.9		10.00		88.9	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **W39912**	RunNo: **39912**
Prep Date:	Analysis Date: **1/9/2017**	SeqNo: **1250933** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	115	70	130			
Toluene	19	1.0	20.00	0	97.2	70	130			
Chlorobenzene	19	1.0	20.00	0	96.9	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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

Sample ID	**100ng lcs**	SampType:	**LCS**		TestCode:	**EPA Method 8260B: VOLATILES**					
Client ID:	**LCSW**	Batch ID:	**W39912**		RunNo:	**39912**					
Prep Date:		Analysis Date:	**1/9/2017**		SeqNo:	**1250933**	Units:	**µg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene		20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)		22	1.0	20.00	0	109	70	130			
Surr: 1,2-Dichloroethane-d4		9.4		10.00		93.8	70	130			
Surr: 4-Bromofluorobenzene		9.0		10.00		89.5	70	130			
Surr: Dibromofluoromethane		9.8		10.00		98.4	70	130			
Surr: Toluene-d8		9.1		10.00		91.5	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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

Sample ID **lcs-29601** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSW** Batch ID: **29601** RunNo: **40049**

Prep Date: **1/9/2017** Analysis Date: **1/13/2017** SeqNo: **1255086** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	60	10	100.0	0	60.1	42.9	100			
4-Chloro-3-methylphenol	140	10	200.0	0	68.6	36.2	110			
2-Chlorophenol	130	10	200.0	0	65.3	33.4	97.8			
1,4-Dichlorobenzene	57	10	100.0	0	56.7	32.8	79.3			
2,4-Dinitrotoluene	53	10	100.0	0	53.3	34.9	107			
N-Nitrosodi-n-propylamine	70	10	100.0	0	70.2	30.7	111			
4-Nitrophenol	69	10	200.0	0	34.6	15	91.9			
Pentachlorophenol	110	20	200.0	0	54.9	33.3	93.5			
Phenol	75	10	200.0	0	37.5	20.9	86.4			
Pyrene	60	10	100.0	0	60.2	45.6	111			
1,2,4-Trichlorobenzene	63	10	100.0	0	63.3	38.7	88.2			
Surr: 2-Fluorophenol	96		200.0		48.2	15	98.1			
Surr: Phenol-d5	80		200.0		40.0	15	80.7			
Surr: 2,4,6-Tribromophenol	140		200.0		70.8	15	112			
Surr: Nitrobenzene-d5	68		100.0		67.7	27.2	90.7			
Surr: 2-Fluorobiphenyl	63		100.0		62.7	23.3	85.6			
Surr: 4-Terphenyl-d14	62		100.0		61.7	27.6	107			

Sample ID **lcsd-29601** SampType: **LCS** TestCode: **EPA Method 8270C: Semivolatiles**

Client ID: **LCSW** Batch ID: **29601** RunNo: **40049**

Prep Date: **1/9/2017** Analysis Date: **1/13/2017** SeqNo: **1255088** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	49	10	100.0	0	48.6	42.9	100			
4-Chloro-3-methylphenol	100	10	200.0	0	52.4	36.2	110			
2-Chlorophenol	88	10	200.0	0	44.1	33.4	97.8			
1,4-Dichlorobenzene	39	10	100.0	0	38.9	32.8	79.3			
2,4-Dinitrotoluene	43	10	100.0	0	43.2	34.9	107			
N-Nitrosodi-n-propylamine	53	10	100.0	0	52.9	30.7	111			
4-Nitrophenol	51	10	200.0	0	25.5	15	91.9			
Pentachlorophenol	87	20	200.0	0	43.4	33.3	93.5			
Phenol	50	10	200.0	0	25.2	20.9	86.4			
Pyrene	52	10	100.0	0	51.6	45.6	111			
1,2,4-Trichlorobenzene	51	10	100.0	0	50.6	38.7	88.2			
Surr: 2-Fluorophenol	58		200.0		29.1	15	98.1			
Surr: Phenol-d5	53		200.0		26.7	15	80.7			
Surr: 2,4,6-Tribromophenol	110		200.0		53.2	15	112			
Surr: Nitrobenzene-d5	49		100.0		49.3	27.2	90.7			
Surr: 2-Fluorobiphenyl	46		100.0		46.1	23.3	85.6			

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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology
Project: KAFB BFF

Sample ID	lcsd-29601	SampType:	LCS	TestCode:	EPA Method 8270C: Semivolatiles
Client ID:	LCSW	Batch ID:	29601	RunNo:	40049
Prep Date:	1/9/2017	Analysis Date:	1/13/2017	SeqNo:	1255088 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	43		100.0		42.6	27.6	107			

Sample ID	mb-29601	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles
Client ID:	PBW	Batch ID:	29601	RunNo:	40049
Prep Date:	1/9/2017	Analysis Date:	1/13/2017	SeqNo:	1255089 Units: µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Azobenzene	ND	10								
Benz(a)anthracene	ND	10								
Benzo(a)pyrene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzoic acid	ND	20								
Benzyl alcohol	ND	10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	10								
4-Bromophenyl phenyl ether	ND	10								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
4-Chloro-3-methylphenol	ND	10								
4-Chloroaniline	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
Chrysene	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Dibenz(a,h)anthracene	ND	10								
Dibenzofuran	ND	10								
1,2-Dichlorobenzene	ND	10								
1,3-Dichlorobenzene	ND	10								
1,4-Dichlorobenzene	ND	10								

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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

Sample ID **mb-29601**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**	
Client ID: **PBW**	Batch ID: **29601**	RunNo: **40049**	
Prep Date: **1/9/2017**	Analysis Date: **1/13/2017**	SeqNo: **1255089**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
3,3'-Dichlorobenzidine	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
2,4-Dichlorophenol	ND	20								
2,4-Dimethylphenol	ND	10								
4,6-Dinitro-2-methylphenol	ND	20								
2,4-Dinitrophenol	ND	20								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	10								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
1-Methylnaphthalene	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
3+4-Methylphenol	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
2-Nitroaniline	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
Nitrobenzene	ND	10								
2-Nitrophenol	ND	10								
4-Nitrophenol	ND	10								
Pentachlorophenol	ND	20								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
Pyridine	ND	10								
1,2,4-Trichlorobenzene	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								

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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

Sample ID **mb-29601**	SampType: **MBLK**	TestCode: **EPA Method 8270C: Semivolatiles**	
Client ID: **PBW**	Batch ID: **29601**	RunNo: **40049**	
Prep Date: **1/9/2017**	Analysis Date: **1/13/2017**	SeqNo: **1255089**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorophenol	97		200.0		48.4	15	98.1			
Surr: Phenol-d5	77		200.0		38.4	15	80.7			
Surr: 2,4,6-Tribromophenol	140		200.0		70.4	15	112			
Surr: Nitrobenzene-d5	71		100.0		70.7	27.2	90.7			
Surr: 2-Fluorobiphenyl	64		100.0		63.6	23.3	85.6			
Surr: 4-Terphenyl-d14	68		100.0		68.2	27.6	107			

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#: **1701260**

17-Jan-17

Client: EA Engineering Science & Technology

Project: KAFB BFF

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			

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#: **1701260**
17-Jan-17

Client: EA Engineering Science & Technology
Project: KAFB BFF

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

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: 1701260 RcptNo: 1

Received by/date: AT 01/09/17

Logged By: Anne Thorne 1/9/2017 9:25:00 AM

Completed By: Anne Thorne 1/9/2017 11:10:03 AM

Reviewed By: JA 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° C to 6.0°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 (<2 or >12 unless noted)
Adjusted? NO
Checked by: RC

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	Yes			

Chain-of-Custody Record

Client: EA ~~Engineering~~ Engineering

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: KAFB - BFF

Project #: 62599DM01.1028.11

Project Manager: Devon Jercinovic

Sampler: Joshua Brown

On Ice: ☐ Yes ☐ No

Sample Temperature: 4.0°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1701260	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals + Hg	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	RCT				Air Bubbles (Y or N)
1-8-16	1210	water	KAFB-106239 LC			001							X			X	X	X				
			Trip Blank			-002										X						
			A 01109117																			

Date:	Time:	Relinquished by:	Received by:	Date	Time
1-9-17	0925			1/9/17	0925
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
Email analytical to jbrown@eanst.com + emorse@eanst.com
Thanks

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.