

SIMCOE LLC
(formerly BPX Energy Inc.)

Review of the 2020
Remediation Report
submitted for Mudge B
012R: **Content**
Satisfactory
1. Continue SVE
monitoring and
conducting
groundwater
monitoring as
prescribed by OCD.
2. Submit annual
reports by April 1,
2024.
3. Eight (8)
consecutive quarterly
samples for COCs
must be below the
WQCC standards in
20.6.2 in order for the
site incident to be
eligible for closure with
a closure report and
request submitted per
19.15.30.19 of NMAC

REMEDIATION REPORT

MUDGE B 012R
(A) SECTION 17, T31N, R11W, NMPM
SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR:
NEW MEXICO OIL CONSERVATION DIVISION

JANUARY 2021

PREPARED BY:
SIMCOE LLC
1100 Main Ave., Suite 101
Durango, Colorado 81301

SIMCOE LLC
Mudge B # 12R
Unit Letter A, Sec. 17, T31N, R11W
Incident #: nCS1528741396 API #: 3004510792

Monitor Well Sampling Dates:

12/28/16, 03/15/17, 06/30/17, 09/20/17, 12/20/17, 03/26/18,
06/28/18, 09/26/18, 12/19/18, 03/29/19, 06/28/19, 09/18/19,
12/19/19, 03/31/20, 06/08/20, 09/17/20, 12/16/20.

Soil Vapor Extraction System Installation: May 2019**Impact Discovery Background:**

09/18/2015	C-141 initial report of soil impact discovery submitted to the New Mexico Oil Conservation Division (NMOCD).
10/14/2015	NMOCD approves [NMOCD well file filename (FN): 30045107920000_33_wf.pdf].
11/05/2015	Below-grade tank (BGT) closure document submitted.
11/30/2015	NMOCD approves [NMOCD well file FN: 30045107920000_34_wf.pdf].
10/26/2018	Remediation Plan submitted to NMOCD. Included were impacts delineation data with supporting lab analyses, groundwater monitor well information with initial and subsequent lab sample results (09/26/2018 & 06/28/2018 sampling events), and siting criteria documentation with citations.
10/30/2018	NMOCD approves with stated conditions [NMOCD incident file FN: pcs1903952552_1_a0.pdf].

Groundwater Monitor Well Sampling Procedures:

Three (3) groundwater monitor wells, namely MW #1 – upgradient/background, MW #2 – source area, & MW #3 – down gradient area, were installed in November 2016 to identify existence of any impacts and to delineate the known impacts. These wells were purged using a battery-operated 1½ inch submersible pump and utilizing new vinyl tubing. The groundwater samples were collected following US EPA: SW-846 protocol, placed into laboratory supplied containers with appropriate preservative, and stored in an ice chest for express delivery to an analytical laboratory for testing under strict chain-of-custody procedures. Analytical testing for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by US EPA Method 8260B or 8021B was conducted as well as regulated general chemistry parameters.

Fluids generated during monitor well purging were managed by discarding into the separator below-grade tank (BGT) located on the well site. The BGT contents are eventually disposed through approved NMOCD operational procedures for removal of produced fluids.

Soil Vapor Extraction System Data:

The soil vapor extraction system (SVE) was installed and commenced operation in May 2019. Weekly to monthly monitoring and/or inspections have been ongoing to the present. Volatile organic compounds exhaust [organic vapor meter (OVM) readings] , exhaust vacuum pressure, natural gas generator run time have been recorded and documented (see Soil Vapor Extraction Data Section). The initial and subsequent annual effluent air samples were collected and are included within this report.

Water Quality and Gradient Information:

Quarterly sampling of the groundwater monitor wells was conducted from December 2016 to December 2020. A historical summary of laboratory analytical results as well as field/laboratory reports are included within this report.

Groundwater contour map (attached) was developed using previously installed piezometers. The piezometers were surveyed to provide an accurate groundwater gradient trending to the southeast/south and toward the down gradient monitor well MW #3.

Summary and/or Recommendations:

Since its start up, the SVE system appears to have significantly reduced BTEX levels within the source area groundwater (MW #2) and in the down gradient area as well (MW #3). Although MW #3 has slightly exceeded [13 to 15 micrograms per liter ($\mu\text{g/L}$)] the allowable concentration (10 $\mu\text{g/L}$) on 4 of 17 events, the last five (5) consecutive samplings has shown a decreasing trend toward a non-detectable level.

Continued operation and monitoring of the SVE system is recommended until eight (8) consecutive sampling events below the New Mexico Water Quality Control Commission's (**NMWQCC**) groundwater standard for BTEX is achieved for MW #2 and MW #3. In the future, SIMCOE will eventually advance subsurface borings to verify closure standards for Total Petroleum Hydrocarbons, BTEX, and chlorides for soils are met.

Mudge B 012R SVE Layout

API #30-045-10792
(A), S-17, T31N, R11W
SVE System GPS:
36.902742°, -108.008073°

Legend

- Enterprise Pipeline
- Monitor Well/SVE Point
- Mudge B 12R Wellhead
- SVE System

Mudge B 12R Wellhead

MW-1

SVE Point 1

MW-2

SVE System

MW-3

Google Earth

100 ft





SIMCOE LLC**GROUNDWATER FIELD DATA & LAB BTEX / GENERAL CHEMISTRY RESULTS****MUDGE B # 12R****UNIT A, SEC. 17, T31N, R11W****REVISED DATE: December 31, 2020****Submitted by Cottonwood Consulting LLC**

SAMPLE DATE	WELL NAME / NUMBER	DEPTH to WATER (feet)	WELL TOTAL LENGTH (feet)	TDS (mg/L)	CONDUCT. (µmhos)	pH	FREE PHASE PRODUCT (feet)	BTEX US EPA METHOD 8021B or 8260B			
								BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)
12/28/16	MW #1	43.49	49.90	6,120	4,400	6.86		ND	ND	ND	ND
03/15/17		42.85			4,000	7.15		ND	ND	ND	ND
06/30/17		42.25			4,600	6.93		ND	ND	ND	ND
09/20/17		42.60			3,700	6.81		ND	ND	ND	ND
12/20/17		41.90			2,700	6.87		ND	ND	ND	ND
03/26/18		41.84			4,400	7.10		ND	ND	ND	ND
06/28/18		41.84			3,500	6.80		ND	ND	ND	ND
09/26/18		41.93			2,700	6.96		ND	ND	ND	ND
12/19/18		42.07			3,200	7.48		ND	ND	ND	ND
12/28/16	MW #2	42.59	46.40	7,940	4,200	6.70		320	250	500	5,800
03/15/17		41.95			5,200	6.78		320	13	360	3,700
06/30/17		41.42			5,800	6.78		350	9.3	700	4,600
09/20/17		41.69			4,100	6.73		140	ND	350	400
12/20/17		40.98			4,200	6.74		160	11	190	1,300
03/26/18		40.88			5,000	6.91		140	11	220	780
06/28/18		40.83			4,200	6.91		110	ND	270	620
09/26/18		40.89			3,800	7.00		140	ND	320	620
12/19/18		40.98			3,900	6.71		96	3.6	98	280
03/29/19		40.94			3,100	6.93		46	ND	28	130
06/28/19		40.49			2,200	7.21		26	ND	7.4	13
09/18/19		40.50		7,680	2,100	6.90		3.7	ND	5.6	15
12/19/19		40.56			3,100	7.11		7.7	ND	4.4	5.3
03/31/20		40.86			3,500	7.38		1.8	ND	1.2	2.3
06/08/20		40.85			2,600	7.24		6.6	1.8	ND	2.3
09/17/20		41.17			1,600	7.09		ND	ND	ND	ND
12/28/16	MW #3	42.15	44.00	8,100	4,400	6.72		15	ND	ND	970
03/15/17		41.83			4,300	7.08		9.0	ND	140	730
06/30/17		41.43			4,200	6.71		5.6	ND	120	ND
09/20/17		41.24			3,300	6.76		7.6	ND	87	15
12/20/17		41.16			3,200	6.82		9.7	ND	39	7.4
03/26/18		41.16			3,900	6.99		7.7	ND	7.3	3.2
06/28/18		41.18			3,400	6.89		9.1	ND	1.8	4.7
09/26/18		41.20			2,900	7.03		13	ND	ND	ND
12/19/18		41.37			3,700	7.14		15	ND	ND	ND
03/29/19		41.39			2,700	7.22		7.5	ND	ND	ND
06/28/19		40.99			2,000	7.30		9.4	ND	ND	5.2
09/18/19		40.78			1,800	6.89		13	ND	ND	ND
12/19/19		40.82			3,400	7.76		5.2	ND	ND	ND
03/31/20		41.06			3,100	7.59		5.0	2.1	1.2	7.4
06/08/20		41.20			2,400	7.41		3.1	1.7	ND	3.9
09/17/20		41.45			1,600	7.35		1.5	ND	ND	ND
12/16/20		41.59			3,900	7.54		1.7	ND	ND	ND

NMWQCC GROUNDWATER STANDARDS

10	750	750	620
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SIMCOE LLC**GROUNDWATER FIELD DATA & LAB BTEX / GENERAL CHEMISTRY RESULTS****MUDGE B # 12R****UNIT A, SEC. 17, T31N, R11W****REVISED DATE: December 31, 2020****Submitted by Cottonwood Consulting LLC**

SAMPLE DATE	WELL NAME /NUMBER	Fluoride (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrate-N (mg/L)	TDS (mg/L)	Iron (mg/L)	Manganese (mg/L)	Naphthalene (mg/L)
12/28/16	MW #1	ND	93	4,400	ND	6,120	-	-	ND
12/28/16	MW #2	ND	240	3,400	ND	7,940	-	-	21
09/18/19	"	-	-	-	-	7,680	0.36	1.8	ND
12/28/16	MW #3	ND	150	3,800	ND	8,100	-	-	ND

NMWQCC GROUNDWATER STANDARDS

1.60	250	600	10	1,000	1.0	0.2	30
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NOTES :

- 1) RESULTS IN BOLD RED TYPE INDICATE EXCEEDING NMWQCC STANDARDS &/OR BACKGROUND .
- 2) RESULTS IN BOLD BLUE TYPE INDICATE BELOW NMWQCC STANDARDS AFTER PREVIOUS EXCEEDED.
- 3) ND INDICATES NOT DETECTED AT THE REPORTING LIMITS (less than regulatory standards of at least a magnitude of 10) .
- 4) NMWQCC INDICATES NEW MEXICO WATER QUALITY CONTROL COMMISSION
(levels not to exceed allowable threshold noted or background levels - MW #1 serves as background data when applicable)
- 5) SOIL VAPOR EXTRACTION SYSTEM (SVE) OFFICIAL START UP DATE - MAY 24, 2019.
- 6) Depth to Water measured from top of well casing
- 7) TDS - Total Dissolved Solids
- 8) mg/L - Milligrams per liter
- 9) μ mhos - Micro ohms
- 10) NMWQCC pH allowable range between 6-9
- 11) μ g/L - Micrograms per liter
- 12) (-) - Not analyzed

SOIL VAPOR EXTRACTION DATA

SIMCOE LLC - Mudge B 012R

Summary SVE System Monitoring Data

Date	SVE Pt.	Exhaust OVM (ppm)	Exhaust Vacuum (in)	Generator Run Time	System Operational at Time of Arrival?	H ₂ O Drained from drum?	H ₂ O Amt. Drained (Gal.)?	Comments
5/9/2019	#1	2,467	30	-	NO	NO		Initial start up
5/13/2019	#1	-	NA	-	NO	NO		Generator not operational.
5/16/2019	#1	-	NA	-	NO	NO		Generator not operational (2nd visit)
5/16/2019	#1	-	NA	-	NO	NO		Generator not operational (2nd visit)
5/24/2019	#1	4,133	-	-	YES	NO		Water level in drum not measured
5/28/2019	#1	4,776	44	-	YES	NO		
5/29/2019	#1	2,658	44	-	YES	NO		
5/30/2019	#1	3,158	44	-	YES	NO		
5/31/2019	#1	4,736	44	-	YES	NO		
6/4/2019	#1	3,146	44	28,539.3	YES	NO		
6/12/2019	#1	2,510	45	28,726.2	YES	NO		Water level in drum not measured
6/20/2019	#1	1,970	44	28,922.3	YES	NO		
6/28/2019	#1	4,526	46	29,110.6	YES	NO		
7/5/2019	#1	-	44	29,278.0	YES	YES	9.50	
7/11/2019	#1	1,629	45	29,426.2	YES	NO		Water level below drain plug
7/18/2019	#1	1,503	45	29,591.5	YES	NO		Dry drum
7/27/2019	#1	1,114	46	29,806.8	YES	NO		Water level below drain plug
8/9/2019	#1	1,004	46	30,120.4	YES	NO		Dry drum
8/14/2019	#1	1,691	46	30,240.0	YES	NO		Water level below drain plug
8/23/2019	#1	4,851	45	30,368.7	NO	NO		Generator not operational at time of arrival (GNO); restarted, then collected readings, dry drum
8/28/2019	#1	886	45	30,422.1	YES	NO		Water level below drain plug
9/5/2019	#1	957	46	30,612.1	YES	NO		Water level below drain plug
9/12/2019	#1	1,200	46	30,725.9	NO	NO		GNO; restarted, then collected readings, water level below drain plug
9/18/2019	#1	1,437	46	30,731.8	NO	NO		GNO; restarted, then collected readings, water level below drain plug
9/25/2019	#1	3,242	46	NA	YES	NO		GNO 45 min. prior to arrival, system shut down after readings
10/1/2019	#1	-	-	NA	NO	NO		GNO; did not measure water in drum or restarted generator
10/8/2019	#1	-	-	30,733.9	NO	NO		GNO; restart only lasted 15 sec.; water level below drain plug
10/17/2019	#1	822	46	30,900.1	YES	YES	9.50	
10/23/2019	#1	-	-	30,991.7	NO	NO		GNO; did not measure water in drum or restarted generator
10/28/2019	#1	912	46	31,064.5	YES	YES	10.50	
11/1/2019	#1	963	46	31,165.0	YES	YES	14.00	
11/7/2019	#1	823	46	31,306.9	YES	YES	13.00	

SIMCOE LLC - Mudge B 012R

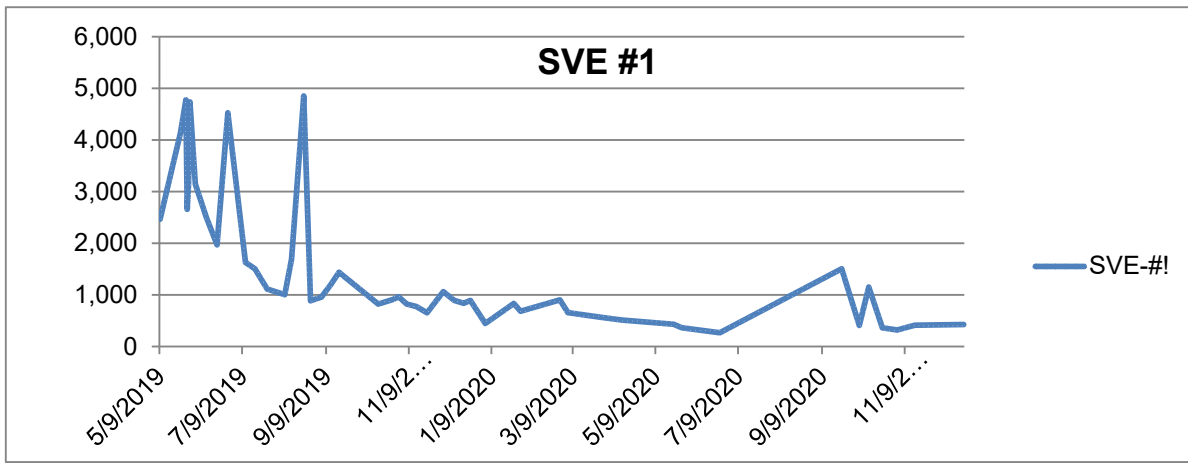
Summary SVE System Monitoring Data

Date	SVE Pt.	Exhaust OVM (ppm)	Exhaust Vacuum (in)	Generator Run Time	System Operational at Time of Arrival?	H ₂ O Drained from drum?	H ₂ O Amt. Drained (Gal.)?	Comments
11/14/2019	#1	775	46	31,473.9	YES	YES	14.00	
11/22/2019	#1	653	46	31,666.5	YES	YES	15.50	
12/4/2019	#1	1,062	46	31,949.9	NO	YES	25.50	Drained, restarted, then collected data after 5 min. running
12/12/2019	#1	894	46	32,142.6	YES	YES	22.00	
12/19/2019	#1	837	46	32,313.8	YES	YES	23.00	Drained, restarted at 2pm after collecting water samples
12/24/2019	#1	892	46	32,430.4	YES	YES	14.00	Drained, restarted
12/30/2019	#1	NA	47	32,573.4	YES	YES	18.50	Drained, restarted
1/4/2020	#1	446	47	32,692.8	YES	YES	17.00	Drained, restarted
1/9/2020	#1	NA	46	32,814.4	YES	YES	14.50	Drained, restarted
1/10/2020	#1	NA	NA	NA	YES	NO		Unintentionally left inlet valve open, did not measure water in drum
1/15/2020	#1	NA	46	32,959.5	YES	YES	17.00	Drained, restarted
1/25/2020	#1	834	48	33,200.6	NO	YES	26.00	Drained, restarted, then collected data after 12 min. running
1/30/2020	#1	683	46	33,322.0	YES	YES	14.00	Drained, restarted
2/5/2020	#1	NA	46	33,462.4	YES	YES	17.00	Drained, restarted
2/13/2020	#1	NA	NA	33,631.0	NO	YES	15.50	GNO; could not restart generator
2/26/2020	#1	NA	NA	33,653.0	NO	NO		GNO; water below drain port, could not restart
2/28/2020	#1	903	46	33,674.3	YES	YES	4.00	Drained, restarted
3/5/2020	#1	656	46	33,818.1	YES	NO		Drained, restarted
3/12/2020	#1	NA	48	33,985.1	YES	NO		Unintentionally left inlet valve open
3/25/2020	#1	NA	46	34,297.5	YES	YES	23.50	Drained, restarted
3/31/2020	#1	560	46	34,440.1	YES	YES	9.50	Drained, restarted
4/14/2020	#1	512	46	34,778.8	YES	YES	15.50	Drained, restarted
4/29/2020	#1	NA	46	35,027.0	YES	YES	8.00	Drained, restarted
5/8/2020	#1	NA	46	35,240.6	YES	NO		Dry drum
5/22/2020	#1	431	46	35,576.7	YES	YES	5.50	Drained, restarted
5/28/2020	#1	364	46	35,721.0	YES	NO		Water in drum not measured
6/25/2020	#1	266	45	-	YES	NO		Water in drum below drain port
7/30/2020	#1	NA	NA	-	NO	NO		GNO; water below drain port, could not restart
8/25/2020	#1	NA	NA	-	NO	NO		GNO; could not restart generator
8/31/2020	#1	NA	NA	-	NO	NO		GNO; could not restart generator
9/17/2020	#1	NA	NA	-	NO	NO		GNO; could not restart generator
9/23/2020	#1	1,506	46	36,781.5	NO	NO		GNO; restarted, then collected readings, dry drum
9/29/2020	#1	NA	NA	-	NO	NO		GNO; restarted, generator shut down < 5 minutes after restart
10/6/2020	#1	409	45	36,946.0	YES	NO		Water in drum below drain port
10/13/2020	#1	1,151	46	37,113.3	YES	NO	2.00	

SIMCOE LLC - Mudge B 012R

Summary SVE System Monitoring Data

Date	SVE Pt.	Exhaust OVM (ppm)	Exhaust Vacuum (in)	Generator Run Time	System Operational at Time of Arrival?	H ₂ O Drained from drum?	H ₂ O Amt. Drained (Gal.)?	Comments
10/23/2020	#1	363	45	37,356.8	YES	YES	5.50	
11/3/2020	#1	320	46	37,617.7	YES	NO		Water in drum just above drain port
11/12/2020	#1	NA	46	37,832.3	YES	YES	15.50	
11/16/2020	#1	412	46	37,931.9	YES	YES	6.50	
11/23/2020	#1	NA	46	38,100.4	YES	YES	7.00	
12/2/2020	#1	NA	47	38,317.7	YES	YES	21.00	
12/10/2020	#1	NA	46	38,503.9	YES	YES	20.50	
12/16/2020	#1	NA	48	38,650.3	YES	YES	18.50	
12/22/2020	#1	425	47	38,792.6	YES	YES	16.00	
12/29/2020	#1	NA	48	38,843.2	NO	NO		GNO; restarted, then collected readings, ice in drum 27 in. from top



SIMCOE LLC

SOIL VAPOR EXTRACTION (SVE) SYSTEM EFFLUENT AIR TEST RESULTS

Official Start Up Date - May 24, 2019

MUDGE B # 12R
UNIT A, SEC. 17, T31N, R11W

Revised Date: December 31, 2020
Submitted by Cottonwood Consulting LLC

SAMPLE DATE	SAMPLE ID	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	O ₂ Mol %	CO ₂ Mol %
06/04/19	SVE (BH-1)	ND	1.1	23	200	-	-
05/28/20	"	ND	1.5	5.7	62	22.1	0.3

- NOTES :
- 1) µg/L - Micrograms per liter
 - 2) Mol % - Mole percentage
 - 3) ND - Indicates Not Detected at the laboratory reporting limits (benzene <1.0 (µg/L).
 - 4) (-) - Not analyzed

Analytical Report

Lab Order 1906152

Date Reported: 6/19/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-1)

Project: Mudge B 12R

Collection Date: 6/4/2019 12:35:00 PM

Lab ID: 1906152-001

Matrix: AIR

Received Date: 6/5/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Toluene	1.1	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Ethylbenzene	23	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Methyl tert-butyl ether (MTBE)	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2,4-Trimethylbenzene	10	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,3,5-Trimethylbenzene	12	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Naphthalene	ND	1.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
1-Methylnaphthalene	ND	2.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
2-Methylnaphthalene	ND	2.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Acetone	ND	5.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Bromobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Bromodichloromethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Bromoform	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Bromomethane	ND	1.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
2-Butanone	ND	5.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Carbon disulfide	6.6	5.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Carbon tetrachloride	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Chlorobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Chloroethane	ND	1.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Chloroform	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Chloromethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
2-Chlorotoluene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
4-Chlorotoluene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
cis-1,2-DCE	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
cis-1,3-Dichloropropene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2-Dibromo-3-chloropropane	ND	1.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Dibromochloromethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Dibromomethane	ND	1.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2-Dichlorobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,3-Dichlorobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,4-Dichlorobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Dichlorodifluoromethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,1-Dichloroethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,1-Dichloroethene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2-Dichloropropane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,3-Dichloropropane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
2,2-Dichloropropane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 1 of 2

Analytical Report

Lab Order 1906152

Date Reported: 6/19/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-1)

Project: Mudge B 12R

Collection Date: 6/4/2019 12:35:00 PM

Lab ID: 1906152-001

Matrix: AIR

Received Date: 6/5/2019 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Hexachlorobutadiene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
2-Hexanone	ND	5.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Isopropylbenzene	3.7	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
4-Isopropyltoluene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
4-Methyl-2-pentanone	ND	5.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Methylene chloride	ND	1.5		µg/L	5	6/17/2019 2:19:29 PM	R60696
n-Butylbenzene	ND	1.5		µg/L	5	6/17/2019 2:19:29 PM	R60696
n-Propylbenzene	3.2	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
sec-Butylbenzene	0.76	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Styrene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
tert-Butylbenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Tetrachloroethene (PCE)	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
trans-1,2-DCE	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
trans-1,3-Dichloropropene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2,3-Trichlorobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2,4-Trichlorobenzene	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,1,1-Trichloroethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,1,2-Trichloroethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Trichloroethene (TCE)	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Trichlorofluoromethane	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
1,2,3-Trichloropropane	ND	1.0		µg/L	5	6/17/2019 2:19:29 PM	R60696
Vinyl chloride	ND	0.50		µg/L	5	6/17/2019 2:19:29 PM	R60696
Xylenes, Total	200	7.5		µg/L	50	6/17/2019 3:17:54 PM	R60696
Surr: Dibromofluoromethane	0	70-130	S	%Rec	5	6/17/2019 2:19:29 PM	R60696
Surr: 1,2-Dichloroethane-d4	94.6	70-130		%Rec	5	6/17/2019 2:19:29 PM	R60696
Surr: Toluene-d8	205	70-130	S	%Rec	5	6/17/2019 2:19:29 PM	R60696
Surr: 4-Bromofluorobenzene	124	70-130		%Rec	5	6/17/2019 2:19:29 PM	R60696

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2005C47

Date Reported: 6/4/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-1)

Project: Mudge B 12R

Collection Date: 5/28/2020 9:50:00 AM

Lab ID: 2005C47-001

Matrix: AIR

Received Date: 5/29/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Toluene	1.5	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Ethylbenzene	5.7	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2,4-Trimethylbenzene	1.6	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,3,5-Trimethylbenzene	3.5	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Naphthalene	ND	2.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1-Methylnaphthalene	ND	4.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
2-Methylnaphthalene	ND	4.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Acetone	ND	10		µg/L	10	5/31/2020 11:48:17 AM	W69284
Bromobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Bromodichloromethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Bromoform	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Bromomethane	ND	2.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
2-Butanone	ND	10		µg/L	10	5/31/2020 11:48:17 AM	W69284
Carbon disulfide	ND	10		µg/L	10	5/31/2020 11:48:17 AM	W69284
Carbon tetrachloride	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Chlorobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Chloroethane	ND	2.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Chloroform	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Chloromethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
2-Chlorotoluene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
4-Chlorotoluene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
cis-1,2-DCE	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
cis-1,3-Dichloropropene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Dibromochloromethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Dibromomethane	ND	2.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2-Dichlorobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,3-Dichlorobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,4-Dichlorobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Dichlorodifluoromethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,1-Dichloroethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,1-Dichloroethene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2-Dichloropropane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,3-Dichloropropane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
2,2-Dichloropropane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 1 of 2

Analytical Report

Lab Order 2005C47

Date Reported: 6/4/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: SVE (BH-1)

Project: Mudge B 12R

Collection Date: 5/28/2020 9:50:00 AM

Lab ID: 2005C47-001

Matrix: AIR

Received Date: 5/29/2020 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Hexachlorobutadiene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
2-Hexanone	ND	10		µg/L	10	5/31/2020 11:48:17 AM	W69284
Isopropylbenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
4-Isopropyltoluene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
4-Methyl-2-pentanone	ND	10		µg/L	10	5/31/2020 11:48:17 AM	W69284
Methylene chloride	ND	3.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
n-Butylbenzene	ND	3.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
n-Propylbenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
sec-Butylbenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Styrene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
tert-Butylbenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Tetrachloroethene (PCE)	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
trans-1,2-DCE	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
trans-1,3-Dichloropropene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2,3-Trichlorobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2,4-Trichlorobenzene	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,1,1-Trichloroethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,1,2-Trichloroethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Trichloroethene (TCE)	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Trichlorofluoromethane	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
1,2,3-Trichloropropane	ND	2.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Vinyl chloride	ND	1.0		µg/L	10	5/31/2020 11:48:17 AM	W69284
Xylenes, Total	62	1.5		µg/L	10	5/31/2020 11:48:17 AM	W69284
Surr: Dibromofluoromethane	86.7	70-130		%Rec	10	5/31/2020 11:48:17 AM	W69284
Surr: 1,2-Dichloroethane-d4	74.2	70-130		%Rec	10	5/31/2020 11:48:17 AM	W69284
Surr: Toluene-d8	99.8	70-130		%Rec	10	5/31/2020 11:48:17 AM	W69284
Surr: 4-Bromofluorobenzene	97.2	70-130		%Rec	10	5/31/2020 11:48:17 AM	W69284

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

Client: Hall Environmental
Project: Not Indicated
Client Sample ID: 2005C47-001B; SVE (BH-1)
Location:
Lab ID: G20060009-001

Report Date: 06/01/20
Collection Date: 05/28/20 09:50
Date Received: 06/01/20
Sampled By: Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
----------	--------	-------	-----------	--------	--------------------

NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT

Oxygen	22.108	Mol %		GPA 2261	06/01/20 13:07 / djb
Nitrogen	77.587	Mol %		GPA 2261	06/01/20 13:07 / djb
Carbon Dioxide	0.305	Mol %		GPA 2261	06/01/20 13:07 / djb
Hydrogen Sulfide	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
Methane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
Ethane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
Propane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
Isobutane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
n-Butane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
Isopentane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
n-Pentane	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb
Hexanes plus	< 0.001	Mol %		GPA 2261	06/01/20 13:07 / djb

GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS

GPM Ethane	< 0.0003	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM Propane	< 0.0003	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM Isobutane	< 0.0003	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM n-Butane	< 0.0003	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM Isopentane	< 0.0004	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM n-Pentane	< 0.0004	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM Hexanes plus	< 0.0004	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM Pentanes plus	< 0.0004	gal/MCF		GPA 2261	06/01/20 13:07 / djb
GPM Total	< 0.0004	gal/MCF		GPA 2261	06/01/20 13:07 / djb

CALCULATED PROPERTIES

Calculation Pressure Base	14.730	psia		GPA 2261	06/01/20 13:07 / djb
Calculation Temperature Base	60	°F		GPA 2261	06/01/20 13:07 / djb
Compressibility Factor, Z	1.0000	unitless		GPA 2261	06/01/20 13:07 / djb
Molecular Weight	28.94	unitless		GPA 2261	06/01/20 13:07 / djb
Pseudo-critical Pressure, psia	548	psia		GPA 2261	06/01/20 13:07 / djb
Pseudo-critical Temperature, deg R	240	deg R		GPA 2261	06/01/20 13:07 / djb
Specific Gravity (air=1.000)	1.002	unitless		GPA 2261	06/01/20 13:07 / djb
Gross BTU per cu ft @ std cond, dry	< 0.01	BTU/cu ft		GPA 2261	06/01/20 13:07 / djb
Gross BTU per cu ft @ std cond, wet	< 0.01	BTU/cu ft		GPA 2261	06/01/20 13:07 / djb

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type)

Sample Temperature: $2.8^{\circ}\text{C} / 2.1^{\circ}\text{C} / +0.3^{\circ}\text{C}$

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

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.

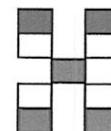
Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type) _____

Sample Temperature: 4.9-0 (C) 4.9-0

2005047

PO #: Provided by BPX (SVE O&M 1H 2020)



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

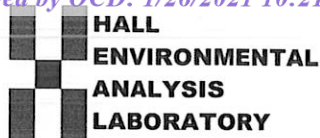
Analysis Request

[illegible]

Received by OCD: 1/26/2021 10:21:12 AM

Air Bubbles (Y or N)

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

Sample Log-In Check List

Client Name: **BLAGG**Work Order Number: **1906152**

RcptNo: 1

Received By: **John Caldwell**

6/5/2019 8:00:00 AM

*John Caldwell*Completed By: **Isaiah Ortiz**

6/5/2019 9:13:16 AM

*I-Ortiz*Reviewed By: *LP**6/5/19*

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: *DAD 6/5/19*

Special Handling (if applicable)

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

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information



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ANALYTICAL SUMMARY REPORT

June 01, 2020

Hall Environmental
4901 Hawkins St NE Ste D
Albuquerque, NM 87109-4372

Work Order: G20060009

Project Name: Not Indicated

Energy Laboratories Inc. Gillette WY received the following 1 sample for Hall Environmental on 6/1/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
G20060009-001	2005C47-001B; SVE (BH-1)	05/28/20 9:50	06/01/20	Gas	Natural Gas Analysis - BTU Natural Gas Analysis - Compressibility Factor Natural Gas Analysis - GPM Natural Gas Analysis - Molecular Weight Natural Gas Analysis - Routine Natural Gas Analysis - Pressure Base Natural Gas Analysis - Psuedo- Critical Pressure Natural Gas Analysis - Psuedo- Critical Temperature Natural Gas Analysis - Specific Gravity Natural Gas Analysis - Temperature Base

The analyses presented in this report were performed by Energy Laboratories, Inc., 400 W. Boxelder Rd., Gillette, WY 82718, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these tests results, please contact your Project Manager.

Report Approved By:



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G20060009

Report Date: 06/01/20

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261							Analytical Run: R257690		
Lab ID: ICV-2006010841	Initial Calibration Verification Standard							06/01/20 08:42	
Oxygen	0.387	Mol %	0.001	81	75	110			
Nitrogen	4.997	Mol %	0.001	99	90	110			
Carbon Dioxide	4.921	Mol %	0.001	99	90	110			
Hydrogen Sulfide	0.132	Mol %	0.001	131	100	136			
Methane	73.123	Mol %	0.001	100	90	110			
Ethane	5.018	Mol %	0.001	101	90	110			
Propane	5.128	Mol %	0.001	101	90	110			
Isobutane	2.012	Mol %	0.001	100	90	110			
n-Butane	1.989	Mol %	0.001	98	90	110			
Isopentane	0.994	Mol %	0.001	99	90	110			
n-Pentane	0.989	Mol %	0.001	99	90	110			
Hexanes plus	0.310	Mol %	0.001	102	90	110			
Lab ID: CCV-2006010847	Continuing Calibration Verification Standard							06/01/20 08:48	
Oxygen	0.572	Mol %	0.001	95	90	110			
Nitrogen	1.264	Mol %	0.001	90	85	110			
Carbon Dioxide	0.951	Mol %	0.001	95	90	110			
Hydrogen Sulfide	0.023	Mol %	0.001	92	70	130			
Methane	93.609	Mol %	0.001	100	90	110			
Ethane	1.026	Mol %	0.001	102	90	110			
Propane	1.009	Mol %	0.001	101	90	110			
Isobutane	0.504	Mol %	0.001	101	90	110			
n-Butane	0.489	Mol %	0.001	98	90	110			
Isopentane	0.201	Mol %	0.001	100	90	110			
n-Pentane	0.197	Mol %	0.001	98	90	110			
Hexanes plus	0.155	Mol %	0.001	102	90	110			
Lab ID: CCV-2006011617	Continuing Calibration Verification Standard							06/01/20 16:17	
Oxygen	0.572	Mol %	0.001	95	90	110			
Nitrogen	1.256	Mol %	0.001	89	85	110			
Carbon Dioxide	0.958	Mol %	0.001	96	90	110			
Hydrogen Sulfide	0.024	Mol %	0.001	96	70	130			
Methane	93.612	Mol %	0.001	100	90	110			
Ethane	1.026	Mol %	0.001	102	90	110			
Propane	1.008	Mol %	0.001	101	90	110			
Isobutane	0.503	Mol %	0.001	100	90	110			
n-Butane	0.489	Mol %	0.001	98	90	110			
Isopentane	0.200	Mol %	0.001	100	90	110			
n-Pentane	0.197	Mol %	0.001	98	90	110			
Hexanes plus	0.155	Mol %	0.001	102	90	110			
Method: GPA 2261							Batch: R257690		
Lab ID: G20060009-001ADUP	Sample Duplicate							Run: Varian GC_200601A	
Oxygen	22.108	Mol %	0.001				0.0	06/01/20 13:13	
							20		

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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www.energylab.com

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QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Work Order: G20060009

Report Date: 06/01/20

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261							Batch: R257690		
Lab ID: G20060009-001ADUP	Sample Duplicate		Run: Varian GC_200601A				06/01/20 13:13		
Nitrogen	77.587	Mol %	0.001				0.0	10	
Carbon Dioxide	0.305	Mol %	0.001				0.0	10	
Hydrogen Sulfide	< 0.001	Mol %	0.001					10	
Methane	< 0.001	Mol %	0.001					10	
Ethane	< 0.001	Mol %	0.001					10	
Propane	< 0.001	Mol %	0.001					10	
Isobutane	< 0.001	Mol %	0.001					10	
n-Butane	< 0.001	Mol %	0.001					10	
Isopentane	< 0.001	Mol %	0.001					10	
n-Pentane	< 0.001	Mol %	0.001					10	
Hexanes plus	< 0.001	Mol %	0.001					10	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



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Work Order Receipt Checklist

Hall Environmental

G20060009

Login completed by: Chantel S. Johnson

Date Received: 6/1/2020

Reviewed by: Misty Stephens

Received by: csj

Reviewed Date: 6/1/2020

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☒	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Applicable ☒
Container/Temp Blank temperature:	°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☒
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☒

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: Energy Labs-Gillette		COMPANY: Energy Laboratories		PHONE: (866) 686-7175		FAX:	
ADDRESS: 400 W Boxelder Rd				ACCOUNT #:		EMAIL:	
CITY, STATE, ZIP: Gillette, WY 82718							
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2005C47-001B	SVE (BH-1)	TEDLAR	Air	5/28/2020 9:50:00 AM	1	Natural Gas Analysis

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 5/29/2020	Time: 9:31 AM	Received By:	Date:	Time:	REPORT TRANSMITTAL DESIRED:	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE	
Relinquished By:	Date:	Time:	Received By:	Date: 5/28/2020	Time: 10:15	FOR LAB USE ONLY	
TAT: Fed ex Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐						Temp of samples _____ °C Attempt to Cool? _____ Comments:	



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: BLAGG

Work Order Number: 2005C47

RcptNo: 1

Received By: Isaiah Ortiz

Completed By: John Caldwell

Reviewed By: DAD 5/29/20

5-29-20 0815 J 5/29/20

~~5/28/2020 9:50:00 AM~~

5/29/2020 9:34:23 AM

I-07

John Caldwell

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace $<1/4$ " for AQ VOA? Yes ☐ No ☐ NA ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: em 5/29/20

Special Handling (if applicable)

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

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good				

GROUNDWATER FIELD LOG SHEETS

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
--

LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **December 28, 2016**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge LS 6 mw log 2016-12-28.xls**PROJECT MANAGER : **N J V**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	43.49	49.90	0745	6.86	4,400	6.4	1.00
2	-	-	42.59	46.40	0828	6.70	4,200	9.2	0.25
3	-	-	42.15	44.00	0812	6.72	4,400	6.2	0.13

DATE & TIME -	4.01/7.00/10.00	2,800
	12/06/16	0600

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Initially developed on 12/27/2016. Very poor recovery in all wells. Light brownish tint appearance in MW #1 & MW #3 &

with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon

odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing.

Collected samples from all monitor wells for BTEX per US EPA Method 8260 and anion / cation balance.

Top of casing MW # 1 ~ 3.00 ft., MW # 2 ~ 3.04 ft., MW # 3 ~ 3.00 ft. above grade.

on-site	7:15 AM	temp	22 F
off-site	8:45 AM	temp	26 F
sky cond.	Sunny		
wind speed	0-10	direct.	E - ESE

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
--

LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **March 15, 2017**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2017-03-15.xls**PROJECT MANAGER : **J C B**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	42.85	49.90	0930	7.15	4,000	14.2	1.00
2	-	-	41.95	46.40	1100	6.78	5,200	18.3	0.25
3	-	-	41.83	44.00	1015	7.08	4,300	17.5	0.13

DATE & TIME -

4.01/7.00/10.00	2,800
03/14/17	0700

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Initially developed on 12/27/2016. Very poor recovery in all wells. Light brownish tint appearance in MW #1 & MW #3 &

with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon

odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing.

Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft., MW # 2 ~ 3.04 ft., MW # 3 ~ 3.00 ft. above grade.

on-site	8:35 AM	temp	39 F
off-site	11:15 AM	temp	58 F
sky cond.	Mostly sunny		
wind speed	0-10	direct.	E-ESE

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
--

LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **June 30, 2017**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2017-06-30.xls**PROJECT MANAGER : **N J V**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	42.25	49.90	0715	6.93	4,600	16.9	1.00
2	-	-	41.42	46.40	0835	6.78	5,800	18.1	0.25
3	-	-	41.43	44.00	0750	6.71	4,200	17.2	0.13

DATE & TIME -	4.01/7.00/10.00	2,800
	06/27/17	0600

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft.}$ $h = 1 \text{ ft.}$) (i.e. 4" MW $r = (2/12) \text{ ft.}$ $h = 1 \text{ ft.}$)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Initially developed on 12/27/2016. Very poor recovery in all wells. Light brownish tint appearance in MW #1 & MW #3 &

with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon

odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing.

Collected samples from all monitor wells for BTEX per US EPA Method 8260 and anion / cation balance.

Top of casing MW # 1 ~ 3.00 ft., MW # 2 ~ 3.04 ft., MW # 3 ~ 3.00 ft. above grade.

on-site	6:40 AM	temp	55 F
off-site	8:45 AM	temp	65 F
sky cond.	Sunny		
wind speed	Calm	direct.	NA

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**CHAIN-OF-CUSTODY # : N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
--

LABORATORY (S) USED : HALL ENVIRONMENTALDate : **September 20, 2017**DEVELOPER / SAMPLER : N J VFilename : **Mudge B 12R mw log 2017-09-20.xls**PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	42.60	49.90	1015	6.81	3,700	16.5	1.00
2	-	-	41.69	46.40	1145	6.73	4,100	17.5	0.25
3	-	-	41.24	44.00	1100	6.76	3,300	17.2	0.13

DATE & TIME -	4.01/7.00/10.00	2,800
	09/06/17	0630

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft.}$ $h = 1 \text{ ft.}$) (i.e. 4" MW $r = (2/12) \text{ ft.}$ $h = 1 \text{ ft.}$)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in all wells . Light brownish tint appearance in MW #1 & MW #3 & with no apparent physical hydro - carbon odor detected . Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing . Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	12:00 PM	temp	72 F
off-site	3:00 PM	temp	80 F
sky cond.	Sunny		
wind speed	0 - 5	direct.	SE - WSW

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
--

LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **December 20, 2017**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2017-12-20.xls**PROJECT MANAGER : **N J V**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	41.90	49.90	1245	6.87	2,700	12.8	1.00
2	-	-	40.98	46.40	1450	6.74	4,200	13.6	0.38
3	-	-	41.16	44.00	1340	6.82	3,200	13.4	0.25

DATE & TIME -	4.01/7.00/10.00	2,800
	12/20/17	0600

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in all wells . Light brownish tint appearance in MW #1 & MW #3 & with no apparent physical hydro - carbon odor detected . Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing . Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	12:00 PM	temp	44 F
off-site	3:00 PM	temp	54 F
sky cond.	Sunny		
wind speed	5 - 10	direct.	E

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
--

LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **March 26, 2018**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2018-03-26.xls**PROJECT MANAGER : **J C B**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	41.84	49.90	1425	7.10	4,400	16.1	0.75
2	-	-	40.88	46.40	1600	6.91	5,000	15.2	0.50
3	-	-	41.16	44.00	1520	6.99	3,900	16.2	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
03/26/18	0630

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in all wells . Light brownish tint appearance in MW #1 & MW #3 & with no apparent physical hydro - carbon odor detected . Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing . Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	1:30 PM	temp	55 F
off-site	4:00 PM	temp	58 F
sky cond.	Sunny then Partly Cloudy		
wind speed	0 - 10	direct.	S - SW

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **June 28, 2018**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2018-06-28.xls**PROJECT MANAGER : **J C B**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	41.84	49.90	0715	6.80	3,500	16.1	0.75
2	-	-	40.83	46.40	0855	6.91	4,200	15.2	0.50
3	-	-	41.18	44.00	0805	6.89	3,400	16.2	0.25

DATE & TIME -	4.01/7.00/10.00	2,800
	06/23/18	0700

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in all wells . Light brownish tint appearance in MW #1 & MW #3 & with no apparent physical hydro - carbon odor detected . Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing . Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	6:20 AM	temp	56 F
off-site	9:15 AM	temp	73 F
sky cond.	Mostly sunny		
wind speed	0 - 5	direct.	E

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **September 25, 2018**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2018-09-25.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	41.93	49.90	0905	6.96	2,700	21.1	0.75
2	-	-	40.89	46.40	1050	7.00	3,800	25.5	0.50
3	-	-	41.20	44.00	1000	7.03	2,900	25.3	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
09/24/18	0600

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in all wells . Light brownish tint appearance in MW #1 & MW #3 & with no apparent physical hydro - carbon odor detected . Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing . Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	8:15 AM	temp	54 F
off-site	10:15 AM	temp	65 F
sky cond.	Partly cloudy		
wind speed	0 - 5	direct.	NE - S

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **December 19, 2018**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2018-12-19.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	42.07	49.90	1030	7.48	3,200	11.8	0.75
2	-	-	40.98	46.40	1150	6.71	3,900	12.6	0.50
3	-	-	41.37	44.00	1110	7.14	3,700	10.9	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
12/13/18	0600

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in all wells . Light brownish tint appearance in MW #1 & MW #3 & with no apparent physical hydro - carbon odor detected . Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing . Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	9:45 AM	temp	47 F
off-site	12:10 PM	temp	48 F
sky cond.	Mostly cloudy		
wind speed	0 - 10	direct.	E - NNE

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP AMERICA PROD. CO.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **March 29, 2019**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2019-03-29.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	42.09	49.90	-	-	-	-	-
2	-	-	40.94	46.40	1105	6.93	3,100	15.4	0.50
3	-	-	41.39	44.00	1030	7.22	2,700	13.0	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
03/29/19	0700

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	10:00 AM	temp	55 F
off-site	11:30 AM	temp	55 F
sky cond.	Mostly cloudy		
wind speed	10-25	direct.	W - NW

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP ENERGY INC.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **June 28, 2019**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2019-06-28.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	41.63	49.90	-	-	-	-	-
2	-	-	40.49	46.40	0900	7.21	2,200	20.0	0.50
3	-	-	40.99	44.00	0830	7.30	2,000	20.1	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
06/20/19	0630

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from all monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	7:45 AM	temp	69 F
off-site	9:20 AM	temp	76 F
sky cond.	Sunny		
wind speed	0 - 10	direct.	E

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP ENERGY INC.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **September 18, 2019**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2019-09-18.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	41.50	49.90	-	-	-	-	-
2	-	-	40.50	46.40	1055	6.90	2,100	21.1	0.50
3	-	-	40.78	44.00	1015	6.89	1,800	21.4	0.33

DATE & TIME -

4.01/7.00/10.00	2,800
09/17/19	0600

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from MW #2 MW # 3 monitor wells for BTEX per US EPA Method 8260.

Top of casing MW # 1 ~ 3.00 ft., MW # 2 ~ 3.04 ft., MW # 3 ~ 3.00 ft. above grade.

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from all monitor wells for BTEX per US EPA Method 8260.

on-site	9:26 AM	temp	67 F
off-site	11:35 AM	temp	74 F
sky cond.	Mostly sunny		
wind speed	0 - 10	direct.	E

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BP ENERGY INC.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **December 19, 2019**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2019-12-19.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
--------	-----------------	------------------	---------------------	------------------	---------------	----	-----------------	-----------------	----------------------

1	-	-	41.58	49.90	-	-	-	-	-
2	-	-	40.56	46.40	1340	7.11	3,100	14.9	0.50
3	-	-	40.82	44.00	1300	7.76	3,400	16.9	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
12/10/19	0700

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from MW #2 MW #3 monitor wells for BTEX per US EPA Method 8260. SVE shut down during sampling between 12:30-2:00 pm.

Top of casing MW #1 ~ 3.00 ft., MW #2 ~ 3.04 ft., MW #3 ~ 3.00 ft. above grade.

on-site	12:10 PM	temp	38 F
off-site	2:10 PM	temp	38 F
sky cond.	Partly cloudy		
wind speed	0 - 15	direct.	W

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BPX ENERGY INC.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **March 31, 2020**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2020-03-31.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	41.87	49.90	-	-	-	-	-
2	-	-	40.86	46.40	1100	7.38	3,500	16.9	0.50
3	-	-	41.06	44.00	1030	7.59	3,100	15.6	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
03/23/20	0930

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from MW #2 MW #3 monitor wells for BTEX per US EPA Method 8260. SVE shut down during sampling between 9:52 - 11:07 am.

Top of casing MW #1 ~ 3.00 ft., MW #2 ~ 3.04 ft., MW #3 ~ 3.00 ft. above grade.

on-site	9:44 AM	temp	44 F
off-site	11:10 AM	temp	53 F
sky cond.	Sunny		
wind speed	5 - 10	direct.	ESE - E

BLAGG ENGINEERING, INC.

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **BPX ENERGY INC.**

CHAIN-OF-CUSTODY # :

N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED :

HALL ENVIRONMENTAL

Date : **June 8, 2020**DEVELOPER / SAMPLER : **N J V**Filename : **Mudge B 12R mw log 2020-06-08.xls**PROJECT MANAGER : **S. MOSKAL**

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	42.04	49.90	-	-	-	-	-
2	-	-	40.85	46.40	0905	7.24	2,600	19.5	0.50
3	-	-	41.20	44.00	0815	7.41	2,400	19.2	0.25

DATE & TIME -

4.01/7.00/10.00	2,800
06/01/20	0630

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft}$. $h = 1 \text{ ft}$.) (i.e. 4" MW $r = (2/12) \text{ ft}$. $h = 1 \text{ ft}$.)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from MW #2 MW #3 monitor wells for BTEX per US EPA Method 8260. SVE shut down during sampling between

Top of casing MW #1 ~ 3.00 ft., MW #2 ~ 3.04 ft., MW #3 ~ 3.00 ft. above grade.

on-site	7:35 AM	temp	61 F
off-site	9:10 AM	temp	67 F
sky cond.	Sunny		
wind speed	0 - 10	direct.	E - SW

COTTONWOOD CONSULTING LLC

MONITOR WELL DEVELOPMENT & / OR SAMPLING DATA

CLIENT : **SIMCOE LLC**CHAIN-OF-CUSTODY # : N / A

MUDGE B # 12R UNIT A, SEC. 17, T31N, R11W
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LABORATORY (S) USED : HALL ENVIRONMENTAL
 Date : **September 17, 2020**
 Filename : **Mudge B 12R mw log 2020-09-17.xls**

 DEVELOPER / SAMPLER : N J V
 PROJECT MANAGER : S. MOSKAL

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	42.29	49.90	-	-	-	-	-
2	-	-	41.17	46.40	1120	7.09	1,600	26.8	0.50
3	-	-	41.45	44.00	1030	7.35	1,600	25.4	0.25

DATE & TIME -	4.01/7.00/10.00	2,800
	09/05/20	0700

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft.}$ $h = 1 \text{ ft.}$) (i.e. 4" MW $r = (2/12) \text{ ft.}$ $h = 1 \text{ ft.}$)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #2 & #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected. Blackish tint appearance in MW #2 & with slight hydrocarbon odor detected physically. Purged available water in wells using 1.5-inch submersible electrical pump, new / clear vinyl tubing. Collected samples from MW #2 MW #3 monitor wells for BTEX per US EPA Method 8260. SVE shut down during sampling between

Top of casing MW #1 ~ 3.00 ft., MW #2 ~ 3.04 ft., MW #3 ~ 3.00 ft. above grade.

on-site	9:45 AM	temp	71 F
off-site	11:40 AM	temp	78 F
sky cond.	Mostly sunny		
wind speed	0 - 5	direct.	ESE

COTTONWOOD CONSULTING LLC
MONITOR WELL DEVELOPMENT & /OR SAMPLING DATA

CLIENT : **SIMCOE LLC**

CHAIN-OF-CUSTODY #: N/A

MUDGE B # 12R
UNIT A, SEC. 17, T31N, R11W

LABORATORY (S) USED : HALL ENVIRONMENTAL

Date : **December 16, 2020**
Filename : **Mudge B 12R mw log 2020-12-16.xls**

DEVELOPER / SAMPLER : N J V
PROJECT MANAGER : S. MOSKAL

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	TEMP. (celcius)	VOLUME PURGED (gal.)
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1	-	-	42.56	49.90	-	-	-	-	-
2	-	-	41.28	46.40	-	-	-	-	-
3	-	-	41.59	44.00	1130	7.89	6,900	10.2	0.25

	4.01/7.00/10.00	2,800
DATE & TIME -	12/15/20	0700

NOTES : Volume of water purged from well prior to sampling: $V = \pi \times r^2 \times h \times 7.48 \text{ gal./ft}^3 \times 3 \text{ (wellbores)}$
 (i.e. 2" MW $r = (1/12) \text{ ft.}$ $h = 1 \text{ ft.}$) (i.e. 4" MW $r = (2/12) \text{ ft.}$ $h = 1 \text{ ft.}$)

Ideally a minimum of three (3) wellbore volumes:

1.50" well diameter = 0.30 gal./ft. of water.

2.00" well diameter = 0.49 gal./ft. of water.

Comments or note well diameter if not standard 2".

Very poor recovery in MW #3. Light brownish tint appearance in MW #3 & with no apparent physical hydrocarbon odor detected.

Purged available water in wells using 1.5 inch submersible electrical pump, new / clear vinyl tubing . Collected samples from MW #3 BTEX per US EPA Method 8260. SVE shut down during sampling between 10:00 - 11:35 am.

Top of casing MW # 1 ~ 3.00 ft. , MW # 2 ~ 3.04 ft. , MW # 3 ~ 3.00 ft. above grade .

on-site	10:00 AM	temp	21 F
off-site	11:40 AM	temp	27 F
sky cond.	Sunny		
wind speed	0 - 5	direct.	E

GROUNDWATER LABORATORY REPORTS

Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: MUDGE B #12R

Collection Date: 12/28/2016 7:45:00 AM

Lab ID: 1612E51-001

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Fluoride	ND	0.50		mg/L	5	12/30/2016 3:01:39 AM	R39748
Chloride	93	10		mg/L	20	12/30/2016 3:14:04 AM	R39748
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/30/2016 3:01:39 AM	R39748
Bromide	ND	0.50		mg/L	5	12/30/2016 3:01:39 AM	R39748
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/30/2016 3:01:39 AM	R39748
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	12/30/2016 3:14:04 AM	R39748
Sulfate	4400	50		mg/L	100	1/4/2017 3:40:51 AM	A39806
SM2510B: SPECIFIC CONDUCTANCE							Analyst: JRR
Conductivity	7300	1.0		µmhos/cm	1	1/4/2017 4:31:11 PM	R39840
SM2320B: ALKALINITY							Analyst: JRR
Bicarbonate (As CaCO ₃)	210.5	20.00		mg/L CaCO ₃	1	1/4/2017 4:31:11 PM	R39840
Carbonate (As CaCO ₃)	ND	2.000		mg/L CaCO ₃	1	1/4/2017 4:31:11 PM	R39840
Total Alkalinity (as CaCO ₃)	210.5	20.00		mg/L CaCO ₃	1	1/4/2017 4:31:11 PM	R39840
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	6120	200	*D	mg/L	1	1/4/2017 4:31:00 PM	29507
EPA METHOD 200.7: TOTAL METALS							Analyst: MED
Calcium	430	5.0		mg/L	5	1/10/2017 11:31:36 AM	29508
Magnesium	50	1.0		mg/L	1	1/10/2017 11:25:41 AM	29508
Potassium	6.0	1.0		mg/L	1	1/10/2017 11:25:41 AM	29508
Sodium	1600	50		mg/L	50	1/10/2017 8:42:52 PM	29508
EPA METHOD 8260B: VOLATILES							Analyst: AG
Benzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Toluene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Ethylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Naphthalene	ND	2.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1-Methylnaphthalene	ND	4.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
2-Methylnaphthalene	ND	4.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Acetone	ND	10		µg/L	1	12/30/2016 12:55:11 PM	R39766
Bromobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Bromodichloromethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Bromoform	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Bromomethane	ND	3.0		µg/L	1	12/30/2016 12:55:11 PM	R39766

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

Page 1 of 17

Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: MUDGE B #12R

Collection Date: 12/28/2016 7:45:00 AM

Lab ID: 1612E51-001

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: AG
2-Butanone	ND	10		µg/L	1	12/30/2016 12:55:11 PM	R39766
Carbon disulfide	ND	10		µg/L	1	12/30/2016 12:55:11 PM	R39766
Carbon Tetrachloride	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Chlorobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Chloroethane	ND	2.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Chloroform	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Chloromethane	ND	3.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
2-Chlorotoluene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
4-Chlorotoluene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
cis-1,2-DCE	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Dibromochloromethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Dibromomethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1-Dichloroethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1-Dichloroethene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2-Dichloropropane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,3-Dichloropropane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
2,2-Dichloropropane	ND	2.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1-Dichloropropene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Hexachlorobutadiene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
2-Hexanone	ND	10		µg/L	1	12/30/2016 12:55:11 PM	R39766
Isopropylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
4-Isopropyltoluene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
4-Methyl-2-pentanone	ND	10		µg/L	1	12/30/2016 12:55:11 PM	R39766
Methylene Chloride	ND	3.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
n-Butylbenzene	ND	3.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
n-Propylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
sec-Butylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Styrene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
tert-Butylbenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
trans-1,2-DCE	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766

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

Page 2 of 17

Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: MUDGE B #12R

Collection Date: 12/28/2016 7:45:00 AM

Lab ID: 1612E51-001

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: AG
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Trichlorofluoromethane	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Vinyl chloride	ND	1.0		µg/L	1	12/30/2016 12:55:11 PM	R39766
Xylenes, Total	ND	1.5		µg/L	1	12/30/2016 12:55:11 PM	R39766
Surr: 1,2-Dichloroethane-d4	99.0	70-130		%Rec	1	12/30/2016 12:55:11 PM	R39766
Surr: 4-Bromofluorobenzene	91.2	70-130		%Rec	1	12/30/2016 12:55:11 PM	R39766
Surr: Dibromofluoromethane	107	70-130		%Rec	1	12/30/2016 12:55:11 PM	R39766
Surr: Toluene-d8	101	70-130		%Rec	1	12/30/2016 12:55:11 PM	R39766

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

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Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B #12R

Collection Date: 12/28/2016 8:28:00 AM

Lab ID: 1612E51-002

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Fluoride	ND	0.50		mg/L	5	12/30/2016 3:26:29 AM	R39748
Chloride	240	10		mg/L	20	12/30/2016 3:38:54 AM	R39748
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/30/2016 3:26:29 AM	R39748
Bromide	ND	0.50		mg/L	5	12/30/2016 3:26:29 AM	R39748
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/30/2016 3:26:29 AM	R39748
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	12/30/2016 3:38:54 AM	R39748
Sulfate	3400	100		mg/L	200	1/4/2017 3:53:16 AM	A39806
SM2510B: SPECIFIC CONDUCTANCE							Analyst: JRR
Conductivity	8400	1.0		µmhos/cm	1	1/4/2017 4:43:16 PM	R39840
SM2320B: ALKALINITY							Analyst: JRR
Bicarbonate (As CaCO ₃)	402.6	20.00		mg/L CaCO ₃	1	1/4/2017 4:43:16 PM	R39840
Carbonate (As CaCO ₃)	ND	2.000		mg/L CaCO ₃	1	1/4/2017 4:43:16 PM	R39840
Total Alkalinity (as CaCO ₃)	402.6	20.00		mg/L CaCO ₃	1	1/4/2017 4:43:16 PM	R39840
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	7940	200	*D	mg/L	1	1/4/2017 4:31:00 PM	29507
EPA METHOD 200.7: TOTAL METALS							Analyst: MED
Calcium	430	5.0		mg/L	5	1/10/2017 11:39:17 AM	29508
Magnesium	72	1.0		mg/L	1	1/10/2017 11:37:31 AM	29508
Potassium	7.6	1.0		mg/L	1	1/10/2017 11:37:31 AM	29508
Sodium	1900	50		mg/L	50	1/10/2017 8:44:57 PM	29508
EPA METHOD 8260B: VOLATILES							Analyst: AG
Benzene	320	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Toluene	250	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Ethylbenzene	500	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2,4-Trimethylbenzene	320	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,3,5-Trimethylbenzene	180	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2-Dichloroethane (EDC)	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Naphthalene	21	20		µg/L	10	12/30/2016 1:23:58 PM	R39766
1-Methylnaphthalene	ND	40		µg/L	10	12/30/2016 1:23:58 PM	R39766
2-Methylnaphthalene	ND	40		µg/L	10	12/30/2016 1:23:58 PM	R39766
Acetone	110	100		µg/L	10	12/30/2016 1:23:58 PM	R39766
Bromobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Bromodichloromethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Bromoform	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Bromomethane	ND	30		µg/L	10	12/30/2016 1:23:58 PM	R39766

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

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Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B #12R

Collection Date: 12/28/2016 8:28:00 AM

Lab ID: 1612E51-002

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: AG
2-Butanone	200	100		µg/L	10	12/30/2016 1:23:58 PM	R39766
Carbon disulfide	ND	100		µg/L	10	12/30/2016 1:23:58 PM	R39766
Carbon Tetrachloride	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Chlorobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Chloroethane	ND	20		µg/L	10	12/30/2016 1:23:58 PM	R39766
Chloroform	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Chloromethane	ND	30		µg/L	10	12/30/2016 1:23:58 PM	R39766
2-Chlorotoluene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
4-Chlorotoluene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
cis-1,2-DCE	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
cis-1,3-Dichloropropene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	12/30/2016 1:23:58 PM	R39766
Dibromochloromethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Dibromomethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2-Dichlorobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,3-Dichlorobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,4-Dichlorobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Dichlorodifluoromethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1-Dichloroethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1-Dichloroethene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2-Dichloropropane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,3-Dichloropropane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
2,2-Dichloropropane	ND	20		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1-Dichloropropene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Hexachlorobutadiene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
2-Hexanone	ND	100		µg/L	10	12/30/2016 1:23:58 PM	R39766
Isopropylbenzene	49	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
4-Isopropyltoluene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
4-Methyl-2-pentanone	ND	100		µg/L	10	12/30/2016 1:23:58 PM	R39766
Methylene Chloride	ND	30		µg/L	10	12/30/2016 1:23:58 PM	R39766
n-Butylbenzene	ND	30		µg/L	10	12/30/2016 1:23:58 PM	R39766
n-Propylbenzene	43	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
sec-Butylbenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Styrene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
tert-Butylbenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1,2,2-Tetrachloroethane	ND	20		µg/L	10	12/30/2016 1:23:58 PM	R39766
Tetrachloroethene (PCE)	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
trans-1,2-DCE	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766

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

Page 5 of 17

Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B #12R

Collection Date: 12/28/2016 8:28:00 AM

Lab ID: 1612E51-002

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: AG
trans-1,3-Dichloropropene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2,3-Trichlorobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2,4-Trichlorobenzene	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1,1-Trichloroethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,1,2-Trichloroethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Trichloroethene (TCE)	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Trichlorofluoromethane	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
1,2,3-Trichloropropane	ND	20		µg/L	10	12/30/2016 1:23:58 PM	R39766
Vinyl chloride	ND	10		µg/L	10	12/30/2016 1:23:58 PM	R39766
Xylenes, Total	5800	150		µg/L	100	12/30/2016 5:14:50 PM	R39766
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	10	12/30/2016 1:23:58 PM	R39766
Surr: 4-Bromofluorobenzene	86.1	70-130		%Rec	10	12/30/2016 1:23:58 PM	R39766
Surr: Dibromofluoromethane	109	70-130		%Rec	10	12/30/2016 1:23:58 PM	R39766
Surr: Toluene-d8	99.1	70-130		%Rec	10	12/30/2016 1:23:58 PM	R39766

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

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Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B #12R

Collection Date: 12/28/2016 8:12:00 AM

Lab ID: 1612E51-003

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Fluoride	ND	0.50		mg/L	5	12/30/2016 3:51:19 AM	R39748
Chloride	150	10		mg/L	20	12/30/2016 4:03:43 AM	R39748
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/30/2016 3:51:19 AM	R39748
Bromide	ND	0.50		mg/L	5	12/30/2016 3:51:19 AM	R39748
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/30/2016 3:51:19 AM	R39748
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	12/30/2016 4:03:43 AM	R39748
Sulfate	3800	100		mg/L	200	1/4/2017 4:05:40 AM	A39806
SM2510B: SPECIFIC CONDUCTANCE							Analyst: JRR
Conductivity	8300	1.0		µmhos/cm	1	1/4/2017 5:02:07 PM	R39840
SM2320B: ALKALINITY							Analyst: JRR
Bicarbonate (As CaCO ₃)	768.4	20.00		mg/L CaCO ₃	1	1/4/2017 5:02:07 PM	R39840
Carbonate (As CaCO ₃)	ND	2.000		mg/L CaCO ₃	1	1/4/2017 5:02:07 PM	R39840
Total Alkalinity (as CaCO ₃)	768.4	20.00		mg/L CaCO ₃	1	1/4/2017 5:02:07 PM	R39840
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	8100	200	*D	mg/L	1	1/4/2017 4:31:00 PM	29507
EPA METHOD 200.7: TOTAL METALS							Analyst: MED
Calcium	450	5.0		mg/L	5	1/10/2017 11:42:37 AM	29508
Magnesium	70	1.0		mg/L	1	1/10/2017 11:40:57 AM	29508
Potassium	8.9	1.0		mg/L	1	1/10/2017 11:40:57 AM	29508
Sodium	1900	50		mg/L	50	1/10/2017 8:47:04 PM	29508
EPA METHOD 8260B: VOLATILES							Analyst: AG
Benzene	15	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Toluene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Ethylbenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2,4-Trimethylbenzene	72	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,3,5-Trimethylbenzene	50	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2-Dichloroethane (EDC)	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Naphthalene	ND	20		µg/L	10	12/30/2016 1:52:47 PM	R39766
1-Methylnaphthalene	ND	40		µg/L	10	12/30/2016 1:52:47 PM	R39766
2-Methylnaphthalene	ND	40		µg/L	10	12/30/2016 1:52:47 PM	R39766
Acetone	ND	100		µg/L	10	12/30/2016 1:52:47 PM	R39766
Bromobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Bromodichloromethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Bromoform	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Bromomethane	ND	30		µg/L	10	12/30/2016 1:52:47 PM	R39766

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

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Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B #12R

Collection Date: 12/28/2016 8:12:00 AM

Lab ID: 1612E51-003

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: AG
2-Butanone	ND	100		µg/L	10	12/30/2016 1:52:47 PM	R39766
Carbon disulfide	ND	100		µg/L	10	12/30/2016 1:52:47 PM	R39766
Carbon Tetrachloride	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Chlorobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Chloroethane	ND	20		µg/L	10	12/30/2016 1:52:47 PM	R39766
Chloroform	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Chloromethane	ND	30		µg/L	10	12/30/2016 1:52:47 PM	R39766
2-Chlorotoluene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
4-Chlorotoluene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
cis-1,2-DCE	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
cis-1,3-Dichloropropene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	12/30/2016 1:52:47 PM	R39766
Dibromochloromethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Dibromomethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2-Dichlorobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,3-Dichlorobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,4-Dichlorobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Dichlorodifluoromethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1-Dichloroethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1-Dichloroethene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2-Dichloropropane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,3-Dichloropropane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
2,2-Dichloropropane	ND	20		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1-Dichloropropene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Hexachlorobutadiene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
2-Hexanone	ND	100		µg/L	10	12/30/2016 1:52:47 PM	R39766
Isopropylbenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
4-Isopropyltoluene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
4-Methyl-2-pentanone	ND	100		µg/L	10	12/30/2016 1:52:47 PM	R39766
Methylene Chloride	ND	30		µg/L	10	12/30/2016 1:52:47 PM	R39766
n-Butylbenzene	ND	30		µg/L	10	12/30/2016 1:52:47 PM	R39766
n-Propylbenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
sec-Butylbenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Styrene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
tert-Butylbenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1,2,2-Tetrachloroethane	ND	20		µg/L	10	12/30/2016 1:52:47 PM	R39766
Tetrachloroethene (PCE)	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
trans-1,2-DCE	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766

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

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Analytical Report

Lab Order 1612E51

Date Reported: 1/19/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B #12R

Collection Date: 12/28/2016 8:12:00 AM

Lab ID: 1612E51-003

Matrix: AQUEOUS

Received Date: 12/29/2016 7:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: AG
trans-1,3-Dichloropropene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2,3-Trichlorobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2,4-Trichlorobenzene	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1,1-Trichloroethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,1,2-Trichloroethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Trichloroethene (TCE)	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Trichlorofluoromethane	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
1,2,3-Trichloropropane	ND	20		µg/L	10	12/30/2016 1:52:47 PM	R39766
Vinyl chloride	ND	10		µg/L	10	12/30/2016 1:52:47 PM	R39766
Xylenes, Total	970	15		µg/L	10	12/30/2016 1:52:47 PM	R39766
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	10	12/30/2016 1:52:47 PM	R39766
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	10	12/30/2016 1:52:47 PM	R39766
Surr: Dibromofluoromethane	110	70-130		%Rec	10	12/30/2016 1:52:47 PM	R39766
Surr: Toluene-d8	96.5	70-130		%Rec	10	12/30/2016 1:52:47 PM	R39766

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

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Analytical Report

Lab Order 1703858

Date Reported: 3/20/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: MUDGE B 12R

Collection Date: 3/15/2017 9:30:00 AM

Lab ID: 1703858-001

Matrix: AQUEOUS

Received Date: 3/16/2017 7:09:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	1.0		µg/L	1	3/16/2017 7:53:13 PM	R41422
Toluene	ND	1.0		µg/L	1	3/16/2017 7:53:13 PM	R41422
Ethylbenzene	ND	1.0		µg/L	1	3/16/2017 7:53:13 PM	R41422
Xylenes, Total	ND	2.0		µg/L	1	3/16/2017 7:53:13 PM	R41422
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	1	3/16/2017 7:53:13 PM	R41422

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	Page 1 of 4
	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	

Analytical Report

Lab Order 1703858

Date Reported: 3/20/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B 12R

Collection Date: 3/15/2017 11:00:00 AM

Lab ID: 1703858-002

Matrix: AQUEOUS

Received Date: 3/16/2017 7:09:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	320	10		µg/L	10	3/16/2017 8:19:18 PM	R41422
Toluene	13	10		µg/L	10	3/16/2017 8:19:18 PM	R41422
Ethylbenzene	360	10		µg/L	10	3/16/2017 8:19:18 PM	R41422
Xylenes, Total	3700	100		µg/L	50	3/17/2017 9:59:46 PM	R41422
Surr: 4-Bromofluorobenzene	115	80-120		%Rec	10	3/16/2017 8:19:18 PM	R41422

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

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Analytical Report

Lab Order 1703858

Date Reported: 3/20/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B 12R

Collection Date: 3/15/2017 10:15:00 AM

Lab ID: 1703858-003

Matrix: AQUEOUS

Received Date: 3/16/2017 7:09:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	9.0	5.0		µg/L	5	3/16/2017 8:45:29 PM	R41422
Toluene	ND	5.0		µg/L	5	3/16/2017 8:45:29 PM	R41422
Ethylbenzene	140	5.0		µg/L	5	3/16/2017 8:45:29 PM	R41422
Xylenes, Total	730	10		µg/L	5	3/16/2017 8:45:29 PM	R41422
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	5	3/16/2017 8:45:29 PM	R41422

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

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Analytical Report

Lab Order 1707049

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 6/30/2017 7:15:00 AM

Lab ID: 1707049-001

Matrix: AQUEOUS

Received Date: 7/1/2017 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: DJF
Benzene	ND	1.0		µg/L	1	7/10/2017 3:54:56 PM	B44109
Toluene	ND	1.0		µg/L	1	7/10/2017 3:54:56 PM	B44109
Ethylbenzene	ND	1.0		µg/L	1	7/10/2017 3:54:56 PM	B44109
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/10/2017 3:54:56 PM	B44109
Xylenes, Total	ND	1.5		µg/L	1	7/10/2017 3:54:56 PM	B44109
Surr: 1,2-Dichloroethane-d4	118	70-130		%Rec	1	7/10/2017 3:54:56 PM	B44109
Surr: 4-Bromofluorobenzene	91.1	70-130		%Rec	1	7/10/2017 3:54:56 PM	B44109
Surr: Dibromofluoromethane	111	70-130		%Rec	1	7/10/2017 3:54:56 PM	B44109
Surr: Toluene-d8	99.4	70-130		%Rec	1	7/10/2017 3:54:56 PM	B44109

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	Page 1 of 4
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1707049

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 6/30/2017 8:35:00 AM

Lab ID: 1707049-002

Matrix: AQUEOUS

Received Date: 7/1/2017 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: DJF
Benzene	350	5.0		µg/L	5	7/10/2017 4:53:36 PM	B44109
Toluene	9.3	5.0		µg/L	5	7/10/2017 4:53:36 PM	B44109
Ethylbenzene	700	50		µg/L	50	7/10/2017 4:24:13 PM	B44109
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	7/10/2017 4:53:36 PM	B44109
Xylenes, Total	4600	75		µg/L	50	7/10/2017 4:24:13 PM	B44109
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	5	7/10/2017 4:53:36 PM	B44109
Surr: 4-Bromofluorobenzene	96.9	70-130		%Rec	5	7/10/2017 4:53:36 PM	B44109
Surr: Dibromofluoromethane	106	70-130		%Rec	5	7/10/2017 4:53:36 PM	B44109
Surr: Toluene-d8	101	70-130		%Rec	5	7/10/2017 4:53:36 PM	B44109

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1707049

Date Reported: 7/11/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 6/30/2017 7:50:00 AM

Lab ID: 1707049-003

Matrix: AQUEOUS

Received Date: 7/1/2017 10:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: DJF
Benzene	5.6	5.0		µg/L	5	7/10/2017 5:52:23 PM	B44109
Toluene	ND	5.0		µg/L	5	7/10/2017 5:52:23 PM	B44109
Ethylbenzene	120	5.0		µg/L	5	7/10/2017 5:52:23 PM	B44109
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	7/10/2017 5:52:23 PM	B44109
Xylenes, Total	ND	7.5		µg/L	5	7/10/2017 5:52:23 PM	B44109
Surr: 1,2-Dichloroethane-d4	116	70-130		%Rec	5	7/10/2017 5:52:23 PM	B44109
Surr: 4-Bromofluorobenzene	96.1	70-130		%Rec	5	7/10/2017 5:52:23 PM	B44109
Surr: Dibromofluoromethane	112	70-130		%Rec	5	7/10/2017 5:52:23 PM	B44109
Surr: Toluene-d8	102	70-130		%Rec	5	7/10/2017 5:52:23 PM	B44109

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 3 of 4

Analytical Report

Lab Order 1709B73

Date Reported: 10/4/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: MUDGE B 12R

Collection Date: 9/20/2017 10:15:00 AM

Lab ID: 1709B73-001

Matrix: AQUEOUS

Received Date: 9/21/2017 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Toluene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Ethylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Naphthalene	ND	2.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1-Methylnaphthalene	ND	4.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
2-Methylnaphthalene	ND	4.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Acetone	ND	10		µg/L	1	10/3/2017 11:35:00 AM	A46072
Bromobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Bromodichloromethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Bromoform	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Bromomethane	ND	3.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
2-Butanone	ND	10		µg/L	1	10/3/2017 11:35:00 AM	A46072
Carbon disulfide	ND	10		µg/L	1	10/3/2017 11:35:00 AM	A46072
Carbon Tetrachloride	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Chlorobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Chloroethane	ND	2.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Chloroform	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Chloromethane	ND	3.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
2-Chlorotoluene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
4-Chlorotoluene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
cis-1,2-DCE	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Dibromochloromethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Dibromomethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,1-Dichloroethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,1-Dichloroethene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2-Dichloropropane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,3-Dichloropropane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
2,2-Dichloropropane	ND	2.0		µg/L	1	10/3/2017 11:35:00 AM	A46072

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	Page 1 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1709B73

Date Reported: 10/4/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: MUDGE B 12R

Collection Date: 9/20/2017 10:15:00 AM

Lab ID: 1709B73-001

Matrix: AQUEOUS

Received Date: 9/21/2017 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Hexachlorobutadiene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
2-Hexanone	ND	10		µg/L	1	10/3/2017 11:35:00 AM	A46072
Isopropylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
4-Isopropyltoluene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
4-Methyl-2-pentanone	ND	10		µg/L	1	10/3/2017 11:35:00 AM	A46072
Methylene Chloride	ND	3.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
n-Butylbenzene	ND	3.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
n-Propylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
sec-Butylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Styrene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
tert-Butylbenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
trans-1,2-DCE	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Trichlorofluoromethane	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Vinyl chloride	ND	1.0		µg/L	1	10/3/2017 11:35:00 AM	A46072
Xylenes, Total	ND	1.5		µg/L	1	10/3/2017 11:35:00 AM	A46072
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	10/3/2017 11:35:00 AM	A46072
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	10/3/2017 11:35:00 AM	A46072
Surr: Dibromofluoromethane	106	70-130		%Rec	1	10/3/2017 11:35:00 AM	A46072
Surr: Toluene-d8	99.8	70-130		%Rec	1	10/3/2017 11:35:00 AM	A46072

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	Page 2 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1709B73

Date Reported: 10/4/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B 12R

Collection Date: 9/20/2017 11:45:00 AM

Lab ID: 1709B73-002

Matrix: AQUEOUS

Received Date: 9/21/2017 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	140	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Toluene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Ethylbenzene	350	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2,4-Trimethylbenzene	98	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,3,5-Trimethylbenzene	55	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Naphthalene	ND	10		µg/L	5	10/3/2017 12:23:00 PM	A46072
1-Methylnaphthalene	ND	20		µg/L	5	10/3/2017 12:23:00 PM	A46072
2-Methylnaphthalene	ND	20		µg/L	5	10/3/2017 12:23:00 PM	A46072
Acetone	ND	50		µg/L	5	10/3/2017 12:23:00 PM	A46072
Bromobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Bromodichloromethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Bromoform	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Bromomethane	ND	15		µg/L	5	10/3/2017 12:23:00 PM	A46072
2-Butanone	ND	50		µg/L	5	10/3/2017 12:23:00 PM	A46072
Carbon disulfide	ND	50		µg/L	5	10/3/2017 12:23:00 PM	A46072
Carbon Tetrachloride	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Chlorobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Chloroethane	ND	10		µg/L	5	10/3/2017 12:23:00 PM	A46072
Chloroform	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Chloromethane	ND	15		µg/L	5	10/3/2017 12:23:00 PM	A46072
2-Chlorotoluene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
4-Chlorotoluene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
cis-1,2-DCE	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	10/3/2017 12:23:00 PM	A46072
Dibromochloromethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Dibromomethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2-Dichlorobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,3-Dichlorobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,4-Dichlorobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Dichlorodifluoromethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,1-Dichloroethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,1-Dichloroethene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2-Dichloropropane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,3-Dichloropropane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
2,2-Dichloropropane	ND	10		µg/L	5	10/3/2017 12:23:00 PM	A46072

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	Page 3 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1709B73

Date Reported: 10/4/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B 12R

Collection Date: 9/20/2017 11:45:00 AM

Lab ID: 1709B73-002

Matrix: AQUEOUS

Received Date: 9/21/2017 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Hexachlorobutadiene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
2-Hexanone	ND	50		µg/L	5	10/3/2017 12:23:00 PM	A46072
Isopropylbenzene	22	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
4-Isopropyltoluene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
4-Methyl-2-pentanone	ND	50		µg/L	5	10/3/2017 12:23:00 PM	A46072
Methylene Chloride	ND	15		µg/L	5	10/3/2017 12:23:00 PM	A46072
n-Butylbenzene	ND	15		µg/L	5	10/3/2017 12:23:00 PM	A46072
n-Propylbenzene	17	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
sec-Butylbenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Styrene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
tert-Butylbenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	10/3/2017 12:23:00 PM	A46072
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
trans-1,2-DCE	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,1,1-Trichloroethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,1,2-Trichloroethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Trichloroethene (TCE)	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Trichlorofluoromethane	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
1,2,3-Trichloropropane	ND	10		µg/L	5	10/3/2017 12:23:00 PM	A46072
Vinyl chloride	ND	5.0		µg/L	5	10/3/2017 12:23:00 PM	A46072
Xylenes, Total	400	7.5		µg/L	5	10/3/2017 12:23:00 PM	A46072
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	5	10/3/2017 12:23:00 PM	A46072
Surr: 4-Bromofluorobenzene	98.4	70-130		%Rec	5	10/3/2017 12:23:00 PM	A46072
Surr: Dibromofluoromethane	110	70-130		%Rec	5	10/3/2017 12:23:00 PM	A46072
Surr: Toluene-d8	101	70-130		%Rec	5	10/3/2017 12:23:00 PM	A46072

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	Page 4 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1709B73

Date Reported: 10/4/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B 12R

Collection Date: 9/20/2017 11:00:00 AM

Lab ID: 1709B73-003

Matrix: AQUEOUS

Received Date: 9/21/2017 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	7.6	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Toluene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Ethylbenzene	87	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2,4-Trimethylbenzene	9.3	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,3,5-Trimethylbenzene	2.7	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Naphthalene	4.1	4.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1-Methylnaphthalene	ND	8.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
2-Methylnaphthalene	ND	8.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Acetone	ND	20		µg/L	2	10/3/2017 12:46:00 PM	A46072
Bromobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Bromodichloromethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Bromoform	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Bromomethane	ND	6.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
2-Butanone	ND	20		µg/L	2	10/3/2017 12:46:00 PM	A46072
Carbon disulfide	ND	20		µg/L	2	10/3/2017 12:46:00 PM	A46072
Carbon Tetrachloride	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Chlorobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Chloroethane	ND	4.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Chloroform	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Chloromethane	ND	6.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
2-Chlorotoluene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
4-Chlorotoluene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
cis-1,2-DCE	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Dibromochloromethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Dibromomethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2-Dichlorobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,3-Dichlorobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,4-Dichlorobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Dichlorodifluoromethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,1-Dichloroethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,1-Dichloroethene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2-Dichloropropane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,3-Dichloropropane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
2,2-Dichloropropane	ND	4.0		µg/L	2	10/3/2017 12:46:00 PM	A46072

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	Page 5 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1709B73

Date Reported: 10/4/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B 12R

Collection Date: 9/20/2017 11:00:00 AM

Lab ID: 1709B73-003

Matrix: AQUEOUS

Received Date: 9/21/2017 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Hexachlorobutadiene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
2-Hexanone	ND	20		µg/L	2	10/3/2017 12:46:00 PM	A46072
Isopropylbenzene	5.6	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
4-Isopropyltoluene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
4-Methyl-2-pentanone	ND	20		µg/L	2	10/3/2017 12:46:00 PM	A46072
Methylene Chloride	ND	6.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
n-Butylbenzene	ND	6.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
n-Propylbenzene	3.9	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
sec-Butylbenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Styrene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
tert-Butylbenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
trans-1,2-DCE	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,1,1-Trichloroethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,1,2-Trichloroethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Trichloroethene (TCE)	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Trichlorofluoromethane	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
1,2,3-Trichloropropane	ND	4.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Vinyl chloride	ND	2.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Xylenes, Total	15	3.0		µg/L	2	10/3/2017 12:46:00 PM	A46072
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	2	10/3/2017 12:46:00 PM	A46072
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	2	10/3/2017 12:46:00 PM	A46072
Surr: Dibromofluoromethane	110	70-130		%Rec	2	10/3/2017 12:46:00 PM	A46072
Surr: Toluene-d8	99.5	70-130		%Rec	2	10/3/2017 12:46:00 PM	A46072

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	Page 6 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1712D58

Date Reported: 12/29/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#1

Project: MUDGE B 12R

Collection Date: 12/20/2017 12:45:00 PM

Lab ID: 1712D58-001

Matrix: AQUEOUS

Received Date: 12/22/2017 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Toluene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Ethylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Naphthalene	ND	2.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1-Methylnaphthalene	ND	4.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
2-Methylnaphthalene	ND	4.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Acetone	ND	10		µg/L	1	12/27/2017 12:30:00 AM	B48023
Bromobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Bromodichloromethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Bromoform	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Bromomethane	ND	3.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
2-Butanone	ND	10		µg/L	1	12/27/2017 12:30:00 AM	B48023
Carbon disulfide	ND	10		µg/L	1	12/27/2017 12:30:00 AM	B48023
Carbon Tetrachloride	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Chlorobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Chloroethane	ND	2.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Chloroform	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Chloromethane	ND	3.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
2-Chlorotoluene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
4-Chlorotoluene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
cis-1,2-DCE	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Dibromochloromethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Dibromomethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,1-Dichloroethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,1-Dichloroethene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2-Dichloropropane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,3-Dichloropropane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
2,2-Dichloropropane	ND	2.0		µg/L	1	12/27/2017 12:30:00 AM	B48023

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1712D58

Date Reported: 12/29/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#1

Project: MUDGE B 12R

Collection Date: 12/20/2017 12:45:00 PM

Lab ID: 1712D58-001

Matrix: AQUEOUS

Received Date: 12/22/2017 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Hexachlorobutadiene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
2-Hexanone	ND	10		µg/L	1	12/27/2017 12:30:00 AM	B48023
Isopropylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
4-Isopropyltoluene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
4-Methyl-2-pentanone	ND	10		µg/L	1	12/27/2017 12:30:00 AM	B48023
Methylene Chloride	ND	3.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
n-Butylbenzene	ND	3.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
n-Propylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
sec-Butylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Styrene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
tert-Butylbenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
trans-1,2-DCE	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Trichlorofluoromethane	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Vinyl chloride	ND	1.0		µg/L	1	12/27/2017 12:30:00 AM	B48023
Xylenes, Total	ND	1.5		µg/L	1	12/27/2017 12:30:00 AM	B48023
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	12/27/2017 12:30:00 AM	B48023
Surr: 4-Bromofluorobenzene	94.0	70-130		%Rec	1	12/27/2017 12:30:00 AM	B48023
Surr: Dibromofluoromethane	106	70-130		%Rec	1	12/27/2017 12:30:00 AM	B48023
Surr: Toluene-d8	97.0	70-130		%Rec	1	12/27/2017 12:30:00 AM	B48023

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1712D58

Date Reported: 12/29/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: MUDGE B 12R

Collection Date: 12/20/2017 2:50:00 PM

Lab ID: 1712D58-002

Matrix: AQUEOUS

Received Date: 12/22/2017 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	160	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Toluene	11	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Ethylbenzene	190	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2,4-Trimethylbenzene	230	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,3,5-Trimethylbenzene	120	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Naphthalene	12	10		µg/L	5	12/27/2017 12:53:00 AM	B48023
1-Methylnaphthalene	ND	20		µg/L	5	12/27/2017 12:53:00 AM	B48023
2-Methylnaphthalene	ND	20		µg/L	5	12/27/2017 12:53:00 AM	B48023
Acetone	ND	50		µg/L	5	12/27/2017 12:53:00 AM	B48023
Bromobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Bromodichloromethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Bromoform	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Bromomethane	ND	15		µg/L	5	12/27/2017 12:53:00 AM	B48023
2-Butanone	63	50		µg/L	5	12/27/2017 12:53:00 AM	B48023
Carbon disulfide	ND	50		µg/L	5	12/27/2017 12:53:00 AM	B48023
Carbon Tetrachloride	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Chlorobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Chloroethane	ND	10		µg/L	5	12/27/2017 12:53:00 AM	B48023
Chloroform	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Chloromethane	ND	15		µg/L	5	12/27/2017 12:53:00 AM	B48023
2-Chlorotoluene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
4-Chlorotoluene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
cis-1,2-DCE	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	12/27/2017 12:53:00 AM	B48023
Dibromochloromethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Dibromomethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2-Dichlorobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,3-Dichlorobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,4-Dichlorobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Dichlorodifluoromethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,1-Dichloroethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,1-Dichloroethene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2-Dichloropropane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,3-Dichloropropane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
2,2-Dichloropropane	ND	10		µg/L	5	12/27/2017 12:53:00 AM	B48023

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1712D58

Date Reported: 12/29/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: MUDGE B 12R

Collection Date: 12/20/2017 2:50:00 PM

Lab ID: 1712D58-002

Matrix: AQUEOUS

Received Date: 12/22/2017 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Hexachlorobutadiene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
2-Hexanone	ND	50		µg/L	5	12/27/2017 12:53:00 AM	B48023
Isopropylbenzene	27	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
4-Isopropyltoluene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
4-Methyl-2-pentanone	ND	50		µg/L	5	12/27/2017 12:53:00 AM	B48023
Methylene Chloride	ND	15		µg/L	5	12/27/2017 12:53:00 AM	B48023
n-Butylbenzene	ND	15		µg/L	5	12/27/2017 12:53:00 AM	B48023
n-Propylbenzene	23	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
sec-Butylbenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Styrene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
tert-Butylbenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	12/27/2017 12:53:00 AM	B48023
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
trans-1,2-DCE	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,1,1-Trichloroethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,1,2-Trichloroethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Trichloroethene (TCE)	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Trichlorofluoromethane	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
1,2,3-Trichloropropane	ND	10		µg/L	5	12/27/2017 12:53:00 AM	B48023
Vinyl chloride	ND	5.0		µg/L	5	12/27/2017 12:53:00 AM	B48023
Xylenes, Total	1300	75		µg/L	50	12/27/2017 4:38:00 PM	R48055
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	5	12/27/2017 12:53:00 AM	B48023
Surr: 4-Bromofluorobenzene	94.1	70-130		%Rec	5	12/27/2017 12:53:00 AM	B48023
Surr: Dibromofluoromethane	106	70-130		%Rec	5	12/27/2017 12:53:00 AM	B48023
Surr: Toluene-d8	100	70-130		%Rec	5	12/27/2017 12:53:00 AM	B48023

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1712D58

Date Reported: 12/29/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: MUDGE B 12R

Collection Date: 12/20/2017 1:40:00 PM

Lab ID: 1712D58-003

Matrix: AQUEOUS

Received Date: 12/22/2017 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	9.7	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Toluene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Ethylbenzene	39	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2,4-Trimethylbenzene	12	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Naphthalene	ND	4.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1-Methylnaphthalene	ND	8.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
2-Methylnaphthalene	ND	8.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Acetone	ND	20		µg/L	2	12/27/2017 1:17:00 AM	B48023
Bromobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Bromodichloromethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Bromoform	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Bromomethane	ND	6.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
2-Butanone	ND	20		µg/L	2	12/27/2017 1:17:00 AM	B48023
Carbon disulfide	ND	20		µg/L	2	12/27/2017 1:17:00 AM	B48023
Carbon Tetrachloride	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Chlorobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Chloroethane	ND	4.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Chloroform	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Chloromethane	ND	6.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
2-Chlorotoluene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
4-Chlorotoluene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
cis-1,2-DCE	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Dibromochloromethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Dibromomethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2-Dichlorobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,3-Dichlorobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,4-Dichlorobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Dichlorodifluoromethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,1-Dichloroethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,1-Dichloroethene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2-Dichloropropane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,3-Dichloropropane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
2,2-Dichloropropane	ND	4.0		µg/L	2	12/27/2017 1:17:00 AM	B48023

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1712D58

Date Reported: 12/29/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: MUDGE B 12R

Collection Date: 12/20/2017 1:40:00 PM

Lab ID: 1712D58-003

Matrix: AQUEOUS

Received Date: 12/22/2017 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Hexachlorobutadiene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
2-Hexanone	ND	20		µg/L	2	12/27/2017 1:17:00 AM	B48023
Isopropylbenzene	4.7	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
4-Isopropyltoluene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
4-Methyl-2-pentanone	ND	20		µg/L	2	12/27/2017 1:17:00 AM	B48023
Methylene Chloride	ND	6.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
n-Butylbenzene	ND	6.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
n-Propylbenzene	3.3	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
sec-Butylbenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Styrene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
tert-Butylbenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
trans-1,2-DCE	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,1,1-Trichloroethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,1,2-Trichloroethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Trichloroethene (TCE)	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Trichlorofluoromethane	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
1,2,3-Trichloropropane	ND	4.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Vinyl chloride	ND	2.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Xylenes, Total	7.4	3.0		µg/L	2	12/27/2017 1:17:00 AM	B48023
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	2	12/27/2017 1:17:00 AM	B48023
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	2	12/27/2017 1:17:00 AM	B48023
Surr: Dibromofluoromethane	106	70-130		%Rec	2	12/27/2017 1:17:00 AM	B48023
Surr: Toluene-d8	98.5	70-130		%Rec	2	12/27/2017 1:17:00 AM	B48023

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1803E79

Date Reported: 4/5/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 3/26/2018 2:25:00 PM

Lab ID: 1803E79-001

Matrix: AQUEOUS

Received Date: 3/28/2018 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES				Analyst: DJF			
Benzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Toluene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Ethylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Naphthalene	ND	2.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1-Methylnaphthalene	ND	4.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
2-Methylnaphthalene	ND	4.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Acetone	ND	10		µg/L	1	4/4/2018 3:34:56 PM	A50328
Bromobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Bromodichloromethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Bromoform	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Bromomethane	ND	3.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
2-Butanone	ND	10		µg/L	1	4/4/2018 3:34:56 PM	A50328
Carbon disulfide	ND	10		µg/L	1	4/4/2018 3:34:56 PM	A50328
Carbon Tetrachloride	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Chlorobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Chloroethane	ND	2.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Chloroform	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Chloromethane	ND	3.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
2-Chlorotoluene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
4-Chlorotoluene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
cis-1,2-DCE	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Dibromochloromethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Dibromomethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,1-Dichloroethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,1-Dichloroethene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2-Dichloropropane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,3-Dichloropropane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
2,2-Dichloropropane	ND	2.0		µg/L	1	4/4/2018 3:34:56 PM	A50328

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1803E79

Date Reported: 4/5/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 3/26/2018 2:25:00 PM

Lab ID: 1803E79-001

Matrix: AQUEOUS

Received Date: 3/28/2018 7:15:00 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	4/4/2018 3:34:56 PM	A50328
Hexachlorobutadiene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
2-Hexanone	ND	10		µg/L	1	4/4/2018 3:34:56 PM	A50328
Isopropylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
4-Isopropyltoluene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
4-Methyl-2-pentanone	ND	10		µg/L	1	4/4/2018 3:34:56 PM	A50328
Methylene Chloride	ND	3.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
n-Butylbenzene	ND	3.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
n-Propylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
sec-Butylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Styrene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
tert-Butylbenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
trans-1,2-DCE	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Trichlorofluoromethane	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Vinyl chloride	ND	1.0		µg/L	1	4/4/2018 3:34:56 PM	A50328
Xylenes, Total	ND	1.5		µg/L	1	4/4/2018 3:34:56 PM	A50328
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	4/4/2018 3:34:56 PM	A50328
Surr: 4-Bromofluorobenzene	115	70-130		%Rec	1	4/4/2018 3:34:56 PM	A50328
Surr: Dibromofluoromethane	98.1	70-130		%Rec	1	4/4/2018 3:34:56 PM	A50328
Surr: Toluene-d8	91.1	70-130		%Rec	1	4/4/2018 3:34:56 PM	A50328

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	Page 2 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1803E79

Date Reported: 4/5/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 3/26/2018 4:00:00 PM

Lab ID: 1803E79-002

Matrix: AQUEOUS

Received Date: 3/28/2018 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES				Analyst: DJF			
Benzene	140	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Toluene	11	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Ethylbenzene	220	20		µg/L	20	4/4/2018 4:05:04 PM	A50328
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2,4-Trimethylbenzene	270	20		µg/L	20	4/4/2018 4:05:04 PM	A50328
1,3,5-Trimethylbenzene	40	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Naphthalene	14	4.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1-Methylnaphthalene	10	8.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
2-Methylnaphthalene	19	8.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Acetone	ND	20		µg/L	2	4/4/2018 4:35:00 PM	A50328
Bromobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Bromodichloromethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Bromoform	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Bromomethane	ND	6.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
2-Butanone	ND	20		µg/L	2	4/4/2018 4:35:00 PM	A50328
Carbon disulfide	ND	20		µg/L	2	4/4/2018 4:35:00 PM	A50328
Carbon Tetrachloride	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Chlorobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Chloroethane	ND	4.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Chloroform	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Chloromethane	ND	6.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
2-Chlorotoluene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
4-Chlorotoluene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
cis-1,2-DCE	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Dibromochloromethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Dibromomethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2-Dichlorobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,3-Dichlorobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,4-Dichlorobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Dichlorodifluoromethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,1-Dichloroethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,1-Dichloroethene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2-Dichloropropane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,3-Dichloropropane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
2,2-Dichloropropane	ND	4.0		µg/L	2	4/4/2018 4:35:00 PM	A50328

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1803E79

Date Reported: 4/5/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 3/26/2018 4:00:00 PM

Lab ID: 1803E79-002

Matrix: AQUEOUS

Received Date: 3/28/2018 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Hexachlorobutadiene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
2-Hexanone	ND	20		µg/L	2	4/4/2018 4:35:00 PM	A50328
Isopropylbenzene	34	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
4-Isopropyltoluene	7.7	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
4-Methyl-2-pentanone	ND	20		µg/L	2	4/4/2018 4:35:00 PM	A50328
Methylene Chloride	ND	6.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
n-Butylbenzene	ND	6.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
n-Propylbenzene	30	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
sec-Butylbenzene	7.4	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Styrene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
tert-Butylbenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
trans-1,2-DCE	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,1,1-Trichloroethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,1,2-Trichloroethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Trichloroethene (TCE)	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Trichlorofluoromethane	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
1,2,3-Trichloropropane	ND	4.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Vinyl chloride	ND	2.0		µg/L	2	4/4/2018 4:35:00 PM	A50328
Xylenes, Total	780	30		µg/L	20	4/4/2018 4:05:04 PM	A50328
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	2	4/4/2018 4:35:00 PM	A50328
Surr: 4-Bromofluorobenzene	99.9	70-130		%Rec	2	4/4/2018 4:35:00 PM	A50328
Surr: Dibromofluoromethane	98.2	70-130		%Rec	2	4/4/2018 4:35:00 PM	A50328
Surr: Toluene-d8	102	70-130		%Rec	2	4/4/2018 4:35:00 PM	A50328

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1803E79

Date Reported: 4/5/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 3/26/2018 3:20:00 PM

Lab ID: 1803E79-003

Matrix: AQUEOUS

Received Date: 3/28/2018 7:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	7.7	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Toluene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Ethylbenzene	7.3	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2,4-Trimethylbenzene	4.1	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Naphthalene	ND	2.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1-Methylnaphthalene	ND	4.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
2-Methylnaphthalene	ND	4.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Acetone	ND	10		µg/L	1	4/4/2018 5:04:32 PM	A50328
Bromobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Bromodichloromethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Bromoform	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Bromomethane	ND	3.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
2-Butanone	ND	10		µg/L	1	4/4/2018 5:04:32 PM	A50328
Carbon disulfide	ND	10		µg/L	1	4/4/2018 5:04:32 PM	A50328
Carbon Tetrachloride	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Chlorobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Chloroethane	ND	2.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Chloroform	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Chloromethane	ND	3.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
2-Chlorotoluene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
4-Chlorotoluene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
cis-1,2-DCE	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Dibromochloromethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Dibromomethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,1-Dichloroethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,1-Dichloroethene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2-Dichloropropane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,3-Dichloropropane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
2,2-Dichloropropane	ND	2.0		µg/L	1	4/4/2018 5:04:32 PM	A50328

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	Page 5 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1803E79

Date Reported: 4/5/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 3/26/2018 3:20:00 PM

Lab ID: 1803E79-003

Matrix: AQUEOUS

Received Date: 3/28/2018 7:15:00 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	4/4/2018 5:04:32 PM	A50328
Hexachlorobutadiene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
2-Hexanone	ND	10		µg/L	1	4/4/2018 5:04:32 PM	A50328
Isopropylbenzene	1.3	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
4-Isopropyltoluene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
4-Methyl-2-pentanone	ND	10		µg/L	1	4/4/2018 5:04:32 PM	A50328
Methylene Chloride	ND	3.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
n-Butylbenzene	ND	3.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
n-Propylbenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
sec-Butylbenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Styrene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
tert-Butylbenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
trans-1,2-DCE	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Trichlorofluoromethane	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Vinyl chloride	ND	1.0		µg/L	1	4/4/2018 5:04:32 PM	A50328
Xylenes, Total	3.2	1.5		µg/L	1	4/4/2018 5:04:32 PM	A50328
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	4/4/2018 5:04:32 PM	A50328
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	4/4/2018 5:04:32 PM	A50328
Surr: Dibromofluoromethane	98.6	70-130		%Rec	1	4/4/2018 5:04:32 PM	A50328
Surr: Toluene-d8	93.3	70-130		%Rec	1	4/4/2018 5:04:32 PM	A50328

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	Page 6 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1806I49

Date Reported: 7/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 6/28/2018 7:15:00 AM

Lab ID: 1806I49-001

Matrix: AQUEOUS

Received Date: 6/30/2018 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Toluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Ethylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Naphthalene	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1-Methylnaphthalene	ND	4.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Methylnaphthalene	ND	4.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Acetone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromodichloromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromoform	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromomethane	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Butanone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Carbon disulfide	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Carbon Tetrachloride	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chloroethane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chloroform	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chloromethane	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Chlorotoluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
4-Chlorotoluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
cis-1,2-DCE	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Dibromochloromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Dibromomethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1-Dichloroethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1-Dichloroethene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dichloropropane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,3-Dichloropropane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2,2-Dichloropropane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1806I49

Date Reported: 7/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 6/28/2018 7:15:00 AM

Lab ID: 1806I49-001

Matrix: AQUEOUS

Received Date: 6/30/2018 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Hexachlorobutadiene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Hexanone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Isopropylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
4-Isopropyltoluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
4-Methyl-2-pentanone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Methylene Chloride	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
n-Butylbenzene	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
n-Propylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
sec-Butylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Styrene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
tert-Butylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
trans-1,2-DCE	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Trichlorofluoromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Vinyl chloride	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Xylenes, Total	ND	1.5		µg/L	1	7/6/2018 6:22:00 PM	R52521
Surr: 1,2-Dichloroethane-d4	99.0	70-130		%Rec	1	7/6/2018 6:22:00 PM	R52521
Surr: 4-Bromofluorobenzene	95.8	70-130		%Rec	1	7/6/2018 6:22:00 PM	R52521
Surr: Dibromofluoromethane	94.1	70-130		%Rec	1	7/6/2018 6:22:00 PM	R52521
Surr: Toluene-d8	96.4	70-130		%Rec	1	7/6/2018 6:22:00 PM	R52521

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1806I49

Date Reported: 7/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 6/28/2018 8:55:00 AM

Lab ID: 1806I49-002

Matrix: AQUEOUS

Received Date: 6/30/2018 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	110	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Toluene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Ethylbenzene	270	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,4-Trimethylbenzene	190	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,3,5-Trimethylbenzene	7.9	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Naphthalene	14	10		µg/L	5	7/6/2018 3:55:00 PM	R52521
1-Methylnaphthalene	ND	20		µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Methylnaphthalene	ND	20		µg/L	5	7/6/2018 3:55:00 PM	R52521
Acetone	ND	50		µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromodichloromethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromoform	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromomethane	ND	15		µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Butanone	ND	50		µg/L	5	7/6/2018 3:55:00 PM	R52521
Carbon disulfide	ND	50		µg/L	5	7/6/2018 3:55:00 PM	R52521
Carbon Tetrachloride	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Chlorobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Chloroethane	ND	10		µg/L	5	7/6/2018 3:55:00 PM	R52521
Chloroform	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Chloromethane	ND	15		µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Chlorotoluene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
4-Chlorotoluene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
cis-1,2-DCE	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	7/6/2018 3:55:00 PM	R52521
Dibromochloromethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Dibromomethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dichlorobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,3-Dichlorobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,4-Dichlorobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Dichlorodifluoromethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1-Dichloroethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1-Dichloroethene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dichloropropane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,3-Dichloropropane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
2,2-Dichloropropane	ND	10		µg/L	5	7/6/2018 3:55:00 PM	R52521

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	Page 3 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1806I49

Date Reported: 7/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 6/28/2018 8:55:00 AM

Lab ID: 1806I49-002

Matrix: AQUEOUS

Received Date: 6/30/2018 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Hexachlorobutadiene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Hexanone	ND	50		µg/L	5	7/6/2018 3:55:00 PM	R52521
Isopropylbenzene	30	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
4-Isopropyltoluene	5.5	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
4-Methyl-2-pentanone	ND	50		µg/L	5	7/6/2018 3:55:00 PM	R52521
Methylene Chloride	ND	15		µg/L	5	7/6/2018 3:55:00 PM	R52521
n-Butylbenzene	ND	15		µg/L	5	7/6/2018 3:55:00 PM	R52521
n-Propylbenzene	30	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
sec-Butylbenzene	5.5	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Styrene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
tert-Butylbenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	7/6/2018 3:55:00 PM	R52521
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
trans-1,2-DCE	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,1-Trichloroethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,2-Trichloroethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Trichloroethene (TCE)	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Trichlorofluoromethane	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,3-Trichloropropane	ND	10		µg/L	5	7/6/2018 3:55:00 PM	R52521
Vinyl chloride	ND	5.0		µg/L	5	7/6/2018 3:55:00 PM	R52521
Xylenes, Total	620	7.5		µg/L	5	7/6/2018 3:55:00 PM	R52521
Surr: 1,2-Dichloroethane-d4	96.5	70-130		%Rec	5	7/6/2018 3:55:00 PM	R52521
Surr: 4-Bromofluorobenzene	97.6	70-130		%Rec	5	7/6/2018 3:55:00 PM	R52521
Surr: Dibromofluoromethane	93.8	70-130		%Rec	5	7/6/2018 3:55:00 PM	R52521
Surr: Toluene-d8	100	70-130		%Rec	5	7/6/2018 3:55:00 PM	R52521

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	Page 4 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1806I49

Date Reported: 7/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 6/28/2018 8:05:00 AM

Lab ID: 1806I49-003

Matrix: AQUEOUS

Received Date: 6/30/2018 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	9.1	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Toluene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Ethylbenzene	1.8	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,4-Trimethylbenzene	3.5	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Naphthalene	ND	2.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1-Methylnaphthalene	ND	4.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Methylnaphthalene	ND	4.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Acetone	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Bromobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Bromodichloromethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Bromoform	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Bromomethane	ND	3.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Butanone	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Carbon disulfide	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Carbon Tetrachloride	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Chlorobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Chloroethane	ND	2.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Chloroform	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Chloromethane	ND	3.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Chlorotoluene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Chlorotoluene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
cis-1,2-DCE	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Dibromochloromethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Dibromomethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1-Dichloroethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1-Dichloroethene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dichloropropane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,3-Dichloropropane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
2,2-Dichloropropane	ND	2.0		µg/L	1	7/6/2018 5:08:00 PM	R52521

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1806I49

Date Reported: 7/9/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 6/28/2018 8:05:00 AM

Lab ID: 1806I49-003

Matrix: AQUEOUS

Received Date: 6/30/2018 10:15:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Hexachlorobutadiene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Hexanone	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Isopropylbenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Isopropyltoluene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Methyl-2-pentanone	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Methylene Chloride	ND	3.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
n-Butylbenzene	ND	3.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
n-Propylbenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
sec-Butylbenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Styrene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
tert-Butylbenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
trans-1,2-DCE	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,1-Trichloroethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,2-Trichloroethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Trichloroethene (TCE)	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Trichlorofluoromethane	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,3-Trichloropropane	ND	2.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Vinyl chloride	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Xylenes, Total	4.7	1.5		µg/L	1	7/6/2018 5:08:00 PM	R52521
Surr: 1,2-Dichloroethane-d4	97.3	70-130		%Rec	1	7/6/2018 5:08:00 PM	R52521
Surr: 4-Bromofluorobenzene	99.1	70-130		%Rec	1	7/6/2018 5:08:00 PM	R52521
Surr: Dibromofluoromethane	92.3	70-130		%Rec	1	7/6/2018 5:08:00 PM	R52521
Surr: Toluene-d8	97.3	70-130		%Rec	1	7/6/2018 5:08:00 PM	R52521

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	Page 6 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1809H33

Date Reported: 10/4/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 9/26/2018 9:05:00 AM

Lab ID: 1809H33-001

Matrix: AQUEOUS

Received Date: 9/28/2018 8:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Toluene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Ethylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Naphthalene	ND	2.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1-Methylnaphthalene	ND	4.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Methylnaphthalene	ND	4.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Acetone	ND	10		µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromodichloromethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromoform	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromomethane	ND	3.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Butanone	ND	10		µg/L	1	10/1/2018 4:35:00 PM	R54556
Carbon disulfide	ND	10		µg/L	1	10/1/2018 4:35:00 PM	R54556
Carbon Tetrachloride	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Chlorobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Chloroethane	ND	2.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Chloroform	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Chloromethane	ND	3.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Chlorotoluene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
4-Chlorotoluene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
cis-1,2-DCE	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Dibromochloromethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Dibromomethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1-Dichloroethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1-Dichloroethene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dichloropropane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,3-Dichloropropane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
2,2-Dichloropropane	ND	2.0		µg/L	1	10/1/2018 4:35:00 PM	R54556

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1809H33

Date Reported: 10/4/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 9/26/2018 9:05:00 AM

Lab ID: 1809H33-001

Matrix: AQUEOUS

Received Date: 9/28/2018 8:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Hexachlorobutadiene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Hexanone	ND	10		µg/L	1	10/1/2018 4:35:00 PM	R54556
Isopropylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
4-Isopropyltoluene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
4-Methyl-2-pentanone	ND	10		µg/L	1	10/1/2018 4:35:00 PM	R54556
Methylene Chloride	ND	3.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
n-Butylbenzene	ND	3.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
n-Propylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
sec-Butylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Styrene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
tert-Butylbenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
trans-1,2-DCE	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Trichlorofluoromethane	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Vinyl chloride	ND	1.0		µg/L	1	10/1/2018 4:35:00 PM	R54556
Xylenes, Total	ND	1.5		µg/L	1	10/1/2018 4:35:00 PM	R54556
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	1	10/1/2018 4:35:00 PM	R54556
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	10/1/2018 4:35:00 PM	R54556
Surr: Dibromofluoromethane	113	70-130		%Rec	1	10/1/2018 4:35:00 PM	R54556
Surr: Toluene-d8	97.0	70-130		%Rec	1	10/1/2018 4:35:00 PM	R54556

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 2 of 9

Analytical Report

Lab Order 1809H33

Date Reported: 10/4/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 9/26/2018 10:50:00 AM

Lab ID: 1809H33-002

Matrix: AQUEOUS

Received Date: 9/28/2018 8:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	140	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Toluene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Ethylbenzene	320	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,4-Trimethylbenzene	190	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,3,5-Trimethylbenzene	5.9	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Naphthalene	ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
1-Methylnaphthalene	ND	20		µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Methylnaphthalene	ND	20		µg/L	5	10/1/2018 5:00:00 PM	R54556
Acetone	ND	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromodichloromethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromoform	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromomethane	ND	15		µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Butanone	54	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Carbon disulfide	ND	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Carbon Tetrachloride	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Chlorobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Chloroethane	ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
Chloroform	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Chloromethane	ND	15		µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Chlorotoluene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
4-Chlorotoluene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
cis-1,2-DCE	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
Dibromochloromethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Dibromomethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dichlorobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,3-Dichlorobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,4-Dichlorobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Dichlorodifluoromethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1-Dichloroethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1-Dichloroethene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dichloropropane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,3-Dichloropropane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
2,2-Dichloropropane	ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556

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	Page 3 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1809H33

Date Reported: 10/4/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 9/26/2018 10:50:00 AM

Lab ID: 1809H33-002

Matrix: AQUEOUS

Received Date: 9/28/2018 8:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Hexachlorobutadiene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Hexanone	ND	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Isopropylbenzene	31	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
4-Isopropyltoluene	6.6	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
4-Methyl-2-pentanone	ND	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Methylene Chloride	ND	15		µg/L	5	10/1/2018 5:00:00 PM	R54556
n-Butylbenzene	ND	15		µg/L	5	10/1/2018 5:00:00 PM	R54556
n-Propylbenzene	34	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
sec-Butylbenzene	7.4	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Styrene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
tert-Butylbenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
trans-1,2-DCE	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,1-Trichloroethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,2-Trichloroethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Trichloroethene (TCE)	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Trichlorofluoromethane	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,3-Trichloropropane	ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
Vinyl chloride	ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Xylenes, Total	620	7.5		µg/L	5	10/1/2018 5:00:00 PM	R54556
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556
Surr: Dibromofluoromethane	108	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556
Surr: Toluene-d8	107	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1809H33

Date Reported: 10/4/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 9/26/2018 10:00:00 AM

Lab ID: 1809H33-003

Matrix: AQUEOUS

Received Date: 9/28/2018 8:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	13	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Toluene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Ethylbenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2,4-Trimethylbenzene	3.4	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Naphthalene	ND	2.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1-Methylnaphthalene	ND	4.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Methylnaphthalene	ND	4.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Acetone	ND	10		µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromodichloromethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromoform	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromomethane	ND	3.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Butanone	ND	10		µg/L	1	10/1/2018 5:24:00 PM	R54556
Carbon disulfide	ND	10		µg/L	1	10/1/2018 5:24:00 PM	R54556
Carbon Tetrachloride	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Chlorobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Chloroethane	ND	2.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Chloroform	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Chloromethane	ND	3.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Chlorotoluene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
4-Chlorotoluene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
cis-1,2-DCE	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Dibromochloromethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Dibromomethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dichlorobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,3-Dichlorobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,4-Dichlorobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Dichlorodifluoromethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1-Dichloroethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1-Dichloroethene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dichloropropane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,3-Dichloropropane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
2,2-Dichloropropane	ND	2.0		µg/L	1	10/1/2018 5:24:00 PM	R54556

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	Page 5 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1809H33

Date Reported: 10/4/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 9/26/2018 10:00:00 AM

Lab ID: 1809H33-003

Matrix: AQUEOUS

Received Date: 9/28/2018 8:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Hexachlorobutadiene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Hexanone	ND	10		µg/L	1	10/1/2018 5:24:00 PM	R54556
Isopropylbenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
4-Isopropyltoluene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
4-Methyl-2-pentanone	ND	10		µg/L	1	10/1/2018 5:24:00 PM	R54556
Methylene Chloride	ND	3.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
n-Butylbenzene	ND	3.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
n-Propylbenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
sec-Butylbenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Styrene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
tert-Butylbenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
trans-1,2-DCE	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1,1-Trichloroethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1,2-Trichloroethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Trichloroethene (TCE)	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Trichlorofluoromethane	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2,3-Trichloropropane	ND	2.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Vinyl chloride	ND	1.0		µg/L	1	10/1/2018 5:24:00 PM	R54556
Xylenes, Total	ND	1.5		µg/L	1	10/1/2018 5:24:00 PM	R54556
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	10/1/2018 5:24:00 PM	R54556
Surr: 4-Bromofluorobenzene	99.2	70-130		%Rec	1	10/1/2018 5:24:00 PM	R54556
Surr: Dibromofluoromethane	110	70-130		%Rec	1	10/1/2018 5:24:00 PM	R54556
Surr: Toluene-d8	99.5	70-130		%Rec	1	10/1/2018 5:24:00 PM	R54556

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Analytical Report

Lab Order 1812B50

Date Reported: 12/26/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 12/19/2018 10:30:00 AM

Lab ID: 1812B50-001

Matrix: AQUEOUS

Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Toluene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Ethylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Naphthalene	ND	2.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1-Methylnaphthalene	ND	4.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
2-Methylnaphthalene	ND	4.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Acetone	ND	10		µg/L	1	12/21/2018 6:34:00 AM	W56508
Bromobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Bromodichloromethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Bromoform	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Bromomethane	ND	3.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
2-Butanone	ND	10		µg/L	1	12/21/2018 6:34:00 AM	W56508
Carbon disulfide	ND	10		µg/L	1	12/21/2018 6:34:00 AM	W56508
Carbon Tetrachloride	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Chlorobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Chloroethane	ND	2.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Chloroform	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Chloromethane	ND	3.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
2-Chlorotoluene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
4-Chlorotoluene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
cis-1,2-DCE	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Dibromochloromethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Dibromomethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,1-Dichloroethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,1-Dichloroethene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2-Dichloropropane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,3-Dichloropropane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
2,2-Dichloropropane	ND	2.0		µg/L	1	12/21/2018 6:34:00 AM	W56508

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	Page 1 of 9
	D Sample Diluted Due to Matrix	E Value above quantitation range	
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits	
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative Limit	RL Reporting Detection Limit	
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812B50

Date Reported: 12/26/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #1

Project: Mudge B 12R

Collection Date: 12/19/2018 10:30:00 AM

Lab ID: 1812B50-001

Matrix: AQUEOUS

Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Hexachlorobutadiene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
2-Hexanone	ND	10		µg/L	1	12/21/2018 6:34:00 AM	W56508
Isopropylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
4-Isopropyltoluene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
4-Methyl-2-pentanone	ND	10		µg/L	1	12/21/2018 6:34:00 AM	W56508
Methylene Chloride	ND	3.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
n-Butylbenzene	ND	3.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
n-Propylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
sec-Butylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Styrene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
tert-Butylbenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
trans-1,2-DCE	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Trichlorofluoromethane	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Vinyl chloride	ND	1.0		µg/L	1	12/21/2018 6:34:00 AM	W56508
Xylenes, Total	ND	1.5		µg/L	1	12/21/2018 6:34:00 AM	W56508
Surr: 1,2-Dichloroethane-d4	96.0	70-130		%Rec	1	12/21/2018 6:34:00 AM	W56508
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	12/21/2018 6:34:00 AM	W56508
Surr: Dibromofluoromethane	95.3	70-130		%Rec	1	12/21/2018 6:34:00 AM	W56508
Surr: Toluene-d8	99.7	70-130		%Rec	1	12/21/2018 6:34:00 AM	W56508

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	Page 2 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812B50

Date Reported: 12/26/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 12/19/2018 11:50:00 AM

Lab ID: 1812B50-002

Matrix: AQUEOUS

Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	96	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Toluene	3.6	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Ethylbenzene	98	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2,4-Trimethylbenzene	86	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,3,5-Trimethylbenzene	6.8	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2-Dichloroethane (EDC)	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2-Dibromoethane (EDB)	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Naphthalene	ND	5.0		µg/L	5	12/21/2018 6:58:00 AM	W56508
1-Methylnaphthalene	ND	10		µg/L	5	12/21/2018 6:58:00 AM	W56508
2-Methylnaphthalene	ND	10		µg/L	5	12/21/2018 6:58:00 AM	W56508
Acetone	ND	25		µg/L	5	12/21/2018 6:58:00 AM	W56508
Bromobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Bromodichloromethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Bromoform	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Bromomethane	ND	7.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
2-Butanone	50	25		µg/L	5	12/21/2018 6:58:00 AM	W56508
Carbon disulfide	ND	25		µg/L	5	12/21/2018 6:58:00 AM	W56508
Carbon Tetrachloride	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Chlorobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Chloroethane	ND	5.0		µg/L	5	12/21/2018 6:58:00 AM	W56508
Chloroform	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Chloromethane	ND	7.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
2-Chlorotoluene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
4-Chlorotoluene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
cis-1,2-DCE	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
cis-1,3-Dichloropropene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2-Dibromo-3-chloropropane	ND	5.0		µg/L	5	12/21/2018 6:58:00 AM	W56508
Dibromochloromethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Dibromomethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2-Dichlorobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,3-Dichlorobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,4-Dichlorobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Dichlorodifluoromethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,1-Dichloroethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,1-Dichloroethene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2-Dichloropropane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,3-Dichloropropane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
2,2-Dichloropropane	ND	5.0		µg/L	5	12/21/2018 6:58:00 AM	W56508

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	Page 3 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812B50

Date Reported: 12/26/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 12/19/2018 11:50:00 AM

Lab ID: 1812B50-002

Matrix: AQUEOUS

Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Hexachlorobutadiene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
2-Hexanone	ND	25		µg/L	5	12/21/2018 6:58:00 AM	W56508
Isopropylbenzene	10	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
4-Isopropyltoluene	3.0	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
4-Methyl-2-pentanone	ND	25		µg/L	5	12/21/2018 6:58:00 AM	W56508
Methylene Chloride	ND	7.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
n-Butylbenzene	ND	7.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
n-Propylbenzene	9.4	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
sec-Butylbenzene	3.5	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Styrene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
tert-Butylbenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,1,1,2-Tetrachloroethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	5	12/21/2018 6:58:00 AM	W56508
Tetrachloroethene (PCE)	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
trans-1,2-DCE	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
trans-1,3-Dichloropropene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2,3-Trichlorobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2,4-Trichlorobenzene	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,1,1-Trichloroethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,1,2-Trichloroethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Trichloroethene (TCE)	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Trichlorofluoromethane	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
1,2,3-Trichloropropane	ND	5.0		µg/L	5	12/21/2018 6:58:00 AM	W56508
Vinyl chloride	ND	2.5		µg/L	5	12/21/2018 6:58:00 AM	W56508
Xylenes, Total	280	3.8		µg/L	5	12/21/2018 6:58:00 AM	W56508
Surr: 1,2-Dichloroethane-d4	98.7	70-130		%Rec	5	12/21/2018 6:58:00 AM	W56508
Surr: 4-Bromofluorobenzene	99.6	70-130		%Rec	5	12/21/2018 6:58:00 AM	W56508
Surr: Dibromofluoromethane	95.0	70-130		%Rec	5	12/21/2018 6:58:00 AM	W56508
Surr: Toluene-d8	99.7	70-130		%Rec	5	12/21/2018 6:58:00 AM	W56508

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	Page 4 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812B50

Date Reported: 12/26/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 12/19/2018 11:10:00 AM

Lab ID: 1812B50-003

Matrix: AQUEOUS

Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	15	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Toluene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Ethylbenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2,4-Trimethylbenzene	4.8	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Naphthalene	ND	2.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1-Methylnaphthalene	ND	4.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
2-Methylnaphthalene	ND	4.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Acetone	ND	10		µg/L	1	12/21/2018 7:22:00 AM	W56508
Bromobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Bromodichloromethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Bromoform	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Bromomethane	ND	3.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
2-Butanone	ND	10		µg/L	1	12/21/2018 7:22:00 AM	W56508
Carbon disulfide	ND	10		µg/L	1	12/21/2018 7:22:00 AM	W56508
Carbon Tetrachloride	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Chlorobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Chloroethane	ND	2.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Chloroform	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Chloromethane	ND	3.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
2-Chlorotoluene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
4-Chlorotoluene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
cis-1,2-DCE	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Dibromochloromethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Dibromomethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,1-Dichloroethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,1-Dichloroethene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2-Dichloropropane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,3-Dichloropropane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
2,2-Dichloropropane	ND	2.0		µg/L	1	12/21/2018 7:22:00 AM	W56508

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	Page 5 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1812B50

Date Reported: 12/26/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 12/19/2018 11:10:00 AM

Lab ID: 1812B50-003

Matrix: AQUEOUS

Received Date: 12/20/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Hexachlorobutadiene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
2-Hexanone	ND	10		µg/L	1	12/21/2018 7:22:00 AM	W56508
Isopropylbenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
4-Isopropyltoluene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
4-Methyl-2-pentanone	ND	10		µg/L	1	12/21/2018 7:22:00 AM	W56508
Methylene Chloride	ND	3.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
n-Butylbenzene	ND	3.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
n-Propylbenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
sec-Butylbenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Styrene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
tert-Butylbenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
trans-1,2-DCE	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Trichlorofluoromethane	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Vinyl chloride	ND	1.0		µg/L	1	12/21/2018 7:22:00 AM	W56508
Xylenes, Total	ND	1.5		µg/L	1	12/21/2018 7:22:00 AM	W56508
Surr: 1,2-Dichloroethane-d4	99.1	70-130		%Rec	1	12/21/2018 7:22:00 AM	W56508
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	12/21/2018 7:22:00 AM	W56508
Surr: Dibromofluoromethane	95.1	70-130		%Rec	1	12/21/2018 7:22:00 AM	W56508
Surr: Toluene-d8	99.8	70-130		%Rec	1	12/21/2018 7:22:00 AM	W56508

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	Page 6 of 9
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

Analytical Report

Lab Order 1904022

Date Reported: 4/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: MUDGE B 12R

Collection Date: 3/29/2019 11:05:00 AM

Lab ID: 1904022-001

Matrix: AQUEOUS

Received Date: 3/30/2019 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	46	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Toluene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Ethylbenzene	28	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Methyl tert-butyl ether (MTBE)	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2,4-Trimethylbenzene	41	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,3,5-Trimethylbenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2-Dichloroethane (EDC)	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2-Dibromoethane (EDB)	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Naphthalene	ND	10	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1-Methylnaphthalene	ND	20	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
2-Methylnaphthalene	ND	20	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Acetone	ND	50	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Bromobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Bromodichloromethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Bromoform	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Bromomethane	ND	15	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
2-Butanone	ND	50	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Carbon disulfide	ND	50	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Carbon Tetrachloride	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Chlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Chloroethane	ND	10	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Chloroform	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Chloromethane	ND	15	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
2-Chlorotoluene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
4-Chlorotoluene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
cis-1,2-DCE	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
cis-1,3-Dichloropropene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2-Dibromo-3-chloropropane	ND	10	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Dibromochloromethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Dibromomethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2-Dichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,3-Dichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,4-Dichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Dichlorodifluoromethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,1-Dichloroethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,1-Dichloroethene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2-Dichloropropane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,3-Dichloropropane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
2,2-Dichloropropane	ND	10	D	µg/L	5	4/9/2019 1:54:34 PM	W59020

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

Qualifiers:	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Analytical Report

Lab Order 1904022

Date Reported: 4/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: MUDGE B 12R

Collection Date: 3/29/2019 11:05:00 AM

Lab ID: 1904022-001

Matrix: AQUEOUS

Received Date: 3/30/2019 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Hexachlorobutadiene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
2-Hexanone	ND	50	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Isopropylbenzene	6.0	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
4-Isopropyltoluene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
4-Methyl-2-pentanone	ND	50	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Methylene Chloride	ND	15	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
n-Butylbenzene	ND	15	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
n-Propylbenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
sec-Butylbenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Styrene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
tert-Butylbenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,1,1,2-Tetrachloroethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,1,2,2-Tetrachloroethane	ND	10	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Tetrachloroethene (PCE)	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
trans-1,2-DCE	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
trans-1,3-Dichloropropene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2,3-Trichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2,4-Trichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,1,1-Trichloroethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,1,2-Trichloroethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Trichloroethene (TCE)	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Trichlorofluoromethane	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
1,2,3-Trichloropropane	ND	10	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Vinyl chloride	ND	5.0	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Xylenes, Total	130	7.5	D	µg/L	5	4/9/2019 1:54:34 PM	W59020
Surr: 1,2-Dichloroethane-d4	102	70-130	D	%Rec	5	4/9/2019 1:54:34 PM	W59020
Surr: 4-Bromofluorobenzene	93.1	70-130	D	%Rec	5	4/9/2019 1:54:34 PM	W59020
Surr: Dibromofluoromethane	111	70-130	D	%Rec	5	4/9/2019 1:54:34 PM	W59020
Surr: Toluene-d8	99.7	70-130	D	%Rec	5	4/9/2019 1:54:34 PM	W59020

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

Qualifiers:	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Analytical Report

Lab Order 1904022

Date Reported: 4/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: MUDGE B 12R

Collection Date: 3/29/2019 10:30:00 AM

Lab ID: 1904022-002

Matrix: AQUEOUS

Received Date: 3/30/2019 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	7.5	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Toluene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Ethylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Methyl tert-butyl ether (MTBE)	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2,4-Trimethylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,3,5-Trimethylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2-Dichloroethane (EDC)	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2-Dibromoethane (EDB)	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Naphthalene	ND	10	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1-Methylnaphthalene	ND	20	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
2-Methylnaphthalene	ND	20	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Acetone	ND	50	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Bromobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Bromodichloromethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Bromoform	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Bromomethane	ND	15	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
2-Butanone	ND	50	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Carbon disulfide	ND	50	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Carbon Tetrachloride	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Chlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Chloroethane	ND	10	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Chloroform	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Chloromethane	ND	15	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
2-Chlorotoluene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
4-Chlorotoluene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
cis-1,2-DCE	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
cis-1,3-Dichloropropene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2-Dibromo-3-chloropropane	ND	10	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Dibromochloromethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Dibromomethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2-Dichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,3-Dichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,4-Dichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Dichlorodifluoromethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,1-Dichloroethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,1-Dichloroethene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2-Dichloropropane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,3-Dichloropropane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
2,2-Dichloropropane	ND	10	D	µg/L	5	4/9/2019 3:22:10 PM	W59020

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

Qualifiers:	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Analytical Report

Lab Order 1904022

Date Reported: 4/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: MUDGE B 12R

Collection Date: 3/29/2019 10:30:00 AM

Lab ID: 1904022-002

Matrix: AQUEOUS

Received Date: 3/30/2019 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Hexachlorobutadiene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
2-Hexanone	ND	50	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Isopropylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
4-Isopropyltoluene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
4-Methyl-2-pentanone	ND	50	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Methylene Chloride	ND	15	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
n-Butylbenzene	ND	15	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
n-Propylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
sec-Butylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Styrene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
tert-Butylbenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,1,1,2-Tetrachloroethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,1,2,2-Tetrachloroethane	ND	10	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Tetrachloroethene (PCE)	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
trans-1,2-DCE	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
trans-1,3-Dichloropropene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2,3-Trichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2,4-Trichlorobenzene	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,1,1-Trichloroethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,1,2-Trichloroethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Trichloroethene (TCE)	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Trichlorofluoromethane	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
1,2,3-Trichloropropane	ND	10	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Vinyl chloride	ND	5.0	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Xylenes, Total	ND	7.5	D	µg/L	5	4/9/2019 3:22:10 PM	W59020
Surr: 1,2-Dichloroethane-d4	99.6	70-130	D	%Rec	5	4/9/2019 3:22:10 PM	W59020
Surr: 4-Bromofluorobenzene	92.4	70-130	D	%Rec	5	4/9/2019 3:22:10 PM	W59020
Surr: Dibromofluoromethane	111	70-130	D	%Rec	5	4/9/2019 3:22:10 PM	W59020
Surr: Toluene-d8	93.8	70-130	D	%Rec	5	4/9/2019 3:22:10 PM	W59020

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

Qualifiers:	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

Analytical Report

Lab Order 1907079

Date Reported: 7/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: Mudge B 12R

Collection Date: 6/28/2019 8:30:00 AM

Lab ID: 1907079-002

Matrix: AQUEOUS

Received Date: 7/2/2019 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	26	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Toluene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Ethylbenzene	7.4	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2,4-Trimethylbenzene	28	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,3,5-Trimethylbenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Naphthalene	ND	2.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1-Methylnaphthalene	ND	4.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
2-Methylnaphthalene	ND	4.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Acetone	27	10		µg/L	2	7/9/2019 2:20:00 AM	W61218
Bromobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Bromodichloromethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Bromoform	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Bromomethane	ND	3.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
2-Butanone	ND	10		µg/L	2	7/9/2019 2:20:00 AM	W61218
Carbon disulfide	ND	10		µg/L	2	7/9/2019 2:20:00 AM	W61218
Carbon Tetrachloride	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Chlorobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Chloroethane	ND	2.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Chloroform	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Chloromethane	ND	3.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
2-Chlorotoluene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
4-Chlorotoluene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
cis-1,2-DCE	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
cis-1,3-Dichloropropene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Dibromochloromethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Dibromomethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2-Dichlorobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,3-Dichlorobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,4-Dichlorobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Dichlorodifluoromethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,1-Dichloroethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,1-Dichloroethene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2-Dichloropropane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,3-Dichloropropane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
2,2-Dichloropropane	ND	2.0		µg/L	2	7/9/2019 2:20:00 AM	W61218

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1907079

Date Reported: 7/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: Mudge B 12R

Collection Date: 6/28/2019 8:30:00 AM

Lab ID: 1907079-002

Matrix: AQUEOUS

Received Date: 7/2/2019 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Hexachlorobutadiene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
2-Hexanone	ND	10		µg/L	2	7/9/2019 2:20:00 AM	W61218
Isopropylbenzene	1.9	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
4-Isopropyltoluene	2.8	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
4-Methyl-2-pentanone	ND	10		µg/L	2	7/9/2019 2:20:00 AM	W61218
Methylene Chloride	ND	3.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
n-Butylbenzene	ND	3.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
n-Propylbenzene	1.6	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
sec-Butylbenzene	1.8	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Styrene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
tert-Butylbenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Tetrachloroethene (PCE)	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
trans-1,2-DCE	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
trans-1,3-Dichloropropene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2,3-Trichlorobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2,4-Trichlorobenzene	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,1,1-Trichloroethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,1,2-Trichloroethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Trichloroethene (TCE)	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Trichlorofluoromethane	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
1,2,3-Trichloropropane	ND	2.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Vinyl chloride	ND	1.0		µg/L	2	7/9/2019 2:20:00 AM	W61218
Xylenes, Total	13	1.5		µg/L	2	7/9/2019 2:20:00 AM	W61218
Surr: 1,2-Dichloroethane-d4	90.4	70-130		%Rec	2	7/9/2019 2:20:00 AM	W61218
Surr: 4-Bromofluorobenzene	105	70-130		%Rec	2	7/9/2019 2:20:00 AM	W61218
Surr: Dibromofluoromethane	102	70-130		%Rec	2	7/9/2019 2:20:00 AM	W61218
Surr: Toluene-d8	99.9	70-130		%Rec	2	7/9/2019 2:20:00 AM	W61218

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 1907079

Date Reported: 7/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: Mudge B 12R

Collection Date: 6/28/2019 9:00:00 AM

Lab ID: 1907079-001

Matrix: AQUEOUS

Received Date: 7/2/2019 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
Benzene	9.4	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Toluene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Ethylbenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2,4-Trimethylbenzene	6.3	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,3,5-Trimethylbenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Naphthalene	ND	2.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1-Methylnaphthalene	ND	4.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
2-Methylnaphthalene	ND	4.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Acetone	ND	10		µg/L	2	7/9/2019 1:49:57 AM	W61218
Bromobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Bromodichloromethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Bromoform	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Bromomethane	ND	3.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
2-Butanone	ND	10		µg/L	2	7/9/2019 1:49:57 AM	W61218
Carbon disulfide	ND	10		µg/L	2	7/9/2019 1:49:57 AM	W61218
Carbon Tetrachloride	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Chlorobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Chloroethane	ND	2.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Chloroform	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Chloromethane	ND	3.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
2-Chlorotoluene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
4-Chlorotoluene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
cis-1,2-DCE	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
cis-1,3-Dichloropropene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Dibromochloromethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Dibromomethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2-Dichlorobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,3-Dichlorobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,4-Dichlorobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Dichlorodifluoromethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,1-Dichloroethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,1-Dichloroethene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2-Dichloropropane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,3-Dichloropropane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
2,2-Dichloropropane	ND	2.0		µg/L	2	7/9/2019 1:49:57 AM	W61218

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1907079

Date Reported: 7/10/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: Mudge B 12R

Collection Date: 6/28/2019 9:00:00 AM

Lab ID: 1907079-001

Matrix: AQUEOUS

Received Date: 7/2/2019 7:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: DJF
1,1-Dichloropropene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Hexachlorobutadiene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
2-Hexanone	ND	10		µg/L	2	7/9/2019 1:49:57 AM	W61218
Isopropylbenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
4-Isopropyltoluene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
4-Methyl-2-pentanone	ND	10		µg/L	2	7/9/2019 1:49:57 AM	W61218
Methylene Chloride	ND	3.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
n-Butylbenzene	ND	3.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
n-Propylbenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
sec-Butylbenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Styrene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
tert-Butylbenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Tetrachloroethene (PCE)	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
trans-1,2-DCE	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
trans-1,3-Dichloropropene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2,3-Trichlorobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2,4-Trichlorobenzene	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,1,1-Trichloroethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,1,2-Trichloroethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Trichloroethene (TCE)	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Trichlorofluoromethane	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
1,2,3-Trichloropropane	ND	2.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Vinyl chloride	ND	1.0		µg/L	2	7/9/2019 1:49:57 AM	W61218
Xylenes, Total	5.2	1.5		µg/L	2	7/9/2019 1:49:57 AM	W61218
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	2	7/9/2019 1:49:57 AM	W61218
Surr: 4-Bromofluorobenzene	92.1	70-130		%Rec	2	7/9/2019 1:49:57 AM	W61218
Surr: Dibromofluoromethane	100	70-130		%Rec	2	7/9/2019 1:49:57 AM	W61218
Surr: Toluene-d8	95.5	70-130		%Rec	2	7/9/2019 1:49:57 AM	W61218

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 1909A96

Date Reported: 10/3/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: Mudge B 12R

Collection Date: 9/18/2019 10:55:00 AM

Lab ID: 1909A96-001

Matrix: AQUEOUS

Received Date: 9/20/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	7680	200	*D	mg/L	1	9/25/2019 7:51:00 PM	47682
EPA METHOD 200.7: DISSOLVED METALS							Analyst: ELS
Iron	0.36	0.020	*	mg/L	1	9/30/2019 3:46:00 PM	B63317
Manganese	1.8	0.010	*	mg/L	5	9/30/2019 4:48:04 PM	B63317
EPA METHOD 8260B: VOLATILES							Analyst: JMR
Benzene	3.7	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Toluene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Ethylbenzene	5.6	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2,4-Trimethylbenzene	18	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Naphthalene	ND	4.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1-Methylnaphthalene	ND	8.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
2-Methylnaphthalene	ND	8.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Acetone	ND	20		µg/L	2	9/23/2019 3:42:08 PM	R63131
Bromobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Bromodichloromethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Bromoform	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Bromomethane	ND	6.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
2-Butanone	ND	20		µg/L	2	9/23/2019 3:42:08 PM	R63131
Carbon disulfide	20	20		µg/L	2	9/23/2019 3:42:08 PM	R63131
Carbon Tetrachloride	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Chlorobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Chloroethane	ND	4.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Chloroform	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Chloromethane	ND	6.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
2-Chlorotoluene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
4-Chlorotoluene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
cis-1,2-DCE	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Dibromochloromethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Dibromomethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2-Dichlorobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,3-Dichlorobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,4-Dichlorobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 1909A96

Date Reported: 10/3/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#2

Project: Mudge B 12R

Collection Date: 9/18/2019 10:55:00 AM

Lab ID: 1909A96-001

Matrix: AQUEOUS

Received Date: 9/20/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
Dichlorodifluoromethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1-Dichloroethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1-Dichloroethene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2-Dichloropropane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,3-Dichloropropane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
2,2-Dichloropropane	ND	4.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1-Dichloropropene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Hexachlorobutadiene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
2-Hexanone	ND	20		µg/L	2	9/23/2019 3:42:08 PM	R63131
Isopropylbenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
4-Isopropyltoluene	2.6	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
4-Methyl-2-pentanone	ND	20		µg/L	2	9/23/2019 3:42:08 PM	R63131
Methylene Chloride	ND	6.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
n-Butylbenzene	ND	6.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
n-Propylbenzene	2.5	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
sec-Butylbenzene	2.9	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Styrene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
tert-Butylbenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
trans-1,2-DCE	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1,1-Trichloroethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,1,2-Trichloroethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Trichloroethene (TCE)	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Trichlorofluoromethane	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
1,2,3-Trichloropropane	ND	4.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Vinyl chloride	ND	2.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Xylenes, Total	15	3.0		µg/L	2	9/23/2019 3:42:08 PM	R63131
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	2	9/23/2019 3:42:08 PM	R63131
Surr: 4-Bromofluorobenzene	93.2	70-130		%Rec	2	9/23/2019 3:42:08 PM	R63131
Surr: Dibromofluoromethane	145	70-130	S	%Rec	2	9/23/2019 3:42:08 PM	R63131
Surr: Toluene-d8	104	70-130		%Rec	2	9/23/2019 3:42:08 PM	R63131

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1909A96

Date Reported: 10/3/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: Mudge B 12R

Collection Date: 9/18/2019 10:15:00 AM

Lab ID: 1909A96-002

Matrix: AQUEOUS

Received Date: 9/20/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
Benzene	13	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Toluene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Ethylbenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Methyl tert-butyl ether (MTBE)	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2,4-Trimethylbenzene	14	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,3,5-Trimethylbenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2-Dichloroethane (EDC)	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2-Dibromoethane (EDB)	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Naphthalene	ND	4.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1-Methylnaphthalene	ND	8.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
2-Methylnaphthalene	ND	8.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Acetone	ND	20		µg/L	2	9/23/2019 4:10:49 PM	R63131
Bromobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Bromodichloromethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Bromoform	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Bromomethane	ND	6.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
2-Butanone	ND	20		µg/L	2	9/23/2019 4:10:49 PM	R63131
Carbon disulfide	ND	20		µg/L	2	9/23/2019 4:10:49 PM	R63131
Carbon Tetrachloride	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Chlorobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Chloroethane	ND	4.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Chloroform	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Chloromethane	ND	6.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
2-Chlorotoluene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
4-Chlorotoluene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
cis-1,2-DCE	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
cis-1,3-Dichloropropene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2-Dibromo-3-chloropropane	ND	4.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Dibromochloromethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Dibromomethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2-Dichlorobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,3-Dichlorobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,4-Dichlorobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Dichlorodifluoromethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,1-Dichloroethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,1-Dichloroethene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2-Dichloropropane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,3-Dichloropropane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
2,2-Dichloropropane	ND	4.0		µg/L	2	9/23/2019 4:10:49 PM	R63131

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 1909A96

Date Reported: 10/3/2019

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW#3

Project: Mudge B 12R

Collection Date: 9/18/2019 10:15:00 AM

Lab ID: 1909A96-002

Matrix: AQUEOUS

Received Date: 9/20/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
1,1-Dichloropropene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Hexachlorobutadiene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
2-Hexanone	ND	20		µg/L	2	9/23/2019 4:10:49 PM	R63131
Isopropylbenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
4-Isopropyltoluene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
4-Methyl-2-pentanone	ND	20		µg/L	2	9/23/2019 4:10:49 PM	R63131
Methylene Chloride	ND	6.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
n-Butylbenzene	ND	6.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
n-Propylbenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
sec-Butylbenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Styrene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
tert-Butylbenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,1,1,2-Tetrachloroethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,1,2,2-Tetrachloroethane	ND	4.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Tetrachloroethene (PCE)	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
trans-1,2-DCE	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
trans-1,3-Dichloropropene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2,3-Trichlorobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2,4-Trichlorobenzene	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,1,1-Trichloroethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,1,2-Trichloroethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Trichloroethene (TCE)	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Trichlorofluoromethane	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
1,2,3-Trichloropropane	ND	4.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Vinyl chloride	ND	2.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Xylenes, Total	ND	3.0		µg/L	2	9/23/2019 4:10:49 PM	R63131
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	2	9/23/2019 4:10:49 PM	R63131
Surr: 4-Bromofluorobenzene	96.7	70-130		%Rec	2	9/23/2019 4:10:49 PM	R63131
Surr: Dibromofluoromethane	106	70-130		%Rec	2	9/23/2019 4:10:49 PM	R63131
Surr: Toluene-d8	103	70-130		%Rec	2	9/23/2019 4:10:49 PM	R63131

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1912C39

Date Reported: 1/3/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B 12R

Collection Date: 12/19/2019 1:40:00 PM

Lab ID: 1912C39-001

Matrix: AQUEOUS

Received Date: 12/24/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	7.7	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Toluene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Ethylbenzene	4.4	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2,4-Trimethylbenzene	11	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Naphthalene	ND	2.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1-Methylnaphthalene	ND	4.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
2-Methylnaphthalene	ND	4.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Acetone	ND	10		µg/L	1	12/30/2019 8:09:43 PM	R65492
Bromobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Bromodichloromethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Bromoform	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Bromomethane	ND	3.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
2-Butanone	ND	10		µg/L	1	12/30/2019 8:09:43 PM	R65492
Carbon disulfide	ND	10		µg/L	1	12/30/2019 8:09:43 PM	R65492
Carbon Tetrachloride	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Chlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Chloroethane	ND	2.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Chloroform	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Chloromethane	ND	3.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
2-Chlorotoluene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
4-Chlorotoluene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
cis-1,2-DCE	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Dibromochloromethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Dibromomethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,1-Dichloroethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,1-Dichloroethene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2-Dichloropropane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,3-Dichloropropane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
2,2-Dichloropropane	ND	2.0		µg/L	1	12/30/2019 8:09:43 PM	R65492

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1912C39

Date Reported: 1/3/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B 12R

Collection Date: 12/19/2019 1:40:00 PM

Lab ID: 1912C39-001

Matrix: AQUEOUS

Received Date: 12/24/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Hexachlorobutadiene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
2-Hexanone	ND	10		µg/L	1	12/30/2019 8:09:43 PM	R65492
Isopropylbenzene	1.4	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
4-Isopropyltoluene	1.5	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
4-Methyl-2-pentanone	ND	10		µg/L	1	12/30/2019 8:09:43 PM	R65492
Methylene Chloride	ND	3.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
n-Butylbenzene	ND	3.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
n-Propylbenzene	1.3	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
sec-Butylbenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Styrene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
tert-Butylbenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
trans-1,2-DCE	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Trichlorofluoromethane	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Vinyl chloride	ND	1.0		µg/L	1	12/30/2019 8:09:43 PM	R65492
Xylenes, Total	5.3	1.5		µg/L	1	12/30/2019 8:09:43 PM	R65492
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	12/30/2019 8:09:43 PM	R65492
Surr: 4-Bromofluorobenzene	86.4	70-130		%Rec	1	12/30/2019 8:09:43 PM	R65492
Surr: Dibromofluoromethane	103	70-130		%Rec	1	12/30/2019 8:09:43 PM	R65492
Surr: Toluene-d8	102	70-130		%Rec	1	12/30/2019 8:09:43 PM	R65492

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 1912C39

Date Reported: 1/3/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B 12R

Collection Date: 12/19/2019 1:00:00 PM

Lab ID: 1912C39-002

Matrix: AQUEOUS

Received Date: 12/24/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	5.2	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Toluene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Ethylbenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2,4-Trimethylbenzene	4.3	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Naphthalene	ND	2.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1-Methylnaphthalene	ND	4.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
2-Methylnaphthalene	ND	4.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Acetone	ND	10		µg/L	1	12/30/2019 8:38:23 PM	R65492
Bromobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Bromodichloromethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Bromoform	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Bromomethane	ND	3.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
2-Butanone	ND	10		µg/L	1	12/30/2019 8:38:23 PM	R65492
Carbon disulfide	ND	10		µg/L	1	12/30/2019 8:38:23 PM	R65492
Carbon Tetrachloride	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Chlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Chloroethane	ND	2.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Chloroform	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Chloromethane	ND	3.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
2-Chlorotoluene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
4-Chlorotoluene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
cis-1,2-DCE	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Dibromochloromethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Dibromomethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,1-Dichloroethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,1-Dichloroethene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2-Dichloropropane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,3-Dichloropropane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
2,2-Dichloropropane	ND	2.0		µg/L	1	12/30/2019 8:38:23 PM	R65492

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 1912C39

Date Reported: 1/3/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B 12R

Collection Date: 12/19/2019 1:00:00 PM

Lab ID: 1912C39-002

Matrix: AQUEOUS

Received Date: 12/24/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Hexachlorobutadiene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
2-Hexanone	ND	10		µg/L	1	12/30/2019 8:38:23 PM	R65492
Isopropylbenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
4-Isopropyltoluene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
4-Methyl-2-pentanone	ND	10		µg/L	1	12/30/2019 8:38:23 PM	R65492
Methylene Chloride	ND	3.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
n-Butylbenzene	ND	3.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
n-Propylbenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
sec-Butylbenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Styrene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
tert-Butylbenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
trans-1,2-DCE	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Trichlorofluoromethane	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Vinyl chloride	ND	1.0		µg/L	1	12/30/2019 8:38:23 PM	R65492
Xylenes, Total	ND	1.5		µg/L	1	12/30/2019 8:38:23 PM	R65492
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	12/30/2019 8:38:23 PM	R65492
Surr: 4-Bromofluorobenzene	93.1	70-130		%Rec	1	12/30/2019 8:38:23 PM	R65492
Surr: Dibromofluoromethane	107	70-130		%Rec	1	12/30/2019 8:38:23 PM	R65492
Surr: Toluene-d8	102	70-130		%Rec	1	12/30/2019 8:38:23 PM	R65492

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 2004026

Date Reported: 4/9/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 3/31/2020 11:00:00 AM

Lab ID: 2004026-001

Matrix: AQUEOUS

Received Date: 4/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	1.8	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Toluene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Ethylbenzene	1.2	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2,4-Trimethylbenzene	16	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Naphthalene	ND	2.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1-Methylnaphthalene	ND	4.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
2-Methylnaphthalene	ND	4.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Acetone	ND	10		µg/L	1	4/6/2020 5:04:00 PM	R67944
Bromobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Bromodichloromethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Bromoform	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Bromomethane	ND	3.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
2-Butanone	ND	10		µg/L	1	4/6/2020 5:04:00 PM	R67944
Carbon disulfide	ND	10		µg/L	1	4/6/2020 5:04:00 PM	R67944
Carbon Tetrachloride	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Chlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Chloroethane	ND	2.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Chloroform	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Chloromethane	ND	3.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
2-Chlorotoluene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
4-Chlorotoluene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
cis-1,2-DCE	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Dibromochloromethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Dibromomethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,1-Dichloroethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,1-Dichloroethene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2-Dichloropropane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,3-Dichloropropane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
2,2-Dichloropropane	ND	2.0		µg/L	1	4/6/2020 5:04:00 PM	R67944

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2004026

Date Reported: 4/9/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 3/31/2020 11:00:00 AM

Lab ID: 2004026-001

Matrix: AQUEOUS

Received Date: 4/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Hexachlorobutadiene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
2-Hexanone	ND	10		µg/L	1	4/6/2020 5:04:00 PM	R67944
Isopropylbenzene	1.4	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
4-Isopropyltoluene	1.2	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
4-Methyl-2-pentanone	ND	10		µg/L	1	4/6/2020 5:04:00 PM	R67944
Methylene Chloride	ND	3.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
n-Butylbenzene	ND	3.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
n-Propylbenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
sec-Butylbenzene	1.2	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Styrene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
tert-Butylbenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
trans-1,2-DCE	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Trichlorofluoromethane	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Vinyl chloride	ND	1.0		µg/L	1	4/6/2020 5:04:00 PM	R67944
Xylenes, Total	2.3	1.5		µg/L	1	4/6/2020 5:04:00 PM	R67944
Surr: 1,2-Dichloroethane-d4	97.7	70-130		%Rec	1	4/6/2020 5:04:00 PM	R67944
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	4/6/2020 5:04:00 PM	R67944
Surr: Dibromofluoromethane	97.4	70-130		%Rec	1	4/6/2020 5:04:00 PM	R67944
Surr: Toluene-d8	101	70-130		%Rec	1	4/6/2020 5:04:00 PM	R67944

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Page 2 of 7

Analytical Report

Lab Order 2004026

Date Reported: 4/9/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 3/31/2020 10:30:00 AM

Lab ID: 2004026-002

Matrix: AQUEOUS

Received Date: 4/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
Benzene	5.0	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Toluene	2.1	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Ethylbenzene	1.2	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2,4-Trimethylbenzene	10	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Naphthalene	ND	2.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1-Methylnaphthalene	ND	4.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
2-Methylnaphthalene	ND	4.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Acetone	16	10		µg/L	1	4/6/2020 5:27:00 PM	R67944
Bromobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Bromodichloromethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Bromoform	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Bromomethane	ND	3.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
2-Butanone	ND	10		µg/L	1	4/6/2020 5:27:00 PM	R67944
Carbon disulfide	ND	10		µg/L	1	4/6/2020 5:27:00 PM	R67944
Carbon Tetrachloride	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Chlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Chloroethane	ND	2.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Chloroform	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Chloromethane	ND	3.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
2-Chlorotoluene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
4-Chlorotoluene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
cis-1,2-DCE	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Dibromochloromethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Dibromomethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2-Dichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,3-Dichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,4-Dichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Dichlorodifluoromethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,1-Dichloroethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,1-Dichloroethene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2-Dichloropropane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,3-Dichloropropane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
2,2-Dichloropropane	ND	2.0		µg/L	1	4/6/2020 5:27:00 PM	R67944

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2004026

Date Reported: 4/9/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 3/31/2020 10:30:00 AM

Lab ID: 2004026-002

Matrix: AQUEOUS

Received Date: 4/1/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: RAA
1,1-Dichloropropene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Hexachlorobutadiene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
2-Hexanone	ND	10		µg/L	1	4/6/2020 5:27:00 PM	R67944
Isopropylbenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
4-Isopropyltoluene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
4-Methyl-2-pentanone	ND	10		µg/L	1	4/6/2020 5:27:00 PM	R67944
Methylene Chloride	ND	3.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
n-Butylbenzene	ND	3.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
n-Propylbenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
sec-Butylbenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Styrene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
tert-Butylbenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
trans-1,2-DCE	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,1,1-Trichloroethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,1,2-Trichloroethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Trichloroethene (TCE)	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Trichlorofluoromethane	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
1,2,3-Trichloropropane	ND	2.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Vinyl chloride	ND	1.0		µg/L	1	4/6/2020 5:27:00 PM	R67944
Xylenes, Total	7.4	1.5		µg/L	1	4/6/2020 5:27:00 PM	R67944
Surr: 1,2-Dichloroethane-d4	98.9	70-130		%Rec	1	4/6/2020 5:27:00 PM	R67944
Surr: 4-Bromofluorobenzene	98.3	70-130		%Rec	1	4/6/2020 5:27:00 PM	R67944
Surr: Dibromofluoromethane	98.9	70-130		%Rec	1	4/6/2020 5:27:00 PM	R67944
Surr: Toluene-d8	98.7	70-130		%Rec	1	4/6/2020 5:27:00 PM	R67944

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 2006429

Date Reported: 6/12/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B # 12R

Collection Date: 6/8/2020 9:05:00 AM

Lab ID: 2006429-001

Matrix: AQUEOUS

Received Date: 6/9/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
Benzene	6.6	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Toluene	1.8	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Ethylbenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2,4-Trimethylbenzene	3.4	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Naphthalene	ND	2.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1-Methylnaphthalene	ND	4.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
2-Methylnaphthalene	ND	4.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Acetone	ND	10		µg/L	1	6/10/2020 8:53:01 PM	R69551
Bromobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Bromodichloromethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Bromoform	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Bromomethane	ND	3.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
2-Butanone	ND	10		µg/L	1	6/10/2020 8:53:01 PM	R69551
Carbon disulfide	ND	10		µg/L	1	6/10/2020 8:53:01 PM	R69551
Carbon Tetrachloride	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Chlorobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Chloroethane	ND	2.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Chloroform	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Chloromethane	ND	3.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
2-Chlorotoluene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
4-Chlorotoluene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
cis-1,2-DCE	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Dibromochloromethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Dibromomethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2-Dichlorobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,3-Dichlorobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,4-Dichlorobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Dichlorodifluoromethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,1-Dichloroethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,1-Dichloroethene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2-Dichloropropane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,3-Dichloropropane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
2,2-Dichloropropane	ND	2.0		µg/L	1	6/10/2020 8:53:01 PM	R69551

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2006429

Date Reported: 6/12/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #2

Project: MUDGE B # 12R

Collection Date: 6/8/2020 9:05:00 AM

Lab ID: 2006429-001

Matrix: AQUEOUS

Received Date: 6/9/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
1,1-Dichloropropene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Hexachlorobutadiene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
2-Hexanone	ND	10		µg/L	1	6/10/2020 8:53:01 PM	R69551
Isopropylbenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
4-Isopropyltoluene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
4-Methyl-2-pentanone	ND	10		µg/L	1	6/10/2020 8:53:01 PM	R69551
Methylene Chloride	ND	3.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
n-Butylbenzene	ND	3.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
n-Propylbenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
sec-Butylbenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Styrene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
tert-Butylbenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
trans-1,2-DCE	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,1,1-Trichloroethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,1,2-Trichloroethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Trichloroethene (TCE)	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Trichlorofluoromethane	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
1,2,3-Trichloropropane	ND	2.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Vinyl chloride	ND	1.0		µg/L	1	6/10/2020 8:53:01 PM	R69551
Xylenes, Total	2.3	1.5		µg/L	1	6/10/2020 8:53:01 PM	R69551
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	1	6/10/2020 8:53:01 PM	R69551
Surr: 4-Bromofluorobenzene	88.1	70-130		%Rec	1	6/10/2020 8:53:01 PM	R69551
Surr: Dibromofluoromethane	103	70-130		%Rec	1	6/10/2020 8:53:01 PM	R69551
Surr: Toluene-d8	102	70-130		%Rec	1	6/10/2020 8:53:01 PM	R69551

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 2006429

Date Reported: 6/12/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B # 12R

Collection Date: 6/8/2020 8:15:00 AM

Lab ID: 2006429-002

Matrix: AQUEOUS

Received Date: 6/9/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
Benzene	3.1	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Toluene	1.7	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Ethylbenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2,4-Trimethylbenzene	8.2	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Naphthalene	ND	2.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1-Methylnaphthalene	ND	4.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
2-Methylnaphthalene	ND	4.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Acetone	ND	10		µg/L	1	6/10/2020 9:21:28 PM	R69551
Bromobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Bromodichloromethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Bromoform	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Bromomethane	ND	3.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
2-Butanone	ND	10		µg/L	1	6/10/2020 9:21:28 PM	R69551
Carbon disulfide	ND	10		µg/L	1	6/10/2020 9:21:28 PM	R69551
Carbon Tetrachloride	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Chlorobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Chloroethane	ND	2.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Chloroform	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Chloromethane	ND	3.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
2-Chlorotoluene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
4-Chlorotoluene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
cis-1,2-DCE	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Dibromochloromethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Dibromomethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2-Dichlorobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,3-Dichlorobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,4-Dichlorobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Dichlorodifluoromethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,1-Dichloroethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,1-Dichloroethene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2-Dichloropropane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,3-Dichloropropane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
2,2-Dichloropropane	ND	2.0		µg/L	1	6/10/2020 9:21:28 PM	R69551

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2006429

Date Reported: 6/12/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: MW #3

Project: MUDGE B # 12R

Collection Date: 6/8/2020 8:15:00 AM

Lab ID: 2006429-002

Matrix: AQUEOUS

Received Date: 6/9/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: JMR
1,1-Dichloropropene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Hexachlorobutadiene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
2-Hexanone	ND	10		µg/L	1	6/10/2020 9:21:28 PM	R69551
Isopropylbenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
4-Isopropyltoluene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
4-Methyl-2-pentanone	ND	10		µg/L	1	6/10/2020 9:21:28 PM	R69551
Methylene Chloride	ND	3.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
n-Butylbenzene	ND	3.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
n-Propylbenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
sec-Butylbenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Styrene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
tert-Butylbenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
trans-1,2-DCE	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,1,1-Trichloroethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,1,2-Trichloroethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Trichloroethene (TCE)	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Trichlorofluoromethane	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
1,2,3-Trichloropropane	ND	2.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Vinyl chloride	ND	1.0		µg/L	1	6/10/2020 9:21:28 PM	R69551
Xylenes, Total	3.9	1.5		µg/L	1	6/10/2020 9:21:28 PM	R69551
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	6/10/2020 9:21:28 PM	R69551
Surr: 4-Bromofluorobenzene	90.8	70-130		%Rec	1	6/10/2020 9:21:28 PM	R69551
Surr: Dibromofluoromethane	98.6	70-130		%Rec	1	6/10/2020 9:21:28 PM	R69551
Surr: Toluene-d8	99.6	70-130		%Rec	1	6/10/2020 9:21:28 PM	R69551

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2009A95

Date Reported: 9/22/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: SIMCOE/Cottonwood Consulting

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 9/17/2020 11:20:00 AM

Lab ID: 2009A95-001

Matrix: AQUEOUS

Received Date: 9/18/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: CCM
Benzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Toluene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Ethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Naphthalene	ND	2.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Acetone	ND	10		µg/L	1	9/20/2020 1:09:00 AM	R71977
Bromobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Bromoform	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Bromomethane	ND	3.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
2-Butanone	ND	10		µg/L	1	9/20/2020 1:09:00 AM	R71977
Carbon disulfide	ND	10		µg/L	1	9/20/2020 1:09:00 AM	R71977
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Chlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Chloroethane	ND	2.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Chloroform	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Chloromethane	ND	3.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Dibromomethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2020 1:09:00 AM	R71977

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 2009A95

Date Reported: 9/22/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: SIMCOE/Cottonwood Consulting

Client Sample ID: MW #2

Project: Mudge B 12R

Collection Date: 9/17/2020 11:20:00 AM

Lab ID: 2009A95-001

Matrix: AQUEOUS

Received Date: 9/18/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: CCM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
2-Hexanone	ND	10		µg/L	1	9/20/2020 1:09:00 AM	R71977
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2020 1:09:00 AM	R71977
Methylene Chloride	ND	3.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Styrene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Vinyl chloride	ND	1.0		µg/L	1	9/20/2020 1:09:00 AM	R71977
Xylenes, Total	ND	1.5		µg/L	1	9/20/2020 1:09:00 AM	R71977
Surr: 1,2-Dichloroethane-d4	97.7	70-130		%Rec	1	9/20/2020 1:09:00 AM	R71977
Surr: 4-Bromofluorobenzene	96.3	70-130		%Rec	1	9/20/2020 1:09:00 AM	R71977
Surr: Dibromofluoromethane	99.0	70-130		%Rec	1	9/20/2020 1:09:00 AM	R71977
Surr: Toluene-d8	95.8	70-130		%Rec	1	9/20/2020 1:09:00 AM	R71977

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 2009A95

Date Reported: 9/22/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: SIMCOE/Cottonwood Consulting

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 9/17/2020 10:30:00 AM

Lab ID: 2009A95-002

Matrix: AQUEOUS

Received Date: 9/18/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: CCM
Benzene	1.5	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Toluene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Ethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2,4-Trimethylbenzene	5.0	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Naphthalene	ND	2.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
2-Methylnaphthalene	ND	4.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Acetone	ND	10		µg/L	1	9/20/2020 1:33:00 AM	R71977
Bromobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Bromodichloromethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Bromoform	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Bromomethane	ND	3.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
2-Butanone	ND	10		µg/L	1	9/20/2020 1:33:00 AM	R71977
Carbon disulfide	ND	10		µg/L	1	9/20/2020 1:33:00 AM	R71977
Carbon Tetrachloride	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Chlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Chloroethane	ND	2.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Chloroform	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Chloromethane	ND	3.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
2-Chlorotoluene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
4-Chlorotoluene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
cis-1,2-DCE	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Dibromochloromethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Dibromomethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,1-Dichloroethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,1-Dichloroethene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2-Dichloropropane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,3-Dichloropropane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
2,2-Dichloropropane	ND	2.0		µg/L	1	9/20/2020 1:33:00 AM	R71977

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2009A95

Date Reported: 9/22/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: SIMCOE/Cottonwood Consulting

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 9/17/2020 10:30:00 AM

Lab ID: 2009A95-002

Matrix: AQUEOUS

Received Date: 9/18/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: CCM
1,1-Dichloropropene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Hexachlorobutadiene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
2-Hexanone	ND	10		µg/L	1	9/20/2020 1:33:00 AM	R71977
Isopropylbenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
4-Isopropyltoluene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
4-Methyl-2-pentanone	ND	10		µg/L	1	9/20/2020 1:33:00 AM	R71977
Methylene Chloride	ND	3.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
n-Butylbenzene	ND	3.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
n-Propylbenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
sec-Butylbenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Styrene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
tert-Butylbenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
trans-1,2-DCE	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Trichlorofluoromethane	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Vinyl chloride	ND	1.0		µg/L	1	9/20/2020 1:33:00 AM	R71977
Xylenes, Total	ND	1.5		µg/L	1	9/20/2020 1:33:00 AM	R71977
Surr: 1,2-Dichloroethane-d4	98.3	70-130		%Rec	1	9/20/2020 1:33:00 AM	R71977
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	9/20/2020 1:33:00 AM	R71977
Surr: Dibromofluoromethane	101	70-130		%Rec	1	9/20/2020 1:33:00 AM	R71977
Surr: Toluene-d8	96.8	70-130		%Rec	1	9/20/2020 1:33:00 AM	R71977

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.
	D	Sample Diluted Due to Matrix
	H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit
	S	% Recovery outside of range due to dilution or matrix

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Analytical Report

Lab Order 2012933

Date Reported: 12/30/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: SIMCOE/Cottonwood Consulting

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 12/16/2020 11:30:00 AM

Lab ID: 2012933-001

Matrix: AQUEOUS

Received Date: 12/18/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: DJF
Benzene	1.7	1.0		µg/L	1	12/24/2020 12:16:56 PM
Toluene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Ethylbenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2,4-Trimethylbenzene	5.0	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Naphthalene	ND	2.0		µg/L	1	12/24/2020 12:16:56 PM
1-Methylnaphthalene	ND	4.0		µg/L	1	12/24/2020 12:16:56 PM
2-Methylnaphthalene	ND	4.0		µg/L	1	12/24/2020 12:16:56 PM
Acetone	ND	10		µg/L	1	12/24/2020 12:16:56 PM
Bromobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Bromodichloromethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Bromoform	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Bromomethane	ND	3.0		µg/L	1	12/24/2020 12:16:56 PM
2-Butanone	ND	10		µg/L	1	12/24/2020 12:16:56 PM
Carbon disulfide	ND	10		µg/L	1	12/24/2020 12:16:56 PM
Carbon Tetrachloride	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Chlorobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Chloroethane	ND	2.0		µg/L	1	12/24/2020 12:16:56 PM
Chloroform	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Chloromethane	ND	3.0		µg/L	1	12/24/2020 12:16:56 PM
2-Chlorotoluene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
4-Chlorotoluene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
cis-1,2-DCE	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	12/24/2020 12:16:56 PM
Dibromochloromethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Dibromomethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2-Dichlorobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,3-Dichlorobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,4-Dichlorobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Dichlorodifluoromethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,1-Dichloroethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,1-Dichloroethene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2-Dichloropropane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,3-Dichloropropane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
2,2-Dichloropropane	ND	2.0		µg/L	1	12/24/2020 12:16:56 PM

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 1 of 5

Analytical Report

Lab Order 2012933

Date Reported: 12/30/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: SIMCOE/Cottonwood Consulting

Client Sample ID: MW #3

Project: Mudge B 12R

Collection Date: 12/16/2020 11:30:00 AM

Lab ID: 2012933-001

Matrix: AQUEOUS

Received Date: 12/18/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260B: VOLATILES						Analyst: DJF
1,1-Dichloropropene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Hexachlorobutadiene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
2-Hexanone	ND	10		µg/L	1	12/24/2020 12:16:56 PM
Isopropylbenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
4-Isopropyltoluene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	12/24/2020 12:16:56 PM
Methylene Chloride	ND	3.0		µg/L	1	12/24/2020 12:16:56 PM
n-Butylbenzene	ND	3.0		µg/L	1	12/24/2020 12:16:56 PM
n-Propylbenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
sec-Butylbenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Styrene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
tert-Butylbenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	12/24/2020 12:16:56 PM
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
trans-1,2-DCE	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,1,1-Trichloroethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,1,2-Trichloroethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Trichloroethene (TCE)	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Trichlorofluoromethane	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
1,2,3-Trichloropropane	ND	2.0		µg/L	1	12/24/2020 12:16:56 PM
Vinyl chloride	ND	1.0		µg/L	1	12/24/2020 12:16:56 PM
Xylenes, Total	ND	1.5		µg/L	1	12/24/2020 12:16:56 PM
Surr: 1,2-Dichloroethane-d4	99.0	70-130		%Rec	1	12/24/2020 12:16:56 PM
Surr: 4-Bromofluorobenzene	99.1	70-130		%Rec	1	12/24/2020 12:16:56 PM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	12/24/2020 12:16:56 PM
Surr: Toluene-d8	95.2	70-130		%Rec	1	12/24/2020 12:16:56 PM

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

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Page 2 of 5

GROUNDWATER CHAIN-OF-CUSTODY RECORDS

Chain-of-Custody Record

Client: **BLAGG ENGR. / BP AMERICA**

Mailing Address: **P.O. BOX 87**
BLOOMFIELD, NM 87413

Phone #: **(505) 632-1199**

Email or Fax#:

VQC Package:
☒ Standard ☐ Level 4 (Full Validation)

Creditation:
NELAP ☐ Other

EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name:

MUDGE B # 12R

Project #:

Project Manager:

JEFF BLAGG

Sampler:

NELSON VELEZ

On Ice:

☒ Yes☐ No

Sample Temperature:

6.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021B)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Cation / Anion Balance	Total Dissolved Solids	8260B (VOA)	Nitrate N / Nitrite N	Grab sample	5 pt. composite sample	Air Bubbles (Y or N)
2/28/16	0745	WATER	MW # 1	40 ml VOA - 2	HCl & Cool	-001										✓			✓	
2/28/16	0745	WATER	MW # 1	500 ml - 1	Cool	-001								✓	✓				✓	
2/28/16	0828	WATER	MW # 2	40 ml VOA - 2	HCl & Cool	-002										✓			✓	
2/28/16	0828	WATER	MW # 2	500 ml - 1	Cool	-002								✓	✓				✓	
2/28/16	0812	WATER	MW # 3	40 ml VOA - 2	HCl & Cool	-003										✓			✓	
2/28/16	0812	WATER	MW # 3	500 ml - 1	Cool	-003								✓	✓				✓	

Relinquished by: *[Signature]* Date: 2/28/16 Time: 1612

Received by: *[Signature]* Date: 2/28/16 Time: 1612

Relinquished by: *[Signature]* Date: 8/14 Time: 1749

Received by: *[Signature]* Date: 12/29/16 Time: 0725

Remarks: Report F, Cl, NO₃, & SO₄ only for C/A balance.

BILL DIRECTLY TO BP:

200 Energy Court, Farmington, NM 87401 Attn.: John Ritchie

VID: VDRINKWJA1HALL ENVIRONMENTAL
ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

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.

☐ EDD (Type)

Sample Temperature: 7.60



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.

Released to Imaging: 1/16/2024 10:33:25 AM

|Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name:

MUDGE B # 12R

Project #:

Project Manager:

JEFF BLAGG

Sampler: **NELSON VELEZ**

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.8°C

Received by OCD: 1/26/2021 10:21:12 AM

Remarks:

Date, Time

200 Energy Court, Farmington, NM 87401 Attn.: Steve Moskal

VID: VRITCJWFEC WBS ELEMENT: L1-0018M-E:MUDGE12R

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.

☐ EDD (Type) _____

Sample Temperature: 1.



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[illegible][illegible]

Date: 9/20/17	Time: 1445	Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date 9/20/17	Time 1445
Date: 9/20/17	Time: 1803	Relinquished by: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date 09/20/17	Time 0710

Remarks:

BILL DIRECTLY TO BP:
200 Energy Court, Farmington, NM 87401 Attn.: Steve Moskal

VID: VMOS6HQFEC WBS ELEMENT: L1-0018M-E:MUDGE812R

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 noted on the analytical report.

Released to Imaging: 1/16/2024 10:33:25 AM

Turn-Around Time:

☒ Standard ☐ Rush

Project Name:

Project #:

Project Manager:

JEFF BLAGG

☒ Standard ☐ Level 4 (Full Validation)

Sampler: NELSON VELEZ

On Ice: ☒ Yes ☐ No

Sample Temperature: $-0.5(^{\circ}\text{C}) = .4$

[illegible]

Remarks:

200 Energy Court, Farmington, NM 87401 Attn.: **Steve Moskal**

VID: VMOS6HQFEC WBS ELEMENT: L1-0018M-E:MUDGEB12R

Date Time
0800
2/27/17

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility.

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.

☐ EDD (Type) _____

Sample Temperature: $2.3 - (-1.0) = 1.3$

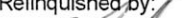
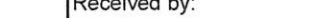
If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

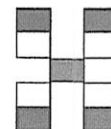
Released to Imaging: 1/16/2024 10:33:25 AM

Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type) _____

Sample Temperature: $3 \text{ rad } e^{-1.0''}$

Date: 3/29/19	Time: 1404	Relinquished by: 	Received by:  3/29/19 1404	Date Time
Date: 3/29/19	Time: 1846	Relinquished by: Christa Waeter	Received by:  03/30/19 0920	Date Time



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

[illegible]

Should receive/Should've received PO from BPX.

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.

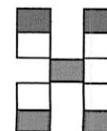
Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type)

Sample Temperature: 2.8 ± 0.5 (K) 2.8

Received by OCD: 1/26/2021 10:21:12 AM

Per Nelson - Analyze
He mislabeled. change MW#2 to MW#3 and MW#3 to MW#2.
of 7/1/19



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Analysis Request

[illegible]

Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type) _____

Sample Temperature: 5.3 - 0.3 - 5.3

HEAL No.

-002

Analysis Request

[illegible]

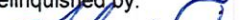
Added note: Please filter for Iron & Manganese analyses & add HNO₃ preservative.

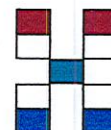
If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type) _____

Sample Temperature: $0.8 + 0.1 = 0.9^{\circ}\text{C}$

Date: 12/23/19	Time: 1414	Relinquished by: 	Received by: 	Date 12/23/19	Time 1414
Date: 12/23/19	Time: 1810	Relinquished by: 	Received by:  courier	Date 12/24/19	Time 8:30



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[illegible]

PO: 4301141754

Received by OCD: 1/26/2021 10:21:12 AM

Air Bubbles (Y or N)

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Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type) _____

Sample Temperature: $1.7 - 0 = 1.7$

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

[illegible]

Date: 3/31/20	Time: 1434	Relinquished by: <i>[Signature]</i>	Received by: <i>Christine Waeten</i>	Date 3/31/20	Time 1434
Date: 3/31/20	Time: 1742	Relinquished by: <i>Christine Waeten</i>	Received by: <i>Inf carver</i>	Date 4/1/20	Time 8:00

Remarks:	
BILL DIRECTLY TO BPX:	
Contact: Steve Moskal	PO to be provided

Released to Imaging: 1/16/2024 10:33:25 AM

Date:	Time:	Relinquished by:
4/8/2020	1743	Chris Warner

Received by:	Date	Time
--------------	------	------

Date	Time
------	------

																		BTEX + MTBE + TMB's (8021B)
																		BTEX + MTBE + TPH (Gas only)
																		TPH 8015B (GRO / DRO / MRO)
																		TPH (Method 418.1)
																		EDB (Method 504.1)
																		PAH (8310 or 8270SIMS)
																		RCRA 8 Metals
																		Anions (F,Cl,NO ₃ ,NO ₂ ,PO ₄ ,SO ₄)
																		8081 Pesticides / 8082 PCB's
										✓								8260B (VOA)
																		Cation / Anion Balance
																		Total Dissolved Solids
										✓								Grab sample
																		5 pt. composite sample
																		Air Bubbles (Y or N) <i>MMVZT-12:01</i>

PO #: Provided by BPX (SVE O&M 1H 2020)

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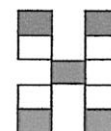
If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 1/16/2024 10:33:25 AM

☐ EDD (Type) _____

Sample Temperature: $4.5 \pm 0 = 4.5$

Date:	Time:	Relinquished by:	Received by:	Courier Date	Time
9/17/20	1910		9M 9/18/20		8:00
Date:	Time:	Relinquished by:	Received by:	Date	Time



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

[illegible]

PO #: Already or to be provided.

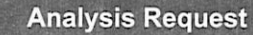
Received by OCD: 1/26/2021 10:21:12 AM

Air Bubbles (Y or N)

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Released to Imaging: 1/16/2024 10:33:25 AM

Turn-Around Time:	
☒ Standard	☐ Rush _____
Project Name: MUDGE B #12R	
Project #:	
Project Manager: STEVE MOSKAL	
Sampler: NELSON VELTZ	
On Ice:	☒ Yes ☐ No
Sample Temperature: 3.1-0.0 = 3.1°	

[illegible]

Remarks: BILL TO IKAV ENERGY INC.
CONTACT: STEVE MOSKAL / ERIN CUNMAN
Seal Intact DAD 12/18/20

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LABORATORY QUALITY CONTROL / QUALITY ASSURANCE

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1612E51

19-Jan-17

Client: Blagg Engineering**Project:** MUDGE B #12R

Sample ID	1612E51-001CMS	SampType:	MS	TestCode:	EPA Method 200.7: Total Metals					
Client ID:	MW #1	Batch ID:	29508	RunNo:	39925					
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1251212	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	96	1.0	50.00	50.38	90.8	70	130			
Potassium	54	1.0	50.00	6.030	96.7	70	130			

Sample ID	1612E51-001CMSD	SampType:	MSD	TestCode:	EPA Method 200.7: Total Metals					
Client ID:	MW #1	Batch ID:	29508	RunNo:	39925					
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1251213	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	91	1.0	50.00	50.38	81.9	70	130	4.75	20	
Potassium	52	1.0	50.00	6.030	92.3	70	130	4.14	20	

Sample ID	1612E51-001CMS	SampType:	MS	TestCode:	EPA Method 200.7: Total Metals					
Client ID:	MW #1	Batch ID:	29508	RunNo:	39925					
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1251215	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	490	5.0	50.00	434.3	118	70	130			

Sample ID	1612E51-001CMSD	SampType:	MSD	TestCode:	EPA Method 200.7: Total Metals					
Client ID:	MW #1	Batch ID:	29508	RunNo:	39925					
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1251216	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	490	5.0	50.00	434.3	117	70	130	0.182	20	

Sample ID	MB-29508	SampType:	MBLK	TestCode:	EPA Method 200.7: Total Metals					
Client ID:	PBW	Batch ID:	29508	RunNo:	39925					
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1252230	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID	LCS-29508	SampType:	LCS	TestCode:	EPA Method 200.7: Total Metals					
Client ID:	LCSW	Batch ID:	29508	RunNo:	39925					
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1252231	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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#: 1612E51
19-Jan-17

Client: Blagg Engineering
Project: MUDGE B #12R

Sample ID	LCS-29508	SampType:	LCS	TestCode:	EPA Method 200.7: Total Metals						
Client ID:	LCSW	Batch ID:	29508	RunNo:	39925						
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1252231	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium	48	1.0	50.00	0	96.7	85	115				
Magnesium	49	1.0	50.00	0	98.1	85	115				
Potassium	48	1.0	50.00	0	95.1	85	115				
Sodium	48	1.0	50.00	0	96.4	85	115				

Sample ID	LCSLL-29508	SampType:	LCSLL	TestCode:	EPA Method 200.7: Total Metals						
Client ID:	BatchQC	Batch ID:	29508	RunNo:	39925						
Prep Date:	1/3/2017	Analysis Date:	1/10/2017	SeqNo:	1252232	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Calcium	ND	1.0	0.5000	0	98.2	50	150				
Magnesium	ND	1.0	0.5000	0	104	50	150				
Potassium	ND	1.0	0.5000	0	106	50	150				
Sodium	ND	1.0	0.5000	0	103	50	150				

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

Page 11 of 17

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1612E51

19-Jan-17

Client: Blagg Engineering**Project:** MUDGE B #12R

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R39748		RunNo: 39748							
Prep Date:	Analysis Date: 12/29/2016		SeqNo: 1245680		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R39748		RunNo: 39748							
Prep Date:	Analysis Date: 12/29/2016		SeqNo: 1245681		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.9	0.50	5.000	0	97.2	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	95.6	90	110			
Bromide	2.5	0.10	2.500	0	98.9	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P)	4.9	0.50	5.000	0	98.1	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A39806		RunNo: 39806							
Prep Date:	Analysis Date: 1/3/2017		SeqNo: 1247574		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: A39806		RunNo: 39806							
Prep Date:	Analysis Date: 1/3/2017		SeqNo: 1247575		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.8	0.50	10.00	0	98.4	90	110			

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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1612E51

19-Jan-17

Client: Blagg Engineering**Project:** MUDGE B #12R

Sample ID 100ng lcs	SampType: LCS				TestCode: EPA Method 8260B: VOLATILES					
Client ID: LCSW	Batch ID: R39766				RunNo: 39766					
Prep Date:	Analysis Date: 12/30/2016				SeqNo: 1246077	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	20	1.0	20.00	0	99.2	70	130			
Chlorobenzene	19	1.0	20.00	0	97.1	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	106	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.8	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		91.8	70	130			
Surr: Dibromofluoromethane	7.9		10.00		79.4	70	130			
Surr: Toluene-d8	9.8		10.00		98.4	70	130			

Sample ID rb	SampType: MBLK				TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW	Batch ID: R39766				RunNo: 39766					
Prep Date:	Analysis Date: 12/30/2016				SeqNo: 1246081	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1612E51

19-Jan-17

Client: Blagg Engineering

Project: MUDGE B #12R

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R39766			RunNo: 39766					
Prep Date:		Analysis Date: 12/30/2016			SeqNo: 1246081		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1612E51

19-Jan-17

Client: Blagg Engineering**Project:** MUDGE B #12R

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R39766			RunNo: 39766						
Prep Date:	Analysis Date: 12/30/2016			SeqNo: 1246081		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.1	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.2	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.9		10.00		98.7	70	130			

Sample ID 1612e51-001ams	SampType: MS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: MW #1	Batch ID: R39766			RunNo: 39766						
Prep Date:	Analysis Date: 12/30/2016			SeqNo: 1246083		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	20	1.0	20.00	0	97.9	70	130			
Chlorobenzene	19	1.0	20.00	0	92.8	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	106	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	91.5	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.3	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.4	70	130			
Surr: Dibromofluoromethane	8.2		10.00		82.5	70	130			
Surr: Toluene-d8	9.9		10.00		99.1	70	130			

Sample ID 1612e51-001amsd	SampType: MSD			TestCode: EPA Method 8260B: VOLATILES						
Client ID: MW #1	Batch ID: R39766			RunNo: 39766						
Prep Date:	Analysis Date: 12/30/2016			SeqNo: 1246084		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.5	70	130	8.65	20	
Toluene	18	1.0	20.00	0	91.8	70	130	6.48	20	
Chlorobenzene	18	1.0	20.00	0	89.3	70	130	3.84	20	
1,1-Dichloroethene	19	1.0	20.00	0	97.0	70	130	8.40	20	
Trichloroethene (TCE)	17	1.0	20.00	0	83.3	70	130	9.32	20	
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.6	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130	0	0	
Surr: Dibromofluoromethane	8.1		10.00		80.6	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		98.7	70	130	0	0	

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
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#: 1612E51
19-Jan-17

Client: Blagg Engineering
Project: MUDGE B #12R

Sample ID	mb-1	SampType:	mblk	TestCode:	SM2320B: Alkalinity					
Client ID:	PBW	Batch ID:	R39840	RunNo:	39840					
Prep Date:		Analysis Date:	1/4/2017	SeqNo:	1248688	Units:	mg/L CaCO3			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID	lcs-1	SampType:	lcs	TestCode:	SM2320B: Alkalinity					
Client ID:	LCSW	Batch ID:	R39840	RunNo:	39840					
Prep Date:		Analysis Date:	1/4/2017	SeqNo:	1248689	Units:	mg/L CaCO3			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.48	20.00	80.00	0	96.8	90	110			

Sample ID	mb-2	SampType:	mblk	TestCode:	SM2320B: Alkalinity					
Client ID:	PBW	Batch ID:	R39840	RunNo:	39840					
Prep Date:		Analysis Date:	1/4/2017	SeqNo:	1248712	Units:	mg/L CaCO3			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID	lcs-2	SampType:	lcs	TestCode:	SM2320B: Alkalinity					
Client ID:	LCSW	Batch ID:	R39840	RunNo:	39840					
Prep Date:		Analysis Date:	1/4/2017	SeqNo:	1248713	Units:	mg/L CaCO3			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	77.52	20.00	80.00	0	96.9	90	110			

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

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1612E51
19-Jan-17

Client: Blagg Engineering
Project: MUDGE B #12R

Sample ID	MB-29507	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	29507	RunNo:	39821					
Prep Date:	1/3/2017	Analysis Date:	1/4/2017	SeqNo:	1247984	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	LCS-29507	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	29507	RunNo:	39821					
Prep Date:	1/3/2017	Analysis Date:	1/4/2017	SeqNo:	1247985	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1050	20.0	1000	0	105	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank	Page 17 of 17
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: BLAGG

Work Order Number: 1612E51

RcptNo: 1

Received by/date: *Sm* 12/29/16

Logged By: Lindsey Aragon

12/29/2016 7:25:00 AM

Lindsey Aragon

Completed By: Lindsey Aragon

12/29/2016 4:25:01 PM

*Lindsey Aragon*Reviewed By: *Ja / Re*

12/29/16

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?

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°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 ☒ *Re*
9. Was preservative added to bottles? Yes ☒ No ☒ *Re* 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: *S*(≤ 2 or >12 unless noted)Adjusted? *YES*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: *0.5 mL HNO₃ was added to metals analysis samples.*

18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			

Samples were held 24 hrs. prior to analysis. 1630 12/29/16 Re

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1703858

20-Mar-17

Client: Blagg Engineering**Project:** MUDGE B 12R

Sample ID RB	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBW	Batch ID: R41422			RunNo: 41422						
Prep Date:	Analysis Date: 3/16/2017			SeqNo: 1299249		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	2.0								
Surr: 4-Bromofluorobenzene	22		20.00		109	80	120			

Sample ID 100NG BTEX LCS	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSW	Batch ID: R41422			RunNo: 41422						
Prep Date:	Analysis Date: 3/16/2017			SeqNo: 1299250		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.9	71.7	126			
Toluene	20	1.0	20.00	0	99.1	73.3	119			
Ethylbenzene	20	1.0	20.00	0	102	80	120			
Xylenes, Total	63	2.0	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		111	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



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: **BLAGG**Work Order Number: **1703858**RcptNo: **1**

Received by/date:

03/16/17

Logged By: **Lindsay Mangin**

3/16/2017 7:09:00 AM

Completed By: **Lindsay Mangin**

3/16/2017 9:22:38 AM

Reviewed By:

LJM

03/16/17

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? Courier

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°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: ☐ eMail ☐ Phone ☐ Fax ☐ 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	2.6	Good	Yes			

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1707049

12-Jul-17

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8260: Volatiles Short List						
Client ID: PBW	Batch ID: B44109			RunNo: 44109						
Prep Date:	Analysis Date: 7/10/2017			SeqNo: 1391811		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								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.0	70	130			
Surr: Dibromofluoromethane	10		10.00		101	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Sample ID 100ng lcs	SampType: LCS			TestCode: EPA Method 8260: Volatiles Short List						
Client ID: LCSW	Batch ID: B44109			RunNo: 44109						
Prep Date:	Analysis Date: 7/10/2017			SeqNo: 1391812		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	21	1.0	20.00	0	106	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.5	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.6	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

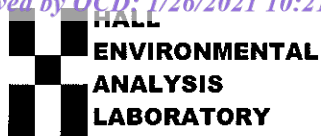
J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 4 of 4



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: BLAGG

Work Order Number: 1707049

RcptNo: 1

Received By: Andy Freeman

7/1/2017 10:30:00 AM

Completed By: Ashley Gallegos

7/3/2017 11:58:04 AM

Reviewed By: ENM

7/3/17

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? Courier

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?
(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: ☐ 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	3.8	Good	Yes			

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1709B73

04-Oct-17

Client: Blagg Engineering**Project:** MUDGE B 12R

Sample ID 100ng lcs	SampType: LCS				TestCode: EPA Method 8260B: VOLATILES					
Client ID: LCSW	Batch ID: A46072				RunNo: 46072					
Prep Date:	Analysis Date: 10/3/2017				SeqNo: 1465318	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Chlorobenzene	22	1.0	20.00	0	108	70	130			
1,1-Dichloroethene	21	1.0	20.00	0	106	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.5	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.6	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	10		10.00		99.6	70	130			

Sample ID RB	SampType: MBLK				TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW	Batch ID: A46072				RunNo: 46072					
Prep Date:	Analysis Date: 10/3/2017				SeqNo: 1465323	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting 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#: 1709B73

04-Oct-17

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID	RB	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: A46072			RunNo: 46072					
Prep Date:		Analysis Date: 10/3/2017			SeqNo: 1465323	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

Page 8 of 9

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1709B73

04-Oct-17

Client: Blagg Engineering**Project:** MUDGE B 12R

Sample ID RB	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A46072			RunNo: 46072						
Prep Date:	Analysis Date: 10/3/2017			SeqNo: 1465323		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.5	70	130			
Surr: Dibromofluoromethane	11		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID 100ng lcs2	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: B46072			RunNo: 46072						
Prep Date:	Analysis Date: 10/3/2017			SeqNo: 1465418		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		110	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.7	70	130			
Surr: Dibromofluoromethane	11		10.00		114	70	130			
Surr: Toluene-d8	9.9		10.00		99.2	70	130			

Sample ID rb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: B46072			RunNo: 46072						
Prep Date:	Analysis Date: 10/3/2017			SeqNo: 1465419		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	11		10.00		110	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	11		10.00		114	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting 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: **BLAGG**Work Order Number: **1709B73**RcptNo: **1**Received By: **Anne Thorne**

9/20/2017 7:10:00 AM

Completed By: **Anne Thorne**

9/21/2017 9:41:01 AM

Reviewed By: **ENM**

9/21/17

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? Courier

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°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: ☐ eMail ☐ Phone ☐ Fax ☐ 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	1.1	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1712D58

29-Dec-17

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID	100ng lcs		SampType:	LCS		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	LCSW		Batch ID:	R48023		RunNo:	48023			
Prep Date:			Analysis Date:	12/26/2017		SeqNo:	1538961	Units:	%Rec	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.6	70	130			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.0	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.0	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID	RB		SampType:	MBLK		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	PBW		Batch ID:	R48023		RunNo:	48023			
Prep Date:			Analysis Date:	12/26/2017		SeqNo:	1538967	Units:	%Rec	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.6		10.00		96.3	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		93.7	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.9		10.00		98.6	70	130			

Sample ID	100ng lcs2		SampType:	LCS		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	LCSW		Batch ID:	B48023		RunNo:	48023			
Prep Date:			Analysis Date:	12/27/2017		SeqNo:	1538997	Units:	µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	23	1.0	20.00	0	115	70	130			
Trichloroethene (TCE)	21	1.0	20.00	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.6	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.7		10.00		96.6	70	130			

Sample ID	rb2		SampType:	MBLK		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	PBW		Batch ID:	B48023		RunNo:	48023			
Prep Date:			Analysis Date:	12/27/2017		SeqNo:	1538998	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								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting 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#: 1712D58

29-Dec-17

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID	rb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: B48023			RunNo: 48023					
Prep Date:		Analysis Date: 12/27/2017			SeqNo: 1538998		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								

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
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 8 of 10

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1712D58

29-Dec-17

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID rb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: B48023			RunNo: 48023						
Prep Date:	Analysis Date: 12/27/2017			SeqNo: 1538998		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	9.9		10.00		99.0	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.8	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.6		10.00		96.4	70	130			

Sample ID 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R48055			RunNo: 48055						
Prep Date:	Analysis Date: 12/27/2017			SeqNo: 1539985		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.5	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		94.9	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.9	70	130			
Surr: Toluene-d8	9.4		10.00		94.2	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1712D58

29-Dec-17

Client: Blagg Engineering**Project:** MUDGE B 12R

Sample ID 100ng lcs2	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: B48055			RunNo: 48055						
Prep Date:	Analysis Date: 12/28/2017			SeqNo: 1540317		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.5	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		96.2	70	130			
Surr: Dibromofluoromethane	9.7		10.00		97.1	70	130			
Surr: Toluene-d8	9.3		10.00		93.2	70	130			

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R48055			RunNo: 48055						
Prep Date:	Analysis Date: 12/27/2017			SeqNo: 1540318		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.2	70	130			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.5	70	130			
Surr: Dibromofluoromethane	9.6		10.00		96.0	70	130			
Surr: Toluene-d8	9.6		10.00		96.4	70	130			

Sample ID rb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: B48055			RunNo: 48055						
Prep Date:	Analysis Date: 12/28/2017			SeqNo: 1540320		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.9	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.7	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.9	70	130			
Surr: Toluene-d8	9.3		10.00		93.5	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

Page 10 of 10



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: **BLAGG**Work Order Number: **1712D58**RcptNo: **1**Received By: **Erin Melendrez**

12/22/2017 8:00:00 AM

Completed By: **Sophia Campuzano**

12/22/2017 9:18:23 AM

Reviewed By: **ENM**

12/22/17

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? Courier

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°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:	☐ eMail ☐ Phone ☐ Fax ☐ 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	1.4	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1803E79

05-Apr-18

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: A50328			RunNo: 50328					
Prep Date:		Analysis Date: 4/4/2018			SeqNo: 1630469		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
PQL	Practical Quantitative Limit	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#: 1803E79

05-Apr-18

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A50328			RunNo: 50328						
Prep Date:	Analysis Date: 4/4/2018			SeqNo: 1630469		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	11		10.00		109	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		109	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.1		10.00		91.1	70	130			

Sample ID 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: A50328			RunNo: 50328						
Prep Date:	Analysis Date: 4/4/2018			SeqNo: 1630470		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	110	70	130			
Toluene	18	1.0	20.00	0	91.6	70	130			
Chlorobenzene	19	1.0	20.00	0	93.3	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 8 of 9

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1803E7905-Apr-18

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: A50328			RunNo: 50328					
Prep Date:		Analysis Date: 4/4/2018			SeqNo: 1630470		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	23	1.0	20.00	0	113	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	98.1	70	130			
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		113	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.3		10.00		93.2	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

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

Sample Log-In Check List

Client Name: **BLAGG**

Work Order Number: **1803E79**

RcptNo: **1**

Received By: **Isaiah Ortiz**

3/28/2018 7:15:00 AM

IO

Completed By: **Isaiah Ortiz**

3/28/2018 9:13:03 AM

IO

Reviewed By: **DDS**

3/28/18

MW 3/28/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
 By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding: _____
 Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.9	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1806I49

09-Jul-18

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: R52521			RunNo: 52521					
Prep Date:		Analysis Date: 7/6/2018			SeqNo: 1722668		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	84.1	70	130			
Toluene	18	1.0	20.00	0	89.5	70	130			
Chlorobenzene	18	1.0	20.00	0	90.6	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	89.0	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	82.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.1	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.0	70	130			
Surr: Toluene-d8	9.6		10.00		96.1	70	130			

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R52521			RunNo: 52521					
Prep Date:		Analysis Date: 7/6/2018			SeqNo: 1722669		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:		
* Value exceeds Maximum Contaminant Level.	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	Page 7 of 9
ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
PQL Practical Quantitative Limit	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#: 1806I49

09-Jul-18

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID	rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R52521			RunNo: 52521					
Prep Date:		Analysis Date: 7/6/2018			SeqNo: 1722669		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1806I49

09-Jul-18

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R52521	RunNo:	52521					
Prep Date:		Analysis Date:	7/6/2018	SeqNo:	1722669	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.1	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.3	70	130			
Surr: Toluene-d8	9.6		10.00		95.7	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
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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

Sample Log-In Check List

Client Name: BLAGG

Work Order Number: 1806149

RcptNo: 1

Received By: Erin Melendrez 6/30/2018 10:15:00 AM

Completed By: Erin Melendrez 6/30/2018 12:31:10 PM

Reviewed By: ENM

LB: 07/02/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. VOA vials have zero headspace? ALL VOAs received w/ Headspace Yes ☒ No ☒ No VOA Vials ☒ 07/02/18
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels? Yes ☒ No ☐
- (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met? Yes ☒ No ☐
- (If no, notify customer for authorization.)

of preserved bottles checked for pH: 2
<2 or >12 unless noted
Adjusted? 07/02/18
Checked by: [Signature]

Special Handling (if applicable)

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

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1809H33
04-Oct-18

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID	100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	LCSW	Batch ID: R54556			RunNo: 54556					
Prep Date:		Analysis Date: 10/1/2018			SeqNo: 1808975		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Chlorobenzene	22	1.0	20.00	0	108	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	111	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	99.9	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		99.8	70	130			

Sample ID	RB	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R54556			RunNo: 54556					
Prep Date:		Analysis Date: 10/1/2018			SeqNo: 1808978		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 7 of 9

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1809H33
04-Oct-18

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID	RB	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID: R54556			RunNo: 54556					
Prep Date:		Analysis Date: 10/1/2018			SeqNo: 1808978	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:			
*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting 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#: 1809H33
04-Oct-18

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8260B: VOLATILES					
Client ID:	PBW	Batch ID:	R54556	RunNo:	54556					
Prep Date:		Analysis Date:	10/1/2018	SeqNo:	1808978	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.5	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 9 of 9



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87106
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **BLAGG**Work Order Number: **1809H33**

RcptNo: 1

Received By: **Anne Thorne**

9/28/2018 8:40:00 AM

*Anne Thorne*Completed By: **Ashley Gallegos**

9/28/2018 11:21:58 AM

Ashley Gallegos

Reviewed By:

*Thom Mayke**labeled by: JG 9.28.18***Chain of Custody**

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

of preserved
bottles checked
for pH:

(≤ 2 or >12 unless noted)

Adjusted? *Yes*

Checked by: *JG 9.28.18*

Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No.	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	1.3	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1812B50

26-Dec-18

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID	100ng lcs		SampType:	LCS		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	LCSW		Batch ID:	R56508		RunNo:	56508			
Prep Date:			Analysis Date:	12/20/2018		SeqNo:	1889886		Units: %Rec	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.8	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.3	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID	RB		SampType:	MBLK		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	PBW		Batch ID:	R56508		RunNo:	56508			
Prep Date:			Analysis Date:	12/20/2018		SeqNo:	1889930		Units: %Rec	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.0	70	130			
Surr: Toluene-d8	10		10.00		99.6	70	130			

Sample ID	100ng lcs2		SampType:	LCS		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	LCSW		Batch ID:	W56508		RunNo:	56508			
Prep Date:			Analysis Date:	12/20/2018		SeqNo:	1889981		Units: µg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.1	70	130			
Toluene	20	1.0	20.00	0	99.1	70	130			
Chlorobenzene	20	1.0	20.00	0	100	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	98.5	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	93.4	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.3	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.7	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID	rb2		SampType:	MBLK		TestCode:	EPA Method 8260B: VOLATILES			
Client ID:	PBW		Batch ID:	W56508		RunNo:	56508			
Prep Date:			Analysis Date:	12/20/2018		SeqNo:	1889982		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								

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting 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#: 1812B50

26-Dec-18

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID: rb2	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: W56508	RunNo: 56508								
Prep Date:	Analysis Date: 12/20/2018	SeqNo: 1889982	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

Page 8 of 9

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1812B50

26-Dec-18

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID: rb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: W56508			RunNo: 56508						
Prep Date:	Analysis Date: 12/20/2018			SeqNo: 1889982	Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	9.7		10.00		96.8	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.6	70	130			
Surr: Toluene-d8	10		10.00		100	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
PQL Practical Quantitative Limit	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: **BLAGG**Work Order Number: **1812B50**RcptNo: **1**Received By: **Anne Thorne** 12/20/2018 8:00:00 AMCompleted By: **Isaiah Ortiz** 12/20/2018 9:21:47 AM

Reviewed By:

JAB 12/20/18**LB: DAD 12/20/18**

Anne Thorne
I-Ortiz

Chain of Custody1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐2. How was the sample delivered? CourierLog In3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐4. Were all samples received at a temperature of >0° C to 6.0° C Yes ☒ No ☐ NA ☐5. Sample(s) in proper container(s)? Yes ☒ No ☐6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒10. Were any sample containers received broken? Yes ☐ No ☒11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐13. Is it clear what analyses were requested? Yes ☒ No ☐14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved bottles checked for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: **DAD 12/20/18**Special Handling (if applicable)15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			
2	1.0	Good	Yes			
3	1.0	Good	Yes			
4	1.0	Good	Yes			



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: BLAGG

Work Order Number: 1812B50

RcptNo: 1

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
5	1.0	Good	Yes			
6	1.4	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1904022

10-Apr-19

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID: rb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: A58989	RunNo: 58989								
Prep Date:	Analysis Date: 4/8/2019	SeqNo: 1984814			Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.7	70	130			
Surr: 4-Bromofluorobenzene	8.9		10.00		89.0	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.6		10.00		96.0	70	130			

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: A58989	RunNo: 58989								
Prep Date:	Analysis Date: 4/8/2019	SeqNo: 1984818			Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.0		10.00		90.2	70	130			
Surr: 4-Bromofluorobenzene	8.9		10.00		88.8	70	130			
Surr: Dibromofluoromethane	11		10.00		107	70	130			
Surr: Toluene-d8	9.8		10.00		98.3	70	130			

Sample ID: rb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: W59020	RunNo: 59020								
Prep Date:	Analysis Date: 4/9/2019	SeqNo: 1985773			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								

Qualifiers:

H Holding times for preparation or analysis exceeded
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1904022

10-Apr-19

Client: Blagg Engineering**Project:** MUDGE B 12R

Sample ID: rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: W59020			RunNo: 59020						
Prep Date:	Analysis Date: 4/9/2019			SeqNo: 1985773		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
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								

Qualifiers:

H Holding times for preparation or analysis exceeded
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1904022

10-Apr-19

Client: Blagg Engineering**Project:** MUDGE B 12R

Sample ID: rb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: W59020	RunNo: 59020								
Prep Date:	Analysis Date: 4/9/2019	SeqNo: 1985773 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.3	70	130			
Surr: Dibromofluoromethane	11		10.00		113	70	130			
Surr: Toluene-d8	9.7		10.00		96.9	70	130			

Sample ID: 100ng lcsb	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: W59020	RunNo: 59020								
Prep Date:	Analysis Date: 4/9/2019	SeqNo: 1985774 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.4	70	130			
Toluene	19	1.0	20.00	0	96.0	70	130			
Chlorobenzene	19	1.0	20.00	0	94.9	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	95.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.4		10.00		93.5	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		90.7	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	10		10.00		99.6	70	130			

Sample ID: 1904022-001a ms	SampType: MS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: MW#2	Batch ID: W59020	RunNo: 59020								
Prep Date:	Analysis Date: 4/9/2019	SeqNo: 1985776 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	150	5.0	100.0	45.95	106	70	130			D
Toluene	100	5.0	100.0	0	99.8	70	130			D
Chlorobenzene	100	5.0	100.0	0	99.9	70	130			D
1,1-Dichloroethene	100	5.0	100.0	0	103	67.6	130			D
Trichloroethene (TCE)	99	5.0	100.0	0	99.1	70	130			D
Surr: 1,2-Dichloroethane-d4	51		50.00		101	70	130			D
Surr: 4-Bromofluorobenzene	47		50.00		94.4	70	130			D
Surr: Dibromofluoromethane	54		50.00		107	70	130			D
Surr: Toluene-d8	50		50.00		101	70	130			D

Qualifiers:

H Holding times for preparation or analysis exceeded
 PQL Practical Quantitative Limit
 S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit
 RL Reporting Detection Limit
 W Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1904022

10-Apr-19

Client: Blagg Engineering

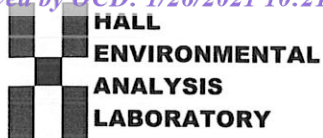
Project: MUDGE B 12R

Sample ID: 1904022-001a msd		SampType: MSD		TestCode: EPA Method 8260B: VOLATILES						
Client ID: MW#2		Batch ID: W59020		RunNo: 59020						
Prep Date:		Analysis Date: 4/9/2019		SeqNo: 1985777		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	140	5.0	100.0	45.95	95.5	70	130	7.12	20	D
Toluene	95	5.0	100.0	0	95.5	70	130	4.49	20	D
Chlorobenzene	97	5.0	100.0	0	96.8	70	130	3.20	20	D
1,1-Dichloroethene	100	5.0	100.0	0	101	67.6	130	1.57	20	D
Trichloroethene (TCE)	99	5.0	100.0	0	98.6	70	130	0.564	20	D
Surr: 1,2-Dichloroethane-d4	51		50.00		103	70	130	0	0	D
Surr: 4-Bromofluorobenzene	47		50.00		94.3	70	130	0	0	D
Surr: Dibromofluoromethane	56		50.00		113	70	130	0	0	D
Surr: Toluene-d8	49		50.00		98.4	70	130	0	0	D

Qualifiers:

H Holding times for preparation or analysis exceeded
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified at testcode



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: **BLAGG**Work Order Number: **1904022**RcptNo: **1**Received By: **Anne Thorne**

3/30/2019 9:20:00 AM

Completed By: **Yazmine Garduno**

4/1/2019 11:19:01 AM

Reviewed By: **ENM**LB: **IO 4/01/19**

Anne Thorne
Yazmine Garduno

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? IO 4/01/19

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			
2	1.0	Good	Yes			
3	1.0	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1907079

10-Jul-19

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID: rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: W61218			RunNo: 61218						
Prep Date:	Analysis Date: 7/8/2019			SeqNo: 2075313		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.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1907079

10-Jul-19

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID: rb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: W61218			RunNo: 61218						
Prep Date:	Analysis Date: 7/8/2019			SeqNo: 2075313		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	9.7		10.00		97.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.8	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: W61218			RunNo: 61218						
Prep Date:	Analysis Date: 7/8/2019			SeqNo: 2075314		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	23	1.0	20.00	0	113	70	130			
Toluene	20	1.0	20.00	0	99.4	70	130			
Chlorobenzene	19	1.0	20.00	0	93.5	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1907079

10-Jul-19

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID: 100ng lcs	SampType: LCS		TestCode: EPA Method 8260B: VOLATILES							
Client ID: LCSW	Batch ID: W61218		RunNo: 61218							
Prep Date:	Analysis Date: 7/8/2019		SeqNo: 2075314		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	18	1.0	20.00	0	92.3	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.9	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.3	70	130			
Surr: Dibromofluoromethane	9.3		10.00		92.7	70	130			
Surr: Toluene-d8	9.7		10.00		97.2	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Page 7 of 7



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: **BLAGG**Work Order Number: **1907079**RcptNo: **1**Received By: **Isaiah Ortiz** 7/2/2019 7:15:00 AMCompleted By: **Yazmine Garduno** 7/2/2019 8:31:07 AMReviewed By: **LB** 7/2/19

IOX
Yazmine Garduno

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: **DAD 7/2/19**

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 1909A96
03-Oct-19

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID: MB-B		SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: PBW		Batch ID: B63317		RunNo: 63317						
Prep Date:		Analysis Date: 9/30/2019		SeqNo: 2160886		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID: LCS-B		SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals						
Client ID: LCSW		Batch ID: B63317		RunNo: 63317						
Prep Date:		Analysis Date: 9/30/2019		SeqNo: 2160888		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	100	85	115			
Manganese	0.50	0.0020	0.5000	0	99.2	85	115			

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1909A96

03-Oct-19

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R63131	RunNo: 63131								
Prep Date:	Analysis Date: 9/23/2019	SeqNo: 2153819	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	20	1.0	20.00	0	102	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	96.0	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	97.1	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.6	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.5	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID: rb1	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R63131	RunNo: 63131								
Prep Date:	Analysis Date: 9/23/2019	SeqNo: 2153841	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1909A96

03-Oct-19

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID: rb1	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R63131	RunNo: 63131								
Prep Date:	Analysis Date: 9/23/2019	SeqNo: 2153841	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Page 7 of 9

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 1909A96
03-Oct-19

Client: Blagg Engineering
Project: Mudge B 12R

Sample ID: rb1		SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW		Batch ID: R63131		RunNo: 63131						
Prep Date:		Analysis Date: 9/23/2019		SeqNo: 2153841		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.3	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.4	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	11		10.00		105	70	130			

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1909A96

03-Oct-19

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID: MB-47682	SampType: MBLK	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: PBW	Batch ID: 47682	RunNo: 63196								
Prep Date: 9/24/2019	Analysis Date: 9/25/2019	SeqNo: 2155942		Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: LCS-47682	SampType: LCS	TestCode: SM2540C MOD: Total Dissolved Solids								
Client ID: LCSW	Batch ID: 47682	RunNo: 63196								
Prep Date: 9/24/2019	Analysis Date: 9/25/2019	SeqNo: 2155943		Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	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

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

Page 9 of 9



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: BLAGG

Work Order Number: 1909A96

RcptNo: 1

Received By: Yazmine Garduno

9/20/2019 8:15:00 AM

Completed By: Michelle Garcia

9/20/2019 10:05:55 AM

Reviewed By:

YGA/23/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☒ No ☒ NA ☐ **DAD 9/23/19**
9. VOA vials have zero headspace? Yes ☒ No ☐ No VOA Vials ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved bottles checked for pH: 1
(<2 or >12 unless noted)
Adjusted? YES
Checked by: DAD 9/23/19

Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via:

☐ eMail☐ Phone☐ Fax☐ In Person

Regarding:

Client Instructions:

16. Additional remarks: From provided 1 Liter poured off 3/4 filtered ~125mL. Added ~0.4mL HNO₃ to sample OOLC for pH < 2.

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.0	Good	Yes			
2	5.9	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912C39

03-Jan-20

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID: 100ng lcs	SampType: LCS				TestCode: EPA Method 8260B: VOLATILES					
Client ID: LCSW	Batch ID: R65492				RunNo: 65492					
Prep Date:	Analysis Date: 12/30/2019				SeqNo: 2250071	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	99.4	70	130			
Toluene	19	1.0	20.00	0	94.8	70	130			
Chlorobenzene	20	1.0	20.00	0	99.1	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	95.8	70	130			
Trichloroethene (TCE)	18	1.0	20.00	0	90.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.5		10.00		94.8	70	130			
Surr: 4-Bromofluorobenzene	9.6		10.00		95.5	70	130			
Surr: Dibromofluoromethane	10		10.00		102	70	130			
Surr: Toluene-d8	9.9		10.00		98.9	70	130			

Sample ID: rb1	SampType: MBLK				TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW	Batch ID: R65492				RunNo: 65492					
Prep Date:	Analysis Date: 12/30/2019				SeqNo: 2250101	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912C39

03-Jan-20

Client: Blagg Engineering

Project: MUDGE B 12R

Sample ID: rb1	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R65492			RunNo: 65492						
Prep Date:	Analysis Date: 12/30/2019			SeqNo: 2250101		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912C39

03-Jan-20

Client: Blagg Engineering

Project: MUDGE B 12R

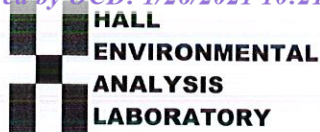
Sample ID: rb1	SampType: MBLK		TestCode: EPA Method 8260B: VOLATILES							
Client ID: PBW	Batch ID: R65492		RunNo: 65492							
Prep Date:	Analysis Date: 12/30/2019		SeqNo: 2250101		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.6	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.0	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Page 7 of 7



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: **BLAGG**Work Order Number: **1912C39**RcptNo: **1**Received By: **Desiree Dominguez** 12/24/2019 8:30:00 AMCompleted By: **Erin Melendrez** 12/24/2019 9:21:53 AMReviewed By: *DM 12/24/19*

DD
EM

Chain of Custody1. Is Chain of Custody sufficiently complete? Yes ☒ No ☐ Not Present ☐2. How was the sample delivered? CourierLog In3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐5. Sample(s) in proper container(s)? Yes ☒ No ☐6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☒ No ☐ NA ☐10. Were any sample containers received broken? Yes ☐ No ☒11. Does paperwork match bottle labels? Yes ☒ No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐13. Is it clear what analyses were requested? Yes ☒ No ☐14. Were all holding times able to be met? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: **DAD 12/24/19**Special Handling (if applicable)15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____

Date: _____

By Whom: _____

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.9	Good	Yes			

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2004026

09-Apr-20

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R67944			RunNo: 67944						
Prep Date:	Analysis Date: 4/6/2020			SeqNo: 2347890		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	70	130			
Toluene	22	1.0	20.00	0	108	70	130			
Chlorobenzene	22	1.0	20.00	0	110	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	101	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	98.3	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.2	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.7	70	130			
Surr: Dibromofluoromethane	9.8		10.00		98.0	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: 100ng lcs2	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: B67944			RunNo: 67944						
Prep Date:	Analysis Date: 4/6/2020			SeqNo: 2347916		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.7	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.9	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.9	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Sample ID: mb2	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: B67944			RunNo: 67944						
Prep Date:	Analysis Date: 4/6/2020			SeqNo: 2347917		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.9	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	9.9		10.00		98.7	70	130			

Sample ID: MB	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R67944			RunNo: 67944						
Prep Date:	Analysis Date: 4/6/2020			SeqNo: 2347926		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								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2004026

09-Apr-20

Client: Blagg Engineering

Project: Mudge B 12R

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R67944	RunNo: 67944								
Prep Date:	Analysis Date: 4/6/2020	SeqNo: 2347926	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Page 6 of 7

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2004026

09-Apr-20

Client: Blagg Engineering**Project:** Mudge B 12R

Sample ID: MB	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R67944	RunNo: 67944								
Prep Date:	Analysis Date: 4/6/2020	SeqNo: 2347926 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		98.9	70	130			
Surr: Dibromofluoromethane	9.9		10.00		98.7	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit



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: **BLAGG**Work Order Number: **2004026**RcptNo: **1**Received By: **Juan Rojas**

4/1/2020 8:05:00 AM

Completed By: **John Caldwell**

4/1/2020 12:54:43 PM

Reviewed By:

JR 4/1/20

Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

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

Special Handling (if applicable)

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

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good				

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2006429

12-Jun-20

Client: Blagg Engineering

Project: MUDGE B # 12R

Sample ID: mb1	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R69551			RunNo: 69551						
Prep Date:	Analysis Date: 6/10/2020			SeqNo: 2413998		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.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Page 5 of 7

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2006429

12-Jun-20

Client: Blagg Engineering

Project: MUDGE B # 12R

Sample ID: mb1	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R69551			RunNo: 69551						
Prep Date:	Analysis Date: 6/10/2020			SeqNo: 2413998		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	9.6		10.00		96.3	70	130			
Surr: 4-Bromofluorobenzene	9.0		10.00		89.8	70	130			
Surr: Dibromofluoromethane	11		10.00		106	70	130			
Surr: Toluene-d8	9.8		10.00		97.6	70	130			

Sample ID: 100ng lcs	SampType: LCS			TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW	Batch ID: R69551			RunNo: 69551						
Prep Date:	Analysis Date: 6/10/2020			SeqNo: 2413999		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	20	1.0	20.00	0	102	70	130			
Chlorobenzene	21	1.0	20.00	0	103	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2006429
12-Jun-20

Client: Blagg Engineering
Project: MUDGE B # 12R

Sample ID: 100ng lcs		SampType: LCS		TestCode: EPA Method 8260B: VOLATILES						
Client ID: LCSW		Batch ID: R69551		RunNo: 69551						
Prep Date:		Analysis Date: 6/10/2020		SeqNo: 2413999		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	24	1.0	20.00	0	120	70	130			
Trichloroethene (TCE)	22	1.0	20.00	0	108	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.8	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	9.9		10.00		99.3	70	130			

Qualifiers:

- *

Value exceeds Maximum Contaminant Level.
- D

Sample Diluted Due to Matrix
- H

Holding times for preparation or analysis exceeded
- ND

Not Detected at the Reporting Limit
- PQL

Practical Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit



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4901 Hawkins NE
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TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **BLAGG**Work Order Number: **2006429**RcptNo: **1**Received By: **Isaiah Ortiz**

6/9/2020 8:00:00 AM

Completed By: **Juan Rojas**

6/9/2020 8:31:29 AM

Reviewed By: **DAD 6/9/20***I-OK**Juan Rojas*

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace $<1/4$ " for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good				

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009A95

22-Sep-20

Client: SIMCOE/Cottonwood Consulting**Project:** Mudge B 12R

Sample ID: 100ng 8260 lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: R71977	RunNo: 71977								
Prep Date:	Analysis Date: 9/19/2020	SeqNo: 2519771	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	97.6	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.9	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: R71977	RunNo: 71977								
Prep Date:	Analysis Date: 9/19/2020	SeqNo: 2519773	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2009A95

22-Sep-20

Client: SIMCOE/Cottonwood Consulting

Project: Mudge B 12R

Sample ID: mb	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: R71977			RunNo: 71977						
Prep Date:	Analysis Date: 9/19/2020			SeqNo: 2519773		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2009A95
22-Sep-20

Client: SIMCOE/Cottonwood Consulting
Project: Mudge B 12R

Sample ID: mb		SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES					
Client ID: PBW		Batch ID: R71977			RunNo: 71977					
Prep Date:		Analysis Date: 9/19/2020			SeqNo: 2519773		Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.5		10.00		94.8	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

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

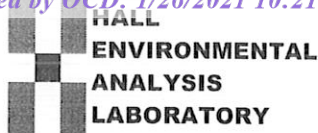
E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Limit

Page 7 of 7



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

Sample Log-In Check List

Client Name: SIMCOE/Cottonwood Consulting

Work Order Number: 2009A95

RcptNo: 1

Received By: Emily Mocho 9/18/2020 8:00:00 AM

Completed By: Emily Mocho 9/18/2020 8:57:08 AM

Reviewed By: EM 9/18/20

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered?

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by:

Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via:

☐ eMail

☐ Phone

☐ Fax

☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.5	Good	Yes			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2012933

30-Dec-20

Client: SIMCOE/Cottonwood Consulting

Project: Mudge B 12R

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: A74228	RunNo: 74228								
Prep Date:	Analysis Date: 12/23/2020	SeqNo: 2620156	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.8		10.00		97.6	70	130			

Sample ID: VSF Fridge	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: A74228	RunNo: 74228								
Prep Date:	Analysis Date: 12/23/2020	SeqNo: 2620157	Units: %Rec							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	10		10.00		99.6	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	11		10.00		111	70	130			
Surr: Toluene-d8	9.7		10.00		97.1	70	130			

Sample ID: mb1	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: A74244	RunNo: 74244								
Prep Date:	Analysis Date: 12/24/2020	SeqNo: 2620789	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								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2012933

30-Dec-20

Client: SIMCOE/Cottonwood Consulting

Project: Mudge B 12R

Sample ID: mb1	SampType: MBLK			TestCode: EPA Method 8260B: VOLATILES						
Client ID: PBW	Batch ID: A74244			RunNo: 74244						
Prep Date:	Analysis Date: 12/24/2020			SeqNo: 2620789		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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								
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								

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2012933

30-Dec-20

Client: SIMCOE/Cottonwood Consulting**Project:** Mudge B 12R

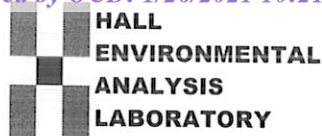
Sample ID: mb1	SampType: MBLK	TestCode: EPA Method 8260B: VOLATILES								
Client ID: PBW	Batch ID: A74244	RunNo: 74244								
Prep Date:	Analysis Date: 12/24/2020	SeqNo: 2620789 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1,2-Trichloroethane	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	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	11		10.00		108	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260B: VOLATILES								
Client ID: LCSW	Batch ID: A74244	RunNo: 74244								
Prep Date:	Analysis Date: 12/24/2020	SeqNo: 2620790 Units: µg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	112	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Chlorobenzene	21	1.0	20.00	0	105	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	102	70	130			
Trichloroethene (TCE)	19	1.0	20.00	0	95.6	70	130			
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.8	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.9	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.2	70	130			
Surr: Toluene-d8	9.6		10.00		95.5	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit



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

Sample Log-In Check List

Client Name: **SIMCOE/Cottonwood Consulting**

Work Order Number: **2012933**

RcptNo: 1

Received By: **Desiree Dominguez** 12/18/2020 8:00:00 AM

Completed By: **Desiree Dominguez** 12/18/2020 8:41:04 AM

Reviewed By:

SR 12/18/20

DP

DP

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☒ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: SGL 12/18/20

Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via:

☐ eMail

☐ Phone

☐ Fax

☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good	Yes			

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 15656

CONDITIONS

Operator: SIMCOE LLC 1199 Main Ave., Suite 101 Durango, CO 81301	OGRID:
	329736
	Action Number:
	15656
Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)	

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2020 Remediation Report submitted for Mudge B 012R: Content Satisfactory 1. Continue SVE monitoring and conducting groundwater monitoring as prescribed by OCD. 2. Submit annual reports by April 1, 2024. 3. Eight (8) consecutive quarterly samples for COCs must be below the WQCC standards in 20.6.2 in order for the site incident to be eligible for closure with a closure report and request submitted per 19.15.30.19 of NMAC	1/16/2024