# AE Order Number Banner

**Report Description**

**This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.**

**App Number:** pWCO0127033627

3RP - 381

BP AMERICA PRODUCTION COMPANY

*7/6/2017*

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

# Release Notification and Corrective Action

## OPERATOR

☐ Initial Report ☒ Final Report

| | |
|---|---|
| Name of Company: BP | Contact: Steve Moskal |
| Address: 200 Energy Court, Farmington, NM 87401 | Telephone No.: 505-326-9497 |
| Facility Name: Gallegos Canyon Unit 170 | Facility Type: Natural gas well |

| | | |
|---|---|---|
| Surface Owner: Fee | Mineral Owner: Fee | API No. 30-045-07658 |

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County: San Juan |
|---|---|---|---|---|---|---|---|---|
| K | 35 | 29N | 12W | 1,750 | South | 1,777 | West | |

**Latitude** 36.68015° **Longitude** -108.07149°

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release: Produced water and condensate | Volume of Release: 253 bbl | Volume Recovered: 71.1 |
| Source of Release: Failed well casing | Date and Hour of Occurrence: July 21, 2016; 2:15 PM | Date and Hour of Discovery: July 22, 2016; 8:30 AM |
| Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required | If YES, To Whom? Landowner Contacted Brandon Powell - NMOCD | |
| By Whom? Jesus Villalobos – Private Landowner | Date and Hour: 7/22/16; Phone 8:30 AM, Email 5:30 PM | |
| Was a Watercourse Reached? ☐ Yes ☒ No | If YES, Volume Impacting the Watercourse. | |

OIL CONS. DIV DIST. 3
JUN 08 2017

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* A significant increase in water production of the well is suspected to be associated with a breach in the downhole casing. The produced water triggered an alarm, closing the automated choke valve. The water then filled the separator, above ground tank (pit) and production tank which subsequently became overfilled. The well was shut in and the freestanding liquids were recovered via vac-truck. After further investigation, the production well had an apparent integrity failure and was subsequently P&A'd. The remediation via excavation removed 15,000 cubic yards of soil for offsite disposal. Subsequent groundwater delineation and monitoring is enclosed in the attached report.

Describe Area Affected and Cleanup Action Taken.* The majority of the existing well pad was excavated to remove impacts associated with the production well integrity failure as well as historical impacts. A total of 15,000 cubic yards of soil was removed and transported off site for landfarm treatment. The report documents the existence and/or extents of groundwater impacts via the installation of several groundwater monitoring wells. The report and confirmation laboratory data demonstrates that the excavation of the recent and historically impacted material was successful in remediating soil and groundwater. BP request no further action at the site. BP requests approval for removal of the monitoring wells and site closure

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

| | | |
|---|---|---|
| Signature: | OIL CONSERVATION DIVISION | |
| Printed Name: Steve Moskal | Approved by Environmental Specialist: | |
| Title: Field Environmental Coordinator | Approval Date: 7/6/17 | Expiration Date: |
| E-mail Address: steven.moskal@bp.com | Conditions of Approval: | Attached ☒ |
| Date: June 7, 2017 Phone: 505-326-9497 | | |

* Attach Additional Sheets If Necessary 3RP-381 #NCS1621656998

78

## Smith, Cory, EMNRD

**From:** Smith, Cory, EMNRD
**Sent:** Thursday, July 6, 2017 11:26 AM
**To:** 'Moskal, Steven'
**Cc:** jeffcblagg@aol.com; blagg_njv@yahoo.com; Bayliss, Randolph, EMNRD; Fields, Vanessa, EMNRD
**Subject:** RE: Gallegos Canyon Unit 170 GWM Report

Good morning Steve,

The OCD has reviewed the Ground Water Report for the Gallegos Canyon Unit 170 (API# 30-045-07658 3RP#-381) that was received on Jun 8, 2017. Following BP remediation and the review of the laboratory water results the Jul 21, 2016 release did not impact the local ground water. No further Soil or Water sampling for that release (incident #NCS1621656998) will be required.

However ground water sampling for the historic 1995 release will need to be continued for a total of 4 consecutive quarters of clean results prior to closure. Once additional sampling is completed BP can request no further action for the historic site though the Santa Fe Office.

This Ground water report will be filed in 3RP-381 online file. If BP has any additional questions in regards to the 1995 historic release ground water sampling please contact Randy Bayliss for any additional questions for the Jul 21, 2016 release BP may contact myself.

Thank you

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

**From:** Moskal, Steven [mailto:Steven.Moskal@bp.com]
**Sent:** Wednesday, June 7, 2017 3:10 PM
**To:** Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>
**Cc:** jeffcblagg@aol.com; blagg_njv@yahoo.com
**Subject:** Gallegos Canyon Unit 170 GWM Report

Randy and Cory,

Attached is the GCU 170 groundwater activities and monitoring report with accompanying C-141. At this time, BP requests no further action at the location as documented in the C-141. Please review and let me know if you have any feedback.

Thank you,

# Groundwater Monitoring

**GCU 170**
**(K) Sec 35 – T29N – R12W**
**API: 30-045-07658**
**San Juan County, New Mexico**

**3RP-422**

Prepared for:
BP America Production Co.
Farmington, New Mexico

Prepared by:
Blagg Engineering, Inc.
P.O. Box 87
Bloomfield, New Mexico 87413
(505)632-1199

May 30, 2017

GROUNDWATER MONITORING
GCU 170

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APPENDICES

GROUNDWATER MONITORING
GCU 170

## INTRODUCTION

Blagg Engineering Inc. (BEI) has been retained by BP America Production Co. (BP) to conduct groundwater monitoring at the GCU 170, located in rural San Juan County, New Mexico at (K) Sec. 35 – T29N – R12W (Figure 1). The purpose of the monitoring was to evaluate groundwater quality following a remedial excavation of hydrocarbon impacted soils that had resulted from an unexpected tank overflow of hydrocarbon condensate on July 21, 2016. Additional soils from historical gas well operations (1995 Impact Remediation) were also removed during the soil remediation. All remedial activities were completed on December 13, 2016 and documented in the BEI report "Release Remediation, GCU 170" dated February 28, 2017. The activities performed during the groundwater well installation and monitoring were executed following the work plan approved, with conditions, on March 24, 2017 by the New Mexico Oil Conservation District III office.

There were pre-existing groundwater monitoring wells at the site before the July 21, 2016 release. A total of four (4) monitor wells had been installed to monitor site water quality from on-site soil impacts that were known to remain following a 1995 remedial excavation. In summary, these wells indicated that groundwater impacts did exist on the original gas well pad, but appeared to be immobile and were not moving in a down-gradient direction (northwest) off of the pad area. With the exception of one (1) off-pad monitor well, MW-5, three (3) on-site pre-existing site wells (MW-2, 3 & 4) were excavated and removed during the recent site remedial activities.

For this groundwater monitoring, the three (3) monitoring points that had been excavated were replaced, and an additional four (4) monitor wells were installed in and around the remedial excavation. The lithology encountered during drilling consisted of recent sedimentary deposits, primarily sand, silt and clay. Groundwater is present at depths between approximately 6 feet to 10 feet below surface grade. Soil samples collected during monitor well installation were analytically tested for hydrocarbon impacts and none were detected.

Laboratory analytical results of groundwater samples collected from the eight (8) monitoring wells did not detect any hydrocarbon impacts in any well.

## INVESTIGATION ACTIVITIES

During monitor well installation, conducted on April 6 – 10, 2017, a total of seven (7) borings were advanced into the water table. Drilling locations had been pre-determined and well permits had been approved by the New Mexico Office of the State Engineer. Three (3) of the borings were drilled as replacements to wells excavated during soil remediation (MW-2A, MW-3A and MW-4A). Four (4) monitor wells MW-6, MW-7, MW-8 and MW-9 were installed to further evaluate up-gradient, down-gradient and prior impact area water quality (see Figure 1)

Monitor well development was performed on April 12, 2017 and groundwater sampling for laboratory analytical testing was conducted on April 17, 2017 with witnessing by the New Mexico Oil Conservation Division (NMOCD) and a landowner representative.

## INVESTIGATIVE PROCEDURES

Beginning on April 6, 2017 drilling operations were commenced by GeoMat using a CME-55 hollow stem auger rig equipped with 5-foot long x 7-3/4 inch outside diameter, 4-inch inside diameter auger. While drilling soil samples were collected using a 2-inch diameter split spoon sampler (see Figures 3 – 10 for boring logs). Monitor wells MW-2A, MW-7 and MW-9 were installed on April 6, 2017; wells MW-4A, MW-6 and MW-8 were installed on April 7, 2017; well MW-3A was installed on April 10, 2017. Well protectors and bollards for all wells were installed on April 10 – 11, 2017.

A representative portion from each split spoon sample was placed into a gallon sized Ziploc® baggie for field headspace analysis of organic vapors with a calibrated IonScience Tiger model photo-ionization detector (PID) containing a 11.2 eV lamp. Split samples were placed into a 4-ounce laboratory supplied jar with Teflon® lid, labeled and placed on ice in an ice chest for further laboratory testing. The jarred samples were hand delivered to a representative of Hall Environmental Analytical Laboratories for analysis via U.S. EPA Method 8021B (volatile organics limited to benzene, toluene, ethyl benzene and total xylenes) and U.S. EPA Method 8015 (gasoline range (GRO), diesel range (DRO) and motor oil range (MRO) organics) and U.S. EPA Method 300 (chloride). A chain-of-custody followed the samples. Soil samples from monitor wells MW-8 and MW-9 were also tested for complete cation/anion analysis to evaluate potential soil impacts from the nearby GCU #2 plugged and abandon well, previously operated by Benson, Montin, Greer Drilling Company.

Well completions consisted of a 10-foot long slotted screened section with riser extending to surface grade. The piping used for completion of the wells was a schedule 40 PVC with threaded connections. The annulus of the screened section was sand packed with washed graded silica 10/20 mesh from boring total depth (TD) to approximately 2 feet above the top screen slot. A 2 foot section of hydrated bentonite was placed immediately above the sand pack, with a cement grout mix installed above this to the ground surface. The well tops were secured with a steel, secured well protector, cemented into place and locked.

The wells with water were developed on April 12, 2017 by using a new, dedicated disposable pump and tubing to recover water from each well until stable parameters (pH, Conductivity and Temperature) were achieved. The wells were sampled by hand bailing using a new, dedicated disposable bailer until stable parameters were achieved on April 17, 2017 with a NMOCD and landowner representative present to witness. Samples were placed into laboratory supplied containers with appropriate preservatives, labeled, placed on ice in an ice chest, then hand delivered to a Hall Laboratories representative with chain-of-custody documentation. Laboratory samples were analyzed via U.S EPA Method 8260 for volatile organics and cation/anion balance.

On April 20, 2017 an engineering survey of the monitor well tops was conducted to establish the site groundwater gradient.

## INVESTIGATION FINDINGS

Laboratory analytical data from the soils collected during drilling are summarized below in Table 1. Laboratory reports are included in Appendix B. Boring logs are included as Figures 3 – 10. No soil samples were found to have TPH, Benzene, BTEX or Chlorides in excess of NMOCD closure standards.

TABLE 1
Soil Analytical Results
April 6 - 10, 2017

| Monitor Well | Sample Date | Sample Depth | Field OVM (ppm) | TPH Total (mg/Kg) | Benzene (mg/Kg) | Total BTEX (mg/Kg) | Chloride (mg/Kg) |
|---|---|---|---|---|---|---|---|
| 2A | 4/6/2017 | 5'-7' | ND | 10 | ND | ND | 120 |
| 2A | 4/6/2017 | 14'-16' | ND | ND | ND | ND | ND |
| 3A | 4/10/2017 | 5'-7' | ND | ND | ND | ND | 150 |
| 3A | 4/10/2017 | 14'-16' | ND | ND | ND | ND | ND |
| 4A | 4/7/2017 | 5'-7' | ND | ND | ND | ND | 180 |
| 4A | 4/7/2017 | 14'-16' | ND | ND | ND | ND | ND |
| 6 | 4/7/2017 | 5'-7' | ND | ND | ND | ND | ND |
| 6 | 4/7/2017 | 14'-16' | ND | ND | ND | ND | ND |
| 7 | 4/6/2017 | 5'-7' | ND | ND | ND | ND | 120 |
| 7 | 4/6/2017 | 14'-16' | ND | ND | ND | ND | ND |
| 8 | 4/7/2017 | 5'-7' | ND | ND | ND | ND | 100 |
| 8 | 4/7/2017 | 7'-9' | ND | ND | ND | ND | 78 |
| 9 | 4/6/2017 | 3'-6' | 0.1 | ND | ND | ND | 220 |
| 9 | 4/6/2017 | 7'-9' | 0.2 | ND | ND | ND | 310 |
| | NMOCD | Closure | Standard: | 100 | 10 | 50 | 600 |

ND = Not Detected at Laboratory Practical Quantitative Limit

Laboratory analytical data from monitor well groundwater sampling is summarized below in Table 2. Analytical data reports are included in Appendix B.

No hydrocarbon contaminates in excess of NMOCD or New Mexico Water Quality Control Commission (NMWQCC) regulatory standards were detected in any water sample. Total dissolved solids (TDS), a measurement of natural dissolved salts, were detected at levels above the NMWQCC recommended level. TDS is an aesthetic parameter related primarily to the taste of domestic water. It is common to be elevated in agricultural areas that use fertilizer or that run livestock. Review of the laboratory data indicate that the primary ions contributing to elevated TDS were sulfate and calcium. Sodium was a minor contributor.

TABLE 2
Groundwater Summary Analytical Results
April 17, 2017

| Monitor Well | Sample Date | Benzene (ug/L) | Toluene (ug/L) | Ethyl-Benzene (ug/L) | Total Xylenes (ug/L) | TDS (mg/L) |
|---|---|---|---|---|---|---|
| MW-2A | 4/17/2017 | ND | ND | ND | ND | 1,010 |
| MW-3A | 4/17/2017 | ND | ND | ND | ND | 1,160 |
| MW-4A | 4/17/2017 | ND | ND | ND | ND | 770 |
| MW-5 | 4/17/2017 | ND | ND | ND | ND | 1,490 |
| MW-6 | 4/17/2017 | ND | ND | ND | ND | 450 |
| MW-7 | 4/17/2017 | ND | ND | ND | ND | 1,610 |
| MW-8 | 4/17/2017 | ND | ND | ND | ND | 1,880 |
| MW-9 | 4/17/2017 | ND | ND | ND | ND | 800 |
| NMWQCC | Standard: | 10 | 750 | 750 | 620 | 1,000 |

ND = Not Detected at Laboratory Practical Quantitative Limit

Relative well top and groundwater elevations are summarized in Table 3. A site bench mark was established near the GCU #2 plugged and abandoned marker.

TABLE 3
Monitor Well Relative Elevation Tops and Groundwater Elevation
April 17, 2017

| Monitor Well | Relative Elevation Casing Top | Measured Depth to Water | Relative Groundwater Elevation |
|---|---|---|---|
| MW-2A | 99.57 | 8.71 | 90.86 |
| MW-3A | 97.46 | 7.92 | 89.54 |
| MW-4A | 99.08 | 8.86 | 90.22 |
| MW-5 | 96.05 | 7.47 | 88.58 |
| MW-6 | 101.53 | 9.98 | 91.55 |
| MW-7 | 99.97 | 9.25 | 90.72 |
| MW-8 | 97.69 | 8.63 | 89.06 |
| MW-9 | 100.28 | 11.38 | 88.90 |

The relative groundwater elevation data was used to estimate the site groundwater gradient and direction. Site Figure 2 depicts this gradient, which is in an approximate north-north-west direction. This indicates that monitor wells MW-5, MW-8 and MW-9 are properly placed as down-gradient receptors of potential hydrocarbon impacts to groundwater, and that monitor well MW-6 is properly placed as an up-gradient sampling point.

## REMEDIATION CLOSURE

The laboratory analytical results of boring soils and of groundwater indicate that site closure of soil and groundwater impacts has been achieved at all monitor well locations. This includes wells installed in and around the historical 1995 release area. It is Blagg Engineering, Inc's opinion that the monitor wells were sufficiently placed to quantify remaining on-site, down-gradient and up-gradient residual water quality. It is possible that monitor wells placed at other locations could result in differing analytical results.

It is Blagg Engineering, Inc's professional opinion that the sampling and analytical testing conducted was sufficient to determine that no groundwater impacts exceeding site closure standards for petroleum hydrocarbons remain at any monitor well points. There is no indication that additional site investigations are necessary, and closure is recommended.

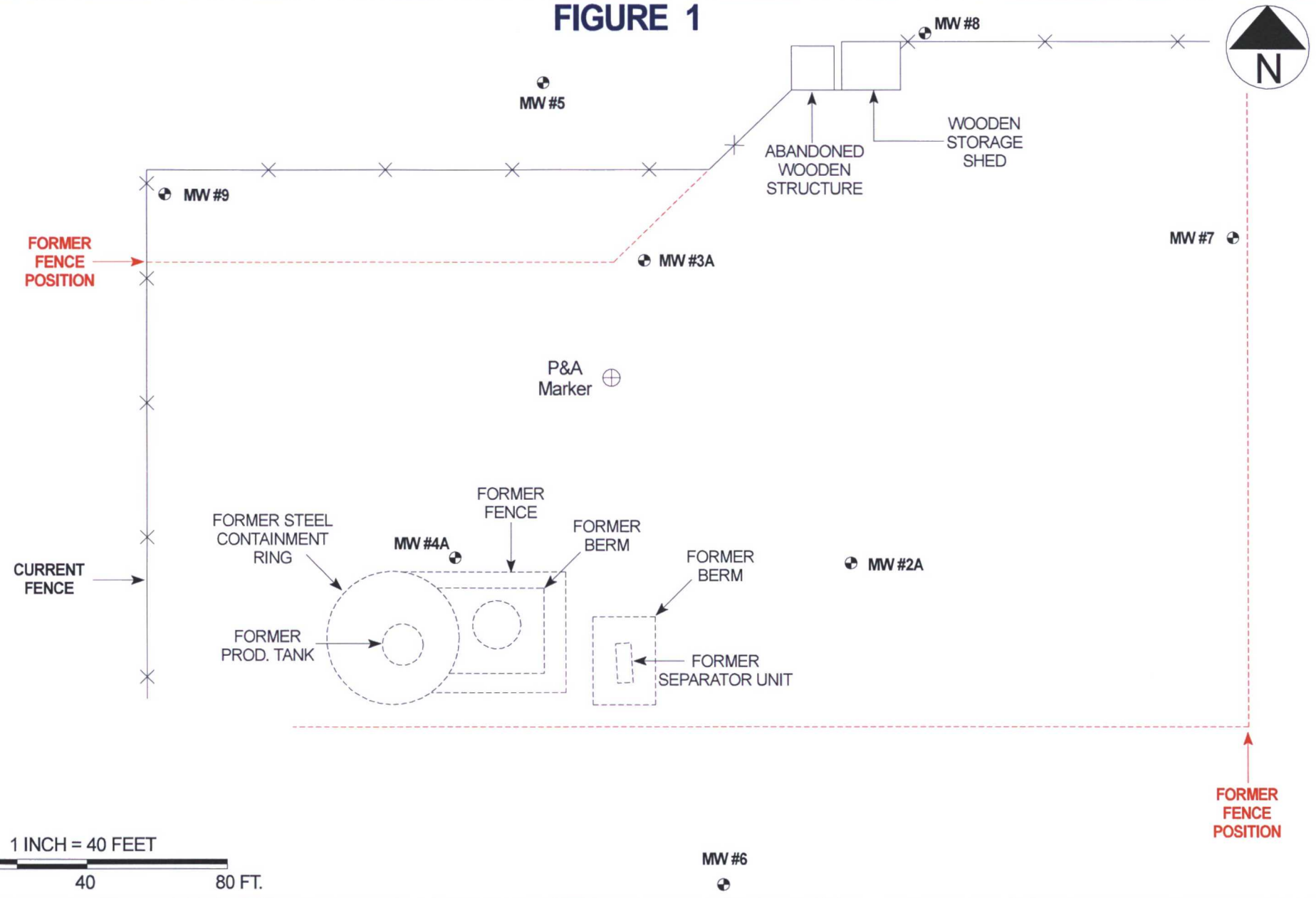
**Blagg Engineering, Inc.**

Jeffrey C. Blagg, P.E.
President

# APPENDIX A

# FIGURES

# FIGURE 1




BP AMERICA PRODUCTION COMPANY

GCU # 170

NE/4 SW/4 SEC. 35, T29N, R12W

SAN JUAN COUNTY, NEW MEXICO


B LAGG ENGINEERING, I NC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199


PROJECT: GROUNDWATER MONITORING

DRAWN BY: NJV

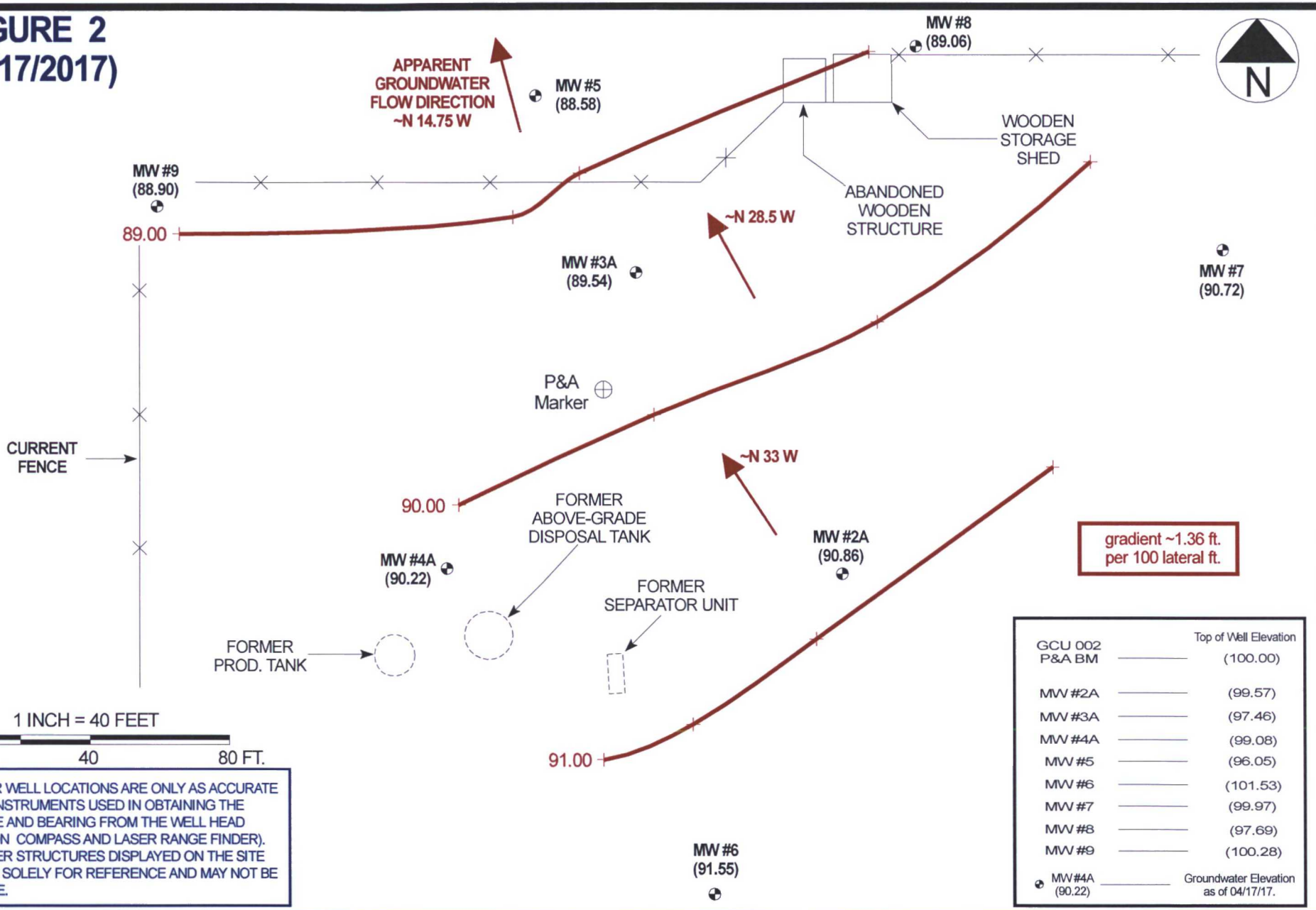
DRAFTED: 04/21/2017

FILENAME: GCU170 SM20170417.SKF

## SITE MAP

04/17

# FIGURE 2
# (04/17/2017)




| | Top of Well Elevation |
|---|---|
| GCU 002 P&A BM | (100.00) |
| MW #2A | (99.57) |
| MW #3A | (97.46) |
| MW #4A | (99.08) |
| MW #5 | (96.05) |
| MW #6 | (101.53) |
| MW #7 | (99.97) |
| MW #8 | (97.69) |
| MW #9 | (100.28) |

MW #4A (90.22) — Groundwater Elevation as of 04/17/17.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

BP AMERICA PRODUCTION COMPANY

GCU # 170

NE/4 SW/4 SEC. 35, T29N, R12W

SAN JUAN COUNTY, NEW MEXICO


B LAGG ENGINEERING, I NC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199


PROJECT: GROUNDWATER MONITORING

DRAWN BY: NJV

REVISED: 04/23/2017

FILENAME: GCU170 GW20170417.SKF

**GROUNDWATER CONTOUR MAP**

04/17

Figure 3

# BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 2A

# BORE / TEST HOLE REPORT

| | |
|---|---|
| BORING #..... | BH - 2 |
| MW #..... | 2A |
| PAGE #..... | 1 |
| DATE STARTED | 04/06/17 |
| DATE FINISHED | 04/06/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | NJV |

CLIENT: BP AMERICA PRODUCTION CO.
LOCATION NAME: GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W
CONTRACTOR: BLAGG ENGINEERING, INC. / GEOMAT
EQUIPMENT USED: MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER
BORING LOCATION: 87.5 FEET, S52E FROM P&A MARKER (GPS COORD.: 36.680182,-108.071353).

| DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME | FIELD OVM (ppm) | TPH (ppm) | BENZ. & TOTAL BTEX (ppm) | BLOW COUNT PER 18" & RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| 1–30 | | | TOS 3.8 | | | | | | |
| | | | | 5.0-7.0 | 1255 | 0.0 | 10 | ND ND | 5 - 3" |
| | | | BOS 13.8 | | | | | | |
| | | | TD 14.8 | 14.0-16.0 | 1355 | 0.0 | ND | ND ND | 8 - 14" |

## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY AT GRADE.

DARK YELLOWISH ORANGE SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 8.0 FT. BELOW GRADE).

GROUNDWATER ~ 8.71 ft. BELOW GRADE ; MEASURED 04/17/17.

OLIVE GRAY SILTY CLAY TO CLAY, COHESIVE TO MEDIUM PLASTIC, MOIST, STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (8.0 - 13.0 FT. BELOW GRADE).

OLIVE GRAY SAND, NON COHESIVE, SATURATED, LOOSE TO FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (13.0 - 16.0 FT. BELOW GRADE).

All soil samples collected via split spoon.

NOTES: - SAND & SILTY SAND. - SAND. - SILT CLAY TO CLAY.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).
TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

**OVM CALIBRATION**
100.0 ppm; RF = 1.00 (RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/06/17.
Time - 1400.

Monitor well consist of 2 inch PVC piping - casing from grade to 3.80 ft. below grade, 0.020 slotted screen between 3.80 to 13.80 ft. below grade, sand packed annular to 2.5 ft. below grade, bentonite grout between 2.5 to grade. Flush mount well protector encompassing exposed casing top, secured with locking cap and padlock.

DRAWING: GCU 170 MW2A-BH2. SKF | DATE: 04/25/17 | DWN BY: NJV

Figure 4

# BLAGG ENGINEERING, INC.

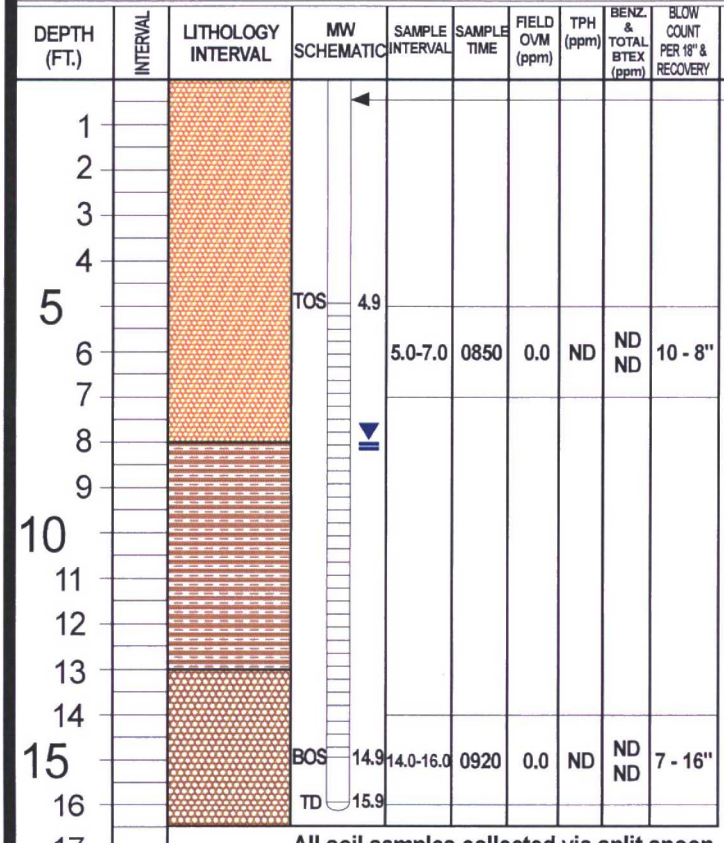
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 3A

# BORE / TEST HOLE REPORT

| | |
|---|---|
| CLIENT: | BP AMERICA PRODUCTION CO. |
| LOCATION NAME: | GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W |
| CONTRACTOR: | BLAGG ENGINEERING, INC. / GEOMAT |
| EQUIPMENT USED: | MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER |
| BORING LOCATION: | 35.4 FEET, N15.5E FROM P&A MARKER (GPS COORD.: 36.680423,-108.071556). |

| | |
|---|---|
| BORING #..... | BH - 8 |
| MW #..... | 3A |
| PAGE #..... | 2 |
| DATE STARTED | 04/10/17 |
| DATE FINISHED | 04/10/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | JCB |




## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY AT GRADE.

DARK YELLOWISH ORANGE SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 8.0 FT. BELOW GRADE).

GROUNDWATER ~ 7.92 ft. BELOW GRADE ; MEASURED 04/17/17.

OLIVE GRAY SILTY CLAY TO CLAY, COHESIVE TO MEDIUM PLASTIC, MOIST, STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (8.0 - 13.0 FT. BELOW GRADE).

OLIVE GRAY SAND, NON COHESIVE, SATURATED, LOOSE TO FIRM, COURSE GRAINED, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (13.0 - 16.5 FT. BELOW GRADE).

All soil samples collected via split spoon.

NOTES: - SAND & SILTY SAND. - SAND. - SILT CLAY TO CLAY.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).

TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

**OVM CALIBRATION**
100.0 ppm; RF = 1.00 (RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/10/17.
Time - 0930.

Monitor well consist of 2 inch PVC piping - casing from grade to 4.90 ft. below grade, 0.020 slotted screen between 4.90 to 14.90 ft. below grade, sand packed annular to 3.0 ft. below grade, bentonite grout between 3.0 to grade. Flush mount well protector encompassing exposed casing top, secured with locking cap and padlock.

DRAWING: GCU 170 MW3A-BH8. | DATE: 04/26/17 | DWN BY: NJV

Figure 5

# BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 4A

# BORE / TEST HOLE REPORT

| | |
|---|---|
| BORING #..... | BH - 7 |
| MW #..... | 4A |
| PAGE #..... | 3 |
| DATE STARTED | 04/07/17 |
| DATE FINISHED | 04/07/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | NJV |

CLIENT: BP AMERICA PRODUCTION CO.
LOCATION NAME: GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W
CONTRACTOR: BLAGG ENGINEERING, INC. / GEOMAT
EQUIPMENT USED: MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER
BORING LOCATION: 69.2 FEET, S41W FROM P&A MARKER (GPS COORD.: 36.680186,-108.717440).

| DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME | FIELD OVM (ppm) | TPH (ppm) | BENZ. & TOTAL BTEX (ppm) | BLOW COUNT PER 18" & RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| 5 | | | TOS 5.0 | 5.0-7.0 | 1225 | 0.0 | ND | ND<br>ND | 9 - 14" |
| 15 | | | BOS 15.0<br>TD 16.0 | 14.0-16.0 | 1355 | 0.0 | ND | ND<br>ND | 7 - 19" |

All soil samples collected via split spoon.

## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY AT GRADE.

DARK YELLOWISH ORANGE SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 8.0 FT. BELOW GRADE).

GROUNDWATER ~ 8.86 ft. BELOW GRADE ; MEASURED 04/17/17.

OLIVE GRAY SILTY CLAY TO CLAY, COHESIVE TO MEDIUM PLASTIC, MOIST, STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (8.0 - 13.0 FT. BELOW GRADE).

OLIVE GRAY SAND, NON COHESIVE, SATURATED, LOOSE TO FIRM, COURSE GRAINED, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (13.0 - 16.5 FT. BELOW GRADE).

NOTES: - SAND & SILTY SAND. - SAND. - SILT CLAY TO CLAY.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).
TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

**OVM CALIBRATION**
100.0 ppm; RF = 1.00 (RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/07/17.
Time - 1110.

Monitor well consist of 2 inch PVC piping - casing from grade to 5.00 ft. below grade, 0.020 slotted screen between 5.00 to 15.00 ft. below grade, sand packed annular to 3.0 ft. below grade, bentonite grout between 3.0 to grade. Flush mount well protector encompassing exposed casing top, secured with locking cap and padlock.

DRAWING: GCU 170 MW4A-BH7. SKF | DATE: 04/26/17 | DWN BY: NJV

Figure 6


BLAGG ENGINEERING, INC.

P.O. BOX 87

BLOOMFIELD, NM 87413

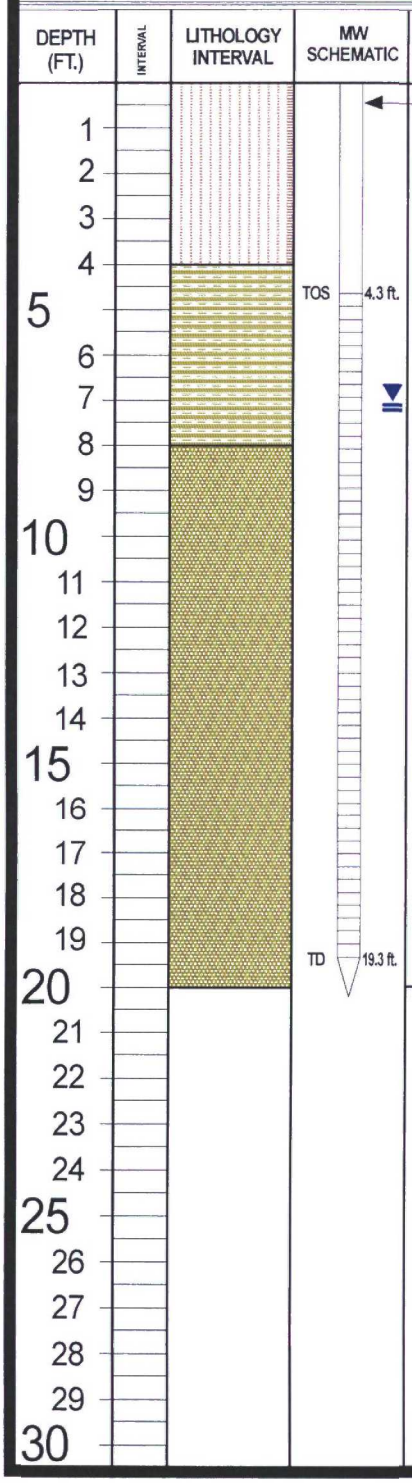
(505) 632-1199


MW # 5

# BORE / TEST HOLE REPORT

| | |
|---|---|
| CLIENT: | BP AMERICA PRODUCTION CO. |
| LOCATION NAME: | GCU #170 UNIT K, SEC. 35, T29N, R12W |
| CONTRACTOR: | BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC. |
| EQUIPMENT USED: | MOBILE DRILL RIG (CME 75) - HOLLOW STEM AUGER |
| BORING LOCATION: | 87.7 FEET, N7.5W FROM WELL HEAD. |

| | |
|---|---|
| BORING #..... | BH - 6 |
| MW #..... | 5 |
| PAGE #..... | 4 |
| DATE STARTED | 02/14/12 |
| DATE FINISHED | 02/14/12 |
| OPERATOR..... | KP |
| LOGGED BY..... | NJV |




## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

**TOP OF CASING APPROXIMATELY AT GRADE.**

MODERATE BROWN SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 4.0 FT. BELOW GRADE).

OLIVE GRAY SILTY CLAY TO CLAY, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (4.0 - 8.0 FT. BELOW GRADE).

**GROUNDWATER ~ 7.00 ft. BELOW GRADE ; MEASURED 03/22/12.**

OLIVE GRAY SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (8.0 - 20.0 FT. BELOW GRADE).

NOTES:

- SILTY SAND.
- SAND TO SILTY SAND.
- SILT CLAY TO CLAY.

TOS - Top of screen of monitor well.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - parts per million or milligram per kilogram (mg/Kg).

OVM CALIBRATION:
52.8 ppm; RF = 0.52
(RF = response factor).
100 ppm calibration gas
- isobutylene.
Date - 02/14/12.
Time - 1050.

**Monitor well consist of 2 inch PVC piping - casing from grade to 4.30 ft. below grade, 0.020 slotted screen between 4.30 to 19.30 ft. below grade, sand packed annular to 2.0 ft. below grade, bentonite grout between 1.0 to 2.0 ft. below grade, grout to surface. Flush mount well protector encompassing exposed casing top, secured with locking cap and padlock.**

| DRAWING: GCU 170 | BH6. SKF | DATE: 04/19/12 | DWN BY: NJV |
|---|---|---|---|

Figure 7

# BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 6

# BORE / TEST HOLE REPORT

| | |
|---|---|
| BORING #..... | BH - 5 |
| MW #..... | 6 |
| PAGE #..... | 5 |
| DATE STARTED | 04/07/17 |
| DATE FINISHED | 04/07/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | JCB |

CLIENT: BP AMERICA PRODUCTION CO.
LOCATION NAME: GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W
CONTRACTOR: BLAGG ENGINEERING, INC. / GEOMAT
EQUIPMENT USED: MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER
BORING LOCATION: 150.5 FEET, S12E FROM P&A MARKER (GPS COORD.: 36.679925,-108.071479).

| DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME | FIELD OVM (ppm) | TPH (ppm) | BENZ. & TOTAL BTEX (ppm) | BLOW COUNT PER 18" & RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| 5 | | | TOS 5.0 | 5.0-7.0 | 1015 | 0.0 | ND | ND ND | 10 - 11" |
| 15 | | | BOS 15.0 TD 16.0 | 14.0-16.0 | 1050 | 0.0 | ND | ND ND | 6 - 3" |

All soil samples collected via split spoon.

## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY AT GRADE.

DARK YELLOWISH BROWN SILTY CLAY, COHESIVE TO MEDIUM PLASTIC, SLIGHTLY MOIST, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 7.0 FT. BELOW GRADE).

OLIVE GRAY CLAY, COHESIVE TO MEDIUM PLASTIC, MOIST, STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (7.0 - 13.0 FT. BELOW GRADE).

GROUNDWATER ~ 9.98 ft. BELOW GRADE ; MEASURED 04/17/17.

MODERATE BROWN SAND, NON COHESIVE, SATURATED, LOOSE, COURSE GRAINED, MINOR GRAVEL INCLUSIONS, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (13.0 - 16.5 FT. BELOW GRADE).

NOTES: - SILTY CLAY. - CLAY. - SAND.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).

TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

**OVM CALIBRATION**
100.0 ppm; RF = 1.00 (RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/07/17.
Time - 1100.

Monitor well consist of 2 inch PVC piping - casing from grade to 5.00 ft. below grade, 0.020 slotted screen between 5.00 to 15.00 ft. below grade, sand packed annular to 3.0 ft. below grade, bentonite grout between 3.0 to grade. Flush mount well protector encompassing exposed casing top, secured with locking cap and padlock.

DRAWING: GCU 170 MW6-BH5. SKF | DATE: 04/26/17 | DWN BY: NJV

Figure 8

# BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 7

# BORE / TEST HOLE REPORT

| | |
|---|---|
| CLIENT: | BP AMERICA PRODUCTION CO. |
| LOCATION NAME: | GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W |
| CONTRACTOR: | BLAGG ENGINEERING, INC. / GEOMAT |
| EQUIPMENT USED: | MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER |
| BORING LOCATION: | 184.4 FEET, N77E FROM P&A MARKER (GPS COORD.: 36.680440,-108.070975). |

| | |
|---|---|
| BORING #..... | BH - 3 |
| MW #..... | 7 |
| PAGE #..... | 6 |
| DATE STARTED | 04/06/17 |
| DATE FINISHED | 04/06/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | NJV |

| DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME | FIELD OVM (ppm) | TPH (ppm) | BENZ. & TOTAL BTEX (ppm) | BLOW COUNT PER 18" & RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| 5 | TOS | 5.2 | 5.0-7.0 | 1449 | 0.0 | ND | ND ND | 8 - 16" |
| 15 | BOS | 15.2 | 14.0-16.0 | 1455 | 0.0 | ND | ND ND | 2 - 14" |
| | TD | 16.2 | | | | | | |

## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY 2.60 FT. ABOVE GRADE..

DARK YELLOWISH ORANGE SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST TO MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 8.0 FT. BELOW GRADE).

GROUNDWATER ~ 6.65 ft. BELOW GRADE ; MEASURED 04/17/17.

OLIVE GRAY CLAY, COHESIVE TO MEDIUM PLASTIC, MOIST, STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (8.0 - 12.0 FT. BELOW GRADE).

DARK YELLOWISH ORANGE SAND, NON COHESIVE, SATURATED, LOOSE, COURSE GRAINED, MINOR GRAVEL INCLUSIONS, NO APPARENT HYDRO-CARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (12.0 - 16.5 FT. BELOW GRADE).

All soil samples collected via split spoon.

NOTES: - SILTY CLAY. - CLAY. - SAND.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).

TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

**OVM CALIBRATION**
100.0 ppm; RF = 1.00 (RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/06/17.
Time - 1400.

Monitor well consist of 2 inch PVC piping - casing from 2.60 ft. above grade to 5.20 ft. below grade, 0.020 slotted screen between 5.20 to 15.20 ft. below grade, sand packed annular to 4.0 ft. below grade, bentonite grout between 4.0 to grade. Above-grade steel well protector encompassing exposed casing and secured with concrete base and hinged lid top with padlock.

DRAWING: GCU 170 MW7-BH3. SKF | DATE: 04/27/17 | DWN BY: NJV

Figure 9

# BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 8

# BORE / TEST HOLE REPORT

| | |
|---|---|
| CLIENT: | BP AMERICA PRODUCTION CO. |
| LOCATION NAME: | GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W |
| CONTRACTOR: | BLAGG ENGINEERING, INC. / GEOMAT |
| EQUIPMENT USED: | MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER |
| BORING LOCATION: | 135.1 FEET, N42E FROM P&A MARKER (GPS COORD.: 36.680603,-108.071279). |

| | |
|---|---|
| BORING #..... | BH - 4 |
| MW #..... | 8 |
| PAGE #..... | 7 |
| DATE STARTED | 04/07/17 |
| DATE FINISHED | 04/07/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | JCB |

| DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME | FIELD OVM (ppm) | TPH (ppm) | BENZ. & TOTAL BTEX (ppm) | BLOW COUNT PER 18" & RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | TOS 4.1 | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | 5.0-7.0 | 0840 | 0.0 | ND | ND ND | 8 - 15" |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | BOS 14.1 | | | | | | |
| 15 | | | TD 15.1 | 14.0-16.0 | 0850 | 0.0 | ND | ND ND | 8 - 13" |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | | | | | | | | | |
| 20 | | | | | | | | | |
| 21 | | | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | | | | | | | | | |
| 29 | | | | | | | | | |
| 30 | | | | | | | | | |

All soil samples collected via split spoon.

## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY 3.00 FT. ABOVE GRADE..

GROUNDWATER ~ 5.63 ft. BELOW GRADE ; MEASURED 04/17/17.

PALE YELLOWISH BROWN SILTY CLAY, COHESIVE TO MEDIUM PLASTIC, SLIGHTLY MOIST TO WET, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 16.5 FT. BELOW GRADE).

NOTES: - SILTY CLAY.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).

TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

OVM CALIBRATION
100.0 ppm; RF = 1.00 (RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/07/17.
Time - 0855.

Monitor well consist of 2 inch PVC piping - casing from 3.00 ft. above grade to 4.10 ft. below grade, 0.020 slotted screen between 4.10 to 14.10 ft. below grade, sand packed annular to 3.0 ft. below grade, bentonite grout between 3.0 to grade. Above-grade steel well protector encompassing exposed casing and secured with concrete base and hinged lid top with padlock.

DRAWING: GCU 170 BH4. SKF DATE: 04/27/17 DWN BY: NJV

Figure 10

# BLAGG ENGINEERING, INC.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 9

# BORE / TEST HOLE REPORT

| | |
|---|---|
| CLIENT: | BP AMERICA PRODUCTION CO. |
| LOCATION NAME: | GCU #170 API #: 3004507658 UNIT K, SEC. 35, T29N, R12W |
| CONTRACTOR: | BLAGG ENGINEERING, INC. / GEOMAT |
| EQUIPMENT USED: | MOBILE DRILL RIG (CME 55) - HOLLOW STEM AUGER |
| BORING LOCATION: | 140.4 FEET, N67.5W FROM P&A MARKER (GPS COORD.: 36.680476,-108.072031). |

| | |
|---|---|
| BORING #..... | BH - 1 |
| MW #..... | 9 |
| PAGE #..... | 8 |
| DATE STARTED | 04/06/17 |
| DATE FINISHED | 04/06/17 |
| OPERATOR..... | KP |
| LOGGED BY..... | JCB |

| DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME | FIELD OVM (ppm) | TPH (ppm) | BENZ. & TOTAL BTEX (ppm) | BLOW COUNT PER 18" & RECOVERY |
|---|---|---|---|---|---|---|---|---|---|
| 1–30 | | | TOS 4.7 | 3.0-6.0 | 1019 | 0.1 | ND | ND<br>ND | 7 - 10" |
| | | | | 7.0-9.0 | 1047 | 0.2 | ND | ND<br>ND | 9 - 22" |
| | | | BOS 14.7<br>TD 15.7 | | | | | | |

## FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROXIMATELY 2.70 FT. ABOVE GRADE..

DARK YELLOWISH BROWN SILTY CLAY TO CLAY, COHESIVE TO MEDIUM PLASTIC, MOIST, FIRM TO VERY STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (7.0 - 16.5 FT. BELOW GRADE).

GROUNDWATER ~ 8.68 ft. BELOW GRADE ; MEASURED 04/17/17.

All soil samples collected via split spoon.

NOTES: - SILTY CLAY TO CLAY.

TOS - Top of screen interval.
BOS - Bottom of screen interval.
TD - Total depth/bottom extent of monitor well.
OVM - Organic vapor meter or photoionization detector (PID).
ppm - Parts per million or milligram per kilogram (mg/Kg).

TPH - Total Petroleum Hydrocarbons per US EPA Method 8015M.
Benz. - Benzene per US EPA Method 8021B.
BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.
ND - Not detected at laboratory reporting limits.

OVM CALIBRATION
100.0 ppm; RF = 1.00
(RF = response factor).
100 ppm calibration gas - isobutylene.
Date - 04/06/17.
Time - 1105.

Monitor well consist of 2 inch PVC piping - casing from 2.70 ft. above grade to 4.70 ft. below grade, 0.020 slotted screen between 4.70 to 14.70 ft. below grade, sand packed annular to 3.0 ft. below grade, bentonite grout between 3.0 to grade. Above-grade steel well protector encompassing exposed casing and secured with concrete base and hinged lid top with padlock.

DRAWING: GCU 170 BH1. SKF | DATE: 04/27/17 | DWN BY: NJV

# APPENDIX B

## Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

April 24, 2017

Jeff Blagg
Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413
TEL: (505) 632-1199
FAX (505) 632-3903

RE: GCU 170 OrderNo.: 1704465

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 14 sample(s) on 4/12/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **1704465**
Date Reported: **4/24/2017**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-001 **Matrix:** SOIL

**Client Sample ID:** MW #2A @5'-7'
**Collection Date:** 4/6/2017 12:55:00 PM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 120 | 30 | | mg/Kg | 20 | 4/17/2017 1:21:03 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | 10 | 9.9 | | mg/Kg | 1 | 4/13/2017 1:53:15 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 4/13/2017 1:53:15 PM | 31205 |
| Surr: DNOP | 115 | 70-130 | | %Rec | 1 | 4/13/2017 1:53:15 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 4/13/2017 10:36:13 AM | 31207 |
| Surr: BFB | 89.7 | 54-150 | | %Rec | 1 | 4/13/2017 10:36:13 AM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 4/13/2017 10:36:13 AM | 31207 |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 10:36:13 AM | 31207 |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 10:36:13 AM | 31207 |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 4/13/2017 10:36:13 AM | 31207 |
| Surr: 4-Bromofluorobenzene | 107 | 66.6-132 | | %Rec | 1 | 4/13/2017 10:36:13 AM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-002 **Matrix:** SOIL

**Client Sample ID:** MW #2A @14'-16'
**Collection Date:** 4/6/2017 1:55:00 PM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | ND | 30 | | mg/Kg | 20 | 4/17/2017 1:58:17 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.3 | | mg/Kg | 1 | 4/13/2017 2:15:25 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 4/13/2017 2:15:25 PM | 31205 |
| Surr: DNOP | 115 | 70-130 | | %Rec | 1 | 4/13/2017 2:15:25 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 4/13/2017 11:46:48 AM | 31207 |
| Surr: BFB | 90.9 | 54-150 | | %Rec | 1 | 4/13/2017 11:46:48 AM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 4/13/2017 11:46:48 AM | 31207 |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 11:46:48 AM | 31207 |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 11:46:48 AM | 31207 |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 4/13/2017 11:46:48 AM | 31207 |
| Surr: 4-Bromofluorobenzene | 111 | 66.6-132 | | %Rec | 1 | 4/13/2017 11:46:48 AM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-003 **Matrix:** SOIL

**Client Sample ID:** MW #7 @5'-7'
**Collection Date:** 4/6/2017 2:49:00 PM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 120 | 30 | | mg/Kg | 20 | 4/17/2017 2:10:42 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 10 | | mg/Kg | 1 | 4/13/2017 2:37:29 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 50 | | mg/Kg | 1 | 4/13/2017 2:37:29 PM | 31205 |
| Surr: DNOP | 123 | 70-130 | | %Rec | 1 | 4/13/2017 2:37:29 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 4/13/2017 12:57:09 PM | 31207 |
| Surr: BFB | 90.8 | 54-150 | | %Rec | 1 | 4/13/2017 12:57:09 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 12:57:09 PM | 31207 |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 12:57:09 PM | 31207 |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 12:57:09 PM | 31207 |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 4/13/2017 12:57:09 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 112 | 66.6-132 | | %Rec | 1 | 4/13/2017 12:57:09 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-004 **Matrix:** SOIL

**Client Sample ID:** MW #7 @14'-16'
**Collection Date:** 4/6/2017 2:55:00 PM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | ND | 30 | | mg/Kg | 20 | 4/17/2017 2:23:07 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 10 | | mg/Kg | 1 | 4/13/2017 2:59:46 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 50 | | mg/Kg | 1 | 4/13/2017 2:59:46 PM | 31205 |
| Surr: DNOP | 111 | 70-130 | | %Rec | 1 | 4/13/2017 2:59:46 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 4/13/2017 1:20:34 PM | 31207 |
| Surr: BFB | 90.9 | 54-150 | | %Rec | 1 | 4/13/2017 1:20:34 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 1:20:34 PM | 31207 |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 1:20:34 PM | 31207 |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 1:20:34 PM | 31207 |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 4/13/2017 1:20:34 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 113 | 66.6-132 | | %Rec | 1 | 4/13/2017 1:20:34 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-005 **Matrix:** SOIL

**Client Sample ID:** MW #6 @5'-7'
**Collection Date:** 4/7/2017 10:15:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | ND | 30 | | mg/Kg | 20 | 4/17/2017 3:00:21 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.3 | | mg/Kg | 1 | 4/13/2017 3:21:41 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 4/13/2017 3:21:41 PM | 31205 |
| Surr: DNOP | 110 | 70-130 | | %Rec | 1 | 4/13/2017 3:21:41 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 4/13/2017 1:43:57 PM | 31207 |
| Surr: BFB | 90.5 | 54-150 | | %Rec | 1 | 4/13/2017 1:43:57 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 4/13/2017 1:43:57 PM | 31207 |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 4/13/2017 1:43:57 PM | 31207 |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 4/13/2017 1:43:57 PM | 31207 |
| Xylenes, Total | ND | 0.099 | | mg/Kg | 1 | 4/13/2017 1:43:57 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 111 | 66.6-132 | | %Rec | 1 | 4/13/2017 1:43:57 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-006 **Matrix:** SOIL

**Client Sample ID:** MW #6 @14'-16'
**Collection Date:** 4/7/2017 10:50:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | ND | 30 | | mg/Kg | 20 | 4/17/2017 3:12:46 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.9 | | mg/Kg | 1 | 4/13/2017 3:43:45 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 4/13/2017 3:43:45 PM | 31205 |
| Surr: DNOP | 112 | 70-130 | | %Rec | 1 | 4/13/2017 3:43:45 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 4/13/2017 2:07:24 PM | 31207 |
| Surr: BFB | 90.6 | 54-150 | | %Rec | 1 | 4/13/2017 2:07:24 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 4/13/2017 2:07:24 PM | 31207 |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 2:07:24 PM | 31207 |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 2:07:24 PM | 31207 |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 4/13/2017 2:07:24 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 110 | 66.6-132 | | %Rec | 1 | 4/13/2017 2:07:24 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-007 **Matrix:** SOIL

**Client Sample ID:** MW #4A @5'-7'
**Collection Date:** 4/7/2017 12:25:00 PM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 180 | 30 | | mg/Kg | 20 | 4/17/2017 3:25:11 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.8 | | mg/Kg | 1 | 4/13/2017 4:05:48 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 4/13/2017 4:05:48 PM | 31205 |
| Surr: DNOP | 102 | 70-130 | | %Rec | 1 | 4/13/2017 4:05:48 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 4/13/2017 2:30:53 PM | 31207 |
| Surr: BFB | 89.8 | 54-150 | | %Rec | 1 | 4/13/2017 2:30:53 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 2:30:53 PM | 31207 |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 2:30:53 PM | 31207 |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 2:30:53 PM | 31207 |
| Xylenes, Total | ND | 0.094 | | mg/Kg | 1 | 4/13/2017 2:30:53 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 109 | 66.6-132 | | %Rec | 1 | 4/13/2017 2:30:53 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-008 **Matrix:** SOIL

**Client Sample ID:** MW #4A @14'-16'
**Collection Date:** 4/7/2017 12:45:00 PM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | ND | 30 | | mg/Kg | 20 | 4/17/2017 3:37:36 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.3 | | mg/Kg | 1 | 4/13/2017 4:28:28 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 4/13/2017 4:28:28 PM | 31205 |
| Surr: DNOP | 105 | 70-130 | | %Rec | 1 | 4/13/2017 4:28:28 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 4/13/2017 2:54:18 PM | 31207 |
| Surr: BFB | 89.8 | 54-150 | | %Rec | 1 | 4/13/2017 2:54:18 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 2:54:18 PM | 31207 |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 2:54:18 PM | 31207 |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 2:54:18 PM | 31207 |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 4/13/2017 2:54:18 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 108 | 66.6-132 | | %Rec | 1 | 4/13/2017 2:54:18 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-009 **Matrix:** SOIL

**Client Sample ID:** MW-9 (3'-6')
**Collection Date:** 4/6/2017 10:19:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Fluoride | 3.9 | 1.5 | | mg/Kg | 5 | 4/20/2017 12:40:59 PM | 31339 |
| Chloride | 220 | 30 | | mg/Kg | 20 | 4/17/2017 3:50:00 PM | 31270 |
| Nitrogen, Nitrite (As N) | ND | 1.5 | | mg/Kg | 5 | 4/20/2017 12:40:59 PM | 31339 |
| Bromide | ND | 1.5 | | mg/Kg | 5 | 4/20/2017 12:40:59 PM | 31339 |
| Nitrogen, Nitrate (As N) | ND | 1.5 | | mg/Kg | 5 | 4/20/2017 12:40:59 PM | 31339 |
| Sulfate | 510 | 7.5 | | mg/Kg | 5 | 4/20/2017 12:40:59 PM | 31339 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | Analyst: **MED** | |
| Calcium | 5800 | 120 | | mg/Kg | 5 | 4/18/2017 10:08:44 AM | 31271 |
| Magnesium | 4200 | 120 | | mg/Kg | 5 | 4/18/2017 9:01:08 AM | 31271 |
| Potassium | 2200 | 240 | | mg/Kg | 5 | 4/18/2017 9:01:08 AM | 31271 |
| Sodium | 1700 | 120 | | mg/Kg | 5 | 4/18/2017 9:01:08 AM | 31271 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.4 | | mg/Kg | 1 | 4/13/2017 4:50:49 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 4/13/2017 4:50:49 PM | 31205 |
| Surr: DNOP | 103 | 70-130 | | %Rec | 1 | 4/13/2017 4:50:49 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 4/13/2017 3:17:44 PM | 31207 |
| Surr: BFB | 90.7 | 54-150 | | %Rec | 1 | 4/13/2017 3:17:44 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 4/13/2017 3:17:44 PM | 31207 |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 3:17:44 PM | 31207 |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 3:17:44 PM | 31207 |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 4/13/2017 3:17:44 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 109 | 66.6-132 | | %Rec | 1 | 4/13/2017 3:17:44 PM | 31207 |

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 |

**Analytical Report**
Lab Order **1704465**
Date Reported: **4/24/2017**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-010 **Matrix:** SOIL

**Client Sample ID:** MW-9(7'-'9')
**Collection Date:** 4/6/2017 10:47:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Fluoride | ND | 0.30 | | mg/Kg | 1 | 4/20/2017 12:53:24 PM | 31339 |
| Chloride | 310 | 30 | | mg/Kg | 20 | 4/17/2017 4:02:24 PM | 31270 |
| Nitrogen, Nitrite (As N) | ND | 0.30 | | mg/Kg | 1 | 4/20/2017 12:53:24 PM | 31339 |
| Bromide | ND | 0.30 | | mg/Kg | 1 | 4/20/2017 12:53:24 PM | 31339 |
| Nitrogen, Nitrate (As N) | 0.67 | 0.30 | | mg/Kg | 1 | 4/20/2017 12:53:24 PM | 31339 |
| Sulfate | 2100 | 30 | | mg/Kg | 20 | 4/17/2017 4:02:24 PM | 31270 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | Analyst: **MED** | |
| Calcium | 8800 | 120 | | mg/Kg | 5 | 4/18/2017 10:09:41 AM | 31271 |
| Magnesium | 5100 | 120 | | mg/Kg | 5 | 4/18/2017 9:02:33 AM | 31271 |
| Potassium | 2800 | 250 | | mg/Kg | 5 | 4/18/2017 9:02:33 AM | 31271 |
| Sodium | 1500 | 120 | | mg/Kg | 5 | 4/18/2017 9:02:33 AM | 31271 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 10 | | mg/Kg | 1 | 4/13/2017 5:13:15 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 50 | | mg/Kg | 1 | 4/13/2017 5:13:15 PM | 31205 |
| Surr: DNOP | 104 | 70-130 | | %Rec | 1 | 4/13/2017 5:13:15 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 4/13/2017 3:41:11 PM | 31207 |
| Surr: BFB | 90.2 | 54-150 | | %Rec | 1 | 4/13/2017 3:41:11 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 3:41:11 PM | 31207 |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 3:41:11 PM | 31207 |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 3:41:11 PM | 31207 |
| Xylenes, Total | ND | 0.094 | | mg/Kg | 1 | 4/13/2017 3:41:11 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 108 | 66.6-132 | | %Rec | 1 | 4/13/2017 3:41:11 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-011 **Matrix:** SOIL

**Client Sample ID:** MW-8(5'-'7')
**Collection Date:** 4/7/2017 8:40:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Fluoride | 1.5 | 0.30 | | mg/Kg | 1 | 4/20/2017 1:05:48 PM | 31339 |
| Chloride | 100 | 30 | | mg/Kg | 20 | 4/17/2017 4:14:49 PM | 31270 |
| Nitrogen, Nitrite (As N) | ND | 0.30 | | mg/Kg | 1 | 4/20/2017 1:05:48 PM | 31339 |
| Bromide | 0.56 | 0.30 | | mg/Kg | 1 | 4/20/2017 1:05:48 PM | 31339 |
| Nitrogen, Nitrate (As N) | 4.0 | 0.30 | | mg/Kg | 1 | 4/20/2017 1:05:48 PM | 31339 |
| Sulfate | 1800 | 30 | | mg/Kg | 20 | 4/17/2017 4:14:49 PM | 31270 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | Analyst: **MED** | |
| Calcium | 8300 | 130 | | mg/Kg | 5 | 4/18/2017 10:10:41 AM | 31271 |
| Magnesium | 4600 | 130 | | mg/Kg | 5 | 4/18/2017 9:04:01 AM | 31271 |
| Potassium | 2700 | 250 | | mg/Kg | 5 | 4/18/2017 9:04:01 AM | 31271 |
| Sodium | 1800 | 130 | | mg/Kg | 5 | 4/18/2017 9:04:01 AM | 31271 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.3 | | mg/Kg | 1 | 4/13/2017 5:35:31 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 4/13/2017 5:35:31 PM | 31205 |
| Surr: DNOP | 105 | 70-130 | | %Rec | 1 | 4/13/2017 5:35:31 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 4/13/2017 7:58:29 PM | 31207 |
| Surr: BFB | 90.9 | 54-150 | | %Rec | 1 | 4/13/2017 7:58:29 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 7:58:29 PM | 31207 |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 7:58:29 PM | 31207 |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 4/13/2017 7:58:29 PM | 31207 |
| Xylenes, Total | ND | 0.095 | | mg/Kg | 1 | 4/13/2017 7:58:29 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 110 | 66.6-132 | | %Rec | 1 | 4/13/2017 7:58:29 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Client Sample ID:** MW-8(7'-'9')
**Project:** GCU 170
**Collection Date:** 4/7/2017 8:50:00 AM
**Lab ID:** 1704465-012 **Matrix:** SOIL **Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Fluoride | 0.80 | 0.30 | | mg/Kg | 1 | 4/20/2017 1:18:12 PM | 31339 |
| Chloride | 78 | 30 | | mg/Kg | 20 | 4/17/2017 4:27:14 PM | 31270 |
| Nitrogen, Nitrite (As N) | ND | 0.30 | | mg/Kg | 1 | 4/20/2017 1:18:12 PM | 31339 |
| Bromide | 0.46 | 0.30 | | mg/Kg | 1 | 4/20/2017 1:18:12 PM | 31339 |
| Nitrogen, Nitrate (As N) | 2.3 | 0.30 | | mg/Kg | 1 | 4/20/2017 1:18:12 PM | 31339 |
| Sulfate | 2100 | 30 | | mg/Kg | 20 | 4/17/2017 4:27:14 PM | 31270 |
| **EPA METHOD 6010B: SOIL METALS** | | | | | | Analyst: **MED** | |
| Calcium | 13000 | 130 | | mg/Kg | 5 | 4/18/2017 10:12:36 AM | 31271 |
| Magnesium | 4800 | 52 | | mg/Kg | 2 | 4/18/2017 9:39:29 AM | 31271 |
| Potassium | 2200 | 100 | | mg/Kg | 2 | 4/18/2017 9:39:29 AM | 31271 |
| Sodium | 1400 | 52 | | mg/Kg | 2 | 4/18/2017 9:39:29 AM | 31271 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.5 | | mg/Kg | 1 | 4/13/2017 5:57:54 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 4/13/2017 5:57:54 PM | 31205 |
| Surr: DNOP | 103 | 70-130 | | %Rec | 1 | 4/13/2017 5:57:54 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 4/13/2017 8:21:49 PM | 31207 |
| Surr: BFB | 91.1 | 54-150 | | %Rec | 1 | 4/13/2017 8:21:49 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 4/13/2017 8:21:49 PM | 31207 |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 8:21:49 PM | 31207 |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 8:21:49 PM | 31207 |
| Xylenes, Total | ND | 0.092 | | mg/Kg | 1 | 4/13/2017 8:21:49 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 110 | 66.6-132 | | %Rec | 1 | 4/13/2017 8:21:49 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-013 **Matrix:** SOIL

**Client Sample ID:** MW-3A (5'-7')
**Collection Date:** 4/10/2017 8:50:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 150 | 30 | | mg/Kg | 20 | 4/17/2017 4:39:39 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.4 | | mg/Kg | 1 | 4/13/2017 6:20:28 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 4/13/2017 6:20:28 PM | 31205 |
| Surr: DNOP | 108 | 70-130 | | %Rec | 1 | 4/13/2017 6:20:28 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 4/13/2017 8:45:22 PM | 31207 |
| Surr: BFB | 90.8 | 54-150 | | %Rec | 1 | 4/13/2017 8:45:22 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 4/13/2017 8:45:22 PM | 31207 |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 8:45:22 PM | 31207 |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 4/13/2017 8:45:22 PM | 31207 |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 4/13/2017 8:45:22 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 109 | 66.6-132 | | %Rec | 1 | 4/13/2017 8:45:22 PM | 31207 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704465-014 **Matrix:** SOIL

**Client Sample ID:** MW-3A (14'-16')
**Collection Date:** 4/10/2017 9:20:00 AM
**Received Date:** 4/12/2017 7:00:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | ND | 30 | | mg/Kg | 20 | 4/17/2017 4:52:03 PM | 31270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **TOM** | |
| Diesel Range Organics (DRO) | ND | 9.7 | | mg/Kg | 1 | 4/13/2017 6:42:55 PM | 31205 |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 4/13/2017 6:42:55 PM | 31205 |
| Surr: DNOP | 109 | 70-130 | | %Rec | 1 | 4/13/2017 6:42:55 PM | 31205 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 4/13/2017 9:08:51 PM | 31207 |
| Surr: BFB | 90.2 | 54-150 | | %Rec | 1 | 4/13/2017 9:08:51 PM | 31207 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 4/13/2017 9:08:51 PM | 31207 |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 9:08:51 PM | 31207 |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 4/13/2017 9:08:51 PM | 31207 |
| Xylenes, Total | ND | 0.092 | | mg/Kg | 1 | 4/13/2017 9:08:51 PM | 31207 |
| Surr: 4-Bromofluorobenzene | 108 | 66.6-132 | | %Rec | 1 | 4/13/2017 9:08:51 PM | 31207 |

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

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704465**

*24-Apr-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **MB-31270** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **31270** | RunNo: **42186** |
| Prep Date: **4/17/2017** | Analysis Date: **4/17/2017** | SeqNo: **1325320** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 1.5 | | | | | | | | |
| Sulfate | ND | 1.5 | | | | | | | | |

| Sample ID **LCS-31270** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **31270** | RunNo: **42186** |
| Prep Date: **4/17/2017** | Analysis Date: **4/17/2017** | SeqNo: **1325321** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 14 | 1.5 | 15.00 | 0 | 91.8 | 90 | 110 | | | |
| Sulfate | 28 | 1.5 | 30.00 | 0 | 92.9 | 90 | 110 | | | |

| Sample ID **MB-31339** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **31339** | RunNo: **42250** |
| Prep Date: **4/20/2017** | Analysis Date: **4/20/2017** | SeqNo: **1328650** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 0.30 | | | | | | | | |
| Nitrogen, Nitrite (As N) | ND | 0.30 | | | | | | | | |
| Bromide | ND | 0.30 | | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.30 | | | | | | | | |
| Sulfate | ND | 1.5 | | | | | | | | |

| Sample ID **LCS-31339** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **31339** | RunNo: **42250** |
| Prep Date: **4/20/2017** | Analysis Date: **4/20/2017** | SeqNo: **1328651** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 1.4 | 0.30 | 1.500 | 0 | 94.6 | 90 | 110 | | | |
| Nitrogen, Nitrite (As N) | 2.8 | 0.30 | 3.000 | 0 | 92.3 | 90 | 110 | | | |
| Bromide | 7.1 | 0.30 | 7.500 | 0 | 94.7 | 90 | 110 | | | |
| Nitrogen, Nitrate (As N) | 7.3 | 0.30 | 7.500 | 0 | 96.9 | 90 | 110 | | | |
| Sulfate | 28 | 1.5 | 30.00 | 0 | 93.1 | 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 |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704465**

*24-Apr-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **LCS-31205** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **31205** | RunNo: **42092** |
| Prep Date: **4/12/2017** | Analysis Date: **4/13/2017** | SeqNo: **1322086** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 42 | 10 | 50.00 | 0 | 83.8 | 63.8 | 116 | | | |
| Surr: DNOP | 4.3 | | 5.000 | | 85.9 | 70 | 130 | | | |

| Sample ID **MB-31205** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **31205** | RunNo: **42092** |
| Prep Date: **4/12/2017** | Analysis Date: **4/13/2017** | SeqNo: **1322087** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 8.4 | | 10.00 | | 83.9 | 70 | 130 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704465**

*24-Apr-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **MB-31207** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **31207** | RunNo: **42108** |
| Prep Date: **4/12/2017** | Analysis Date: **4/13/2017** | SeqNo: **1322584** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | 890 | | 1000 | | 89.2 | 54 | 150 | | | |

| Sample ID **LCS-31207** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **31207** | RunNo: **42108** |
| Prep Date: **4/12/2017** | Analysis Date: **4/13/2017** | SeqNo: **1322585** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 24 | 5.0 | 25.00 | 0 | 96.6 | 76.4 | 125 | | | |
| Surr: BFB | 990 | | 1000 | | 98.8 | 54 | 150 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704465**

*24-Apr-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **MB-31207** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **31207** | RunNo: **42108** |
| Prep Date: **4/12/2017** | Analysis Date: **4/13/2017** | SeqNo: **1322634** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.025 | | | | | | | | |
| Toluene | ND | 0.050 | | | | | | | | |
| Ethylbenzene | ND | 0.050 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 108 | 66.6 | 132 | | | |

| Sample ID **LCS-31207** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **31207** | RunNo: **42108** |
| Prep Date: **4/12/2017** | Analysis Date: **4/13/2017** | SeqNo: **1322635** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1.1 | 0.025 | 1.000 | 0 | 110 | 80 | 120 | | | |
| Toluene | 1.0 | 0.050 | 1.000 | 0 | 104 | 80 | 120 | | | |
| Ethylbenzene | 1.0 | 0.050 | 1.000 | 0 | 102 | 80 | 120 | | | |
| Xylenes, Total | 2.8 | 0.10 | 3.000 | 0 | 93.5 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 115 | 66.6 | 132 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704465**

*24-Apr-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID | **MB-31271** | SampType: | **MBLK** | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **31271** | RunNo: | **42176** | | | | | |
| Prep Date: | **4/17/2017** | Analysis Date: | **4/18/2017** | SeqNo: | **1325138** | Units: | **mg/Kg** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | ND | 25 | | | | | | | | |
| Potassium | ND | 50 | | | | | | | | |
| Sodium | ND | 25 | | | | | | | | |

| Sample ID | **LCS-31271** | SampType: | **LCS** | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **31271** | RunNo: | **42176** | | | | | |
| Prep Date: | **4/17/2017** | Analysis Date: | **4/18/2017** | SeqNo: | **1325139** | Units: | **mg/Kg** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 2700 | 25 | 2500 | 0 | 108 | 80 | 120 | | | |
| Potassium | 2500 | 50 | 2500 | 0 | 99.5 | 80 | 120 | | | |
| Sodium | 2600 | 25 | 2500 | 0 | 102 | 80 | 120 | | | |

| Sample ID | **MB-31271** | SampType: | **MBLK** | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBS** | Batch ID: | **31271** | RunNo: | **42176** | | | | | |
| Prep Date: | **4/17/2017** | Analysis Date: | **4/18/2017** | SeqNo: | **1325174** | Units: | **mg/Kg** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | ND | 25 | | | | | | | | |

| Sample ID | **LCS-31271** | SampType: | **LCS** | TestCode: | **EPA Method 6010B: Soil Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSS** | Batch ID: | **31271** | RunNo: | **42176** | | | | | |
| Prep Date: | **4/17/2017** | Analysis Date: | **4/18/2017** | SeqNo: | **1325175** | Units: | **mg/Kg** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 2600 | 25 | 2500 | 0 | 106 | 80 | 120 | | | |

**Qualifiers:**

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: BLAGG | Work Order Number: 1704465 | RcptNo: 1

Received By: Lindsay Mangin 4/12/2017 7:00:00 AM

Completed By: Ashley Gallegos 4/12/2017 9:21:42 AM

Reviewed By: 04/12/17

## 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 | 1.5 | Good | Yes | | | |

# Cha n-of-Custody Record

Client: BLAGG ENGR. / BP AMERICA

Mailing Address: P.O. BOX 87

BLOOMFIELD, NM 87413

Phone #: (505) 632-1199

email or Fax#:

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

Accreditation:
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
GCU # 170

Project #:

Project Manager:
JEFFREY BLAGG

Sampler: NELSON VELEZ

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.5


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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


Analysis Request

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1704465 | 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,NO3,NO2,PO4,SO4) | 8081 Pesticides / 8082 PCB's | ~~8260 (VOA)~~ 8021 (BTEX + 8015) | 8270 (Semi-VOA) | Chloride (soil - 300.0 / water - 300.1) | | Grab sample | 5 pt. composite sample | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/6/17 | 1255 | SOIL | MW # 2A @ 5' - 7' | 4 oz. - 1 | Cool | -001 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/6/17 | 1355 | SOIL | MW # 2A @ 14' - 16' | 4 oz. - 1 | Cool | -002 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/6/17 | 1449 | SOIL | MW # 7 @ 5' - 7' | 4 oz. - 1 | Cool | -003 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/6/17 | 1455 | SOIL | MW # 7 @ 14' - 16' | 4 oz. - 1 | Cool | -004 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/7/17 | 1015 | SOIL | MW # 6 @ 5' - 7' | 4 oz. - 1 | Cool | -005 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/7/17 | 1050 | SOIL | MW # 6 @ 14' - 16' | 4 oz. - 1 | Cool | -006 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/7/17 | 1225 | SOIL | MW # 4A @ 5' - 7' | 4 oz. - 1 | Cool | -007 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |
| 4/7/17 | 1245 | SOIL | MW # 4A @ 14' - 16' | 4 oz. - 1 | Cool | -008 | | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | |

| Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|
| 4/11/17 | 1740 | | Christ Waeble | 4/11/17 | 1740 |
| 4/11/17 | 1836 | Christ Waeble | | 04/12/17 | 0700 |

Remarks: BILL DIRECTLY TO BP USING THE CONTACT WITH CORRESPONDING VID & REFERENCE # WHEN APPLICABLE:

CONTACT: STEVE MOSKAL / SABRE BEEBE

VID: VBEEBSOPLG

AFE #: X7-006RW-E:REST



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

# 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#:

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

Accreditation:
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: GCU # 170

Project #:

Project Manager: JEFFREY C. BLAGG

Sampler: JEFFREY C. BLAGG

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.5

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1704465 | 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) | 8270 (Semi-VOA) | Chloride (soil - 300.0 / water - 300.1) | CATIONS/ANIONS | Grab sample | 5 pt. composite sample | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/6/2017 | 1019 | Soil | MW-9 (3'-6') | 4 oz x2 | Cool | -009 | X | | X | | | | | | | | | | X | | | |
| 4/6/2017 | 1047 | " | MW-9 (7'-9') | 4 oz x2 | " | -010 | X | | X | | | | | | | | | | X | | | |
| 4/7/2017 | 0840 | " | MW-8 (5'-7') | 4 oz x2 | " | -011 | X | | X | | | | | | | | | | X | | | |
| 4/7/2017 | 0850 | " | MW-8 (7'-9') | 4 oz x2 | " | -012 | X | | X | | | | | | | | | | X | | | |
| 4/10/2017 | 0850 | " | MW-3A (5'-7') | 4 oz x1 | " | -013 | X | | X | | | | | | | | | X | | | | |
| 4/10/2017 | 0920 | " | MW-3A (14'-16') | 4 oz x1 | " | -014 | X | | X | | | | | | | | | X | | | | |

| Date | Time | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 4/11/2017 | 1740 | Jeff Blagg | [signature] | 4/11/17 | 1740 |
| 4/11/17 | 1834 | [signature] | [signature] | 04/12/17 | 0700 |

Remarks: BILL DIRECTLY TO BP USING THE CONTACT WITH CORRESPONDING VID & REFERENCE # WHEN APPLICABLE;
CONTACT: STEVE MOSKAL / SABRE BEEBE
VID: VBEEBSOPLG
AFE #: X7-006RW-E:REST

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

May 01, 2017

Jeff Blagg
Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413
TEL: (505) 632-1199
FAX (505) 632-3903

RE: GCU 170 OrderNo.: 1704739

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 8 sample(s) on 4/18/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **1704739**
Date Reported: **5/1/2017**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-001
**Matrix:** AQUEOUS
**Client Sample ID:** MW-2A
**Collection Date:** 4/17/2017 10:02:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **pmf** | |
| Hardness (As CaCO3) | 670 | 6.6 | | mg/L | 1 | 4/24/2017 | R42326 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9974 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 8.8 | 5.0 | | mg/L | 10 | 4/18/2017 4:05:28 PM | R42188 |
| Sulfate | 440 | 5.0 | * | mg/L | 10 | 4/18/2017 4:05:28 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1400 | 1.0 | | µmhos/cm | 1 | 4/18/2017 6:31:57 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 425.2 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 6:31:57 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 6:31:57 PM | R42224 |
| Total Alkalinity (as CaCO3) | 425.2 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 6:31:57 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1010 | 40.0 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.63 | | H | pH units | 1 | 4/18/2017 6:31:57 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **pmf** | |
| Calcium | 230 | 5.0 | | mg/L | 5 | 4/24/2017 6:35:24 PM | B42326 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 6:23:52 PM | B42326 |
| Magnesium | 24 | 1.0 | | mg/L | 1 | 4/24/2017 6:23:52 PM | B42326 |
| Potassium | 2.4 | 1.0 | | mg/L | 1 | 4/24/2017 6:23:52 PM | B42326 |
| Sodium | 78 | 5.0 | | mg/L | 5 | 4/24/2017 6:35:24 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-001 **Matrix:** AQUEOUS

**Client Sample ID:** MW-2A
**Collection Date:** 4/17/2017 10:02:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-001

**Client Sample ID:** MW-2A
**Collection Date:** 4/17/2017 10:02:00 AM
**Matrix:** AQUEOUS **Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 89.8 | 70-130 | | %Rec | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | %Rec | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Surr: Dibromofluoromethane | 102 | 70-130 | | %Rec | 1 | 4/18/2017 4:37:00 PM | R42209 |
| Surr: Toluene-d8 | 106 | 70-130 | | %Rec | 1 | 4/18/2017 4:37:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-002 **Matrix:** AQUEOUS

**Client Sample ID:** MW-3A
**Collection Date:** 4/17/2017 11:04:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **pmf** | |
| Hardness (As CaCO3) | 750 | 6.6 | | mg/L | 1 | 4/24/2017 | R42326 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9970 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 13 | 5.0 | | mg/L | 10 | 4/18/2017 4:55:07 PM | R42188 |
| Sulfate | 520 | 50 | * | mg/L | 100 | 4/18/2017 5:07:31 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1500 | 1.0 | | µmhos/cm | 1 | 4/18/2017 6:49:46 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 329.7 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 6:49:46 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 6:49:46 PM | R42224 |
| Total Alkalinity (as CaCO3) | 329.7 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 6:49:46 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1160 | 200 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.49 | | H | pH units | 1 | 4/18/2017 6:49:46 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **pmf** | |
| Calcium | 250 | 5.0 | | mg/L | 5 | 4/24/2017 6:49:03 PM | B42326 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 6:43:33 PM | B42326 |
| Magnesium | 32 | 1.0 | | mg/L | 1 | 4/24/2017 6:43:33 PM | B42326 |
| Potassium | 3.2 | 1.0 | | mg/L | 1 | 4/24/2017 6:43:33 PM | B42326 |
| Sodium | 73 | 5.0 | | mg/L | 5 | 4/24/2017 6:49:03 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-002 **Matrix:** AQUEOUS

**Client Sample ID:** MW-3A
**Collection Date:** 4/17/2017 11:04:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-002 **Matrix:** AQUEOUS

**Client Sample ID:** MW-3A
**Collection Date:** 4/17/2017 11:04:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 91.2 | 70-130 | | %Rec | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 104 | 70-130 | | %Rec | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Surr: Dibromofluoromethane | 103 | 70-130 | | %Rec | 1 | 4/18/2017 5:01:00 PM | R42209 |
| Surr: Toluene-d8 | 105 | 70-130 | | %Rec | 1 | 4/18/2017 5:01:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-003 **Matrix:** AQUEOUS

**Client Sample ID:** MW-4A
**Collection Date:** 4/17/2017 9:06:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **TES** | |
| Hardness (As CaCO3) | 490 | 6.6 | | mg/L | 1 | 4/27/2017 | R42438 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9962 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 7.7 | 5.0 | | mg/L | 10 | 4/18/2017 5:19:56 PM | R42188 |
| Sulfate | 270 | 5.0 | * | mg/L | 10 | 4/18/2017 5:19:56 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1100 | 1.0 | | µmhos/cm | 1 | 4/18/2017 7:27:32 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 377.3 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 7:27:32 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 7:27:32 PM | R42224 |
| Total Alkalinity (as CaCO3) | 377.3 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 7:27:32 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 770 | 200 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.70 | | H | pH units | 1 | 4/18/2017 7:27:32 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **TES** | |
| Calcium | 170 | 10 | | mg/L | 10 | 4/27/2017 3:25:07 PM | A42438 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 7:03:23 PM | B42326 |
| Magnesium | 16 | 1.0 | | mg/L | 1 | 4/24/2017 7:03:23 PM | B42326 |
| Potassium | 2.9 | 1.0 | | mg/L | 1 | 4/24/2017 7:03:23 PM | B42326 |
| Sodium | 66 | 1.0 | | mg/L | 1 | 4/24/2017 7:03:23 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-003 **Matrix:** AQUEOUS

**Client Sample ID:** MW-4A
**Collection Date:** 4/17/2017 9:06:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-003
**Matrix:** AQUEOUS
**Client Sample ID:** MW-4A
**Collection Date:** 4/17/2017 9:06:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 90.3 | 70-130 | | %Rec | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 104 | 70-130 | | %Rec | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Surr: Dibromofluoromethane | 102 | 70-130 | | %Rec | 1 | 4/18/2017 5:25:00 PM | R42209 |
| Surr: Toluene-d8 | 105 | 70-130 | | %Rec | 1 | 4/18/2017 5:25:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-004 **Matrix:** AQUEOUS

**Client Sample ID:** MW-5
**Collection Date:** 4/17/2017 12:25:00 PM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **TES** | |
| Hardness (As CaCO3) | 980 | 6.6 | | mg/L | 1 | 4/27/2017 | R42438 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9960 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 12 | 5.0 | | mg/L | 10 | 4/18/2017 5:44:45 PM | R42188 |
| Sulfate | 840 | 50 | * | mg/L | 100 | 4/18/2017 5:57:10 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1900 | 1.0 | | µmhos/cm | 1 | 4/18/2017 7:43:46 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 304.0 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 7:43:46 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 7:43:46 PM | R42224 |
| Total Alkalinity (as CaCO3) | 304.0 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 7:43:46 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1490 | 200 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.58 | | H | pH units | 1 | 4/18/2017 7:43:46 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **TES** | |
| Calcium | 310 | 10 | | mg/L | 10 | 4/27/2017 3:26:23 PM | A42438 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 7:07:20 PM | B42326 |
| Magnesium | 53 | 1.0 | | mg/L | 1 | 4/24/2017 7:07:20 PM | B42326 |
| Potassium | 4.1 | 1.0 | | mg/L | 1 | 4/24/2017 7:07:20 PM | B42326 |
| Sodium | 89 | 1.0 | | mg/L | 1 | 4/24/2017 7:07:20 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-004 **Matrix:** AQUEOUS

**Client Sample ID:** MW-5
**Collection Date:** 4/17/2017 12:25:00 PM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-004 **Matrix:** AQUEOUS

**Client Sample ID:** MW-5
**Collection Date:** 4/17/2017 12:25:00 PM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 89.8 | 70-130 | | %Rec | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 103 | 70-130 | | %Rec | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Surr: Dibromofluoromethane | 101 | 70-130 | | %Rec | 1 | 4/18/2017 5:48:00 PM | R42209 |
| Surr: Toluene-d8 | 104 | 70-130 | | %Rec | 1 | 4/18/2017 5:48:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-005 **Matrix:** AQUEOUS

**Client Sample ID:** MW-6
**Collection Date:** 4/17/2017 9:35:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **TES** | |
| Hardness (As CaCO3) | 380 | 6.6 | | mg/L | 1 | 4/27/2017 | R42438 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9934 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 5.6 | 5.0 | | mg/L | 10 | 4/18/2017 6:09:35 PM | R42188 |
| Sulfate | 85 | 5.0 | | mg/L | 10 | 4/18/2017 6:09:35 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 830 | 1.0 | | µmhos/cm | 1 | 4/18/2017 7:57:51 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 374.4 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 7:57:51 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 7:57:51 PM | R42224 |
| Total Alkalinity (as CaCO3) | 374.4 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 7:57:51 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 450 | 200 | D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.61 | | H | pH units | 1 | 4/18/2017 7:57:51 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **TES** | |
| Calcium | 130 | 10 | | mg/L | 10 | 4/27/2017 3:27:39 PM | A42438 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 7:11:15 PM | B42326 |
| Magnesium | 14 | 1.0 | | mg/L | 1 | 4/24/2017 7:11:15 PM | B42326 |
| Potassium | 2.2 | 1.0 | | mg/L | 1 | 4/24/2017 7:11:15 PM | B42326 |
| Sodium | 36 | 1.0 | | mg/L | 1 | 4/24/2017 7:11:15 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-005 **Matrix:** AQUEOUS

**Client Sample ID:** MW-6
**Collection Date:** 4/17/2017 9:35:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-005 **Matrix:** AQUEOUS

**Client Sample ID:** MW-6
**Collection Date:** 4/17/2017 9:35:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 89.9 | 70-130 | | %Rec | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 103 | 70-130 | | %Rec | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Surr: Dibromofluoromethane | 103 | 70-130 | | %Rec | 1 | 4/18/2017 6:12:00 PM | R42209 |
| Surr: Toluene-d8 | 107 | 70-130 | | %Rec | 1 | 4/18/2017 6:12:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-006 **Matrix:** AQUEOUS

**Client Sample ID:** MW-7
**Collection Date:** 4/17/2017 10:36:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **TES** | |
| Hardness (As CaCO3) | 1100 | 6.6 | | mg/L | 1 | 4/27/2017 | R42438 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9960 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 7.7 | 5.0 | | mg/L | 10 | 4/18/2017 6:34:24 PM | R42188 |
| Sulfate | 930 | 50 | * | mg/L | 100 | 4/18/2017 6:46:49 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1900 | 1.0 | | µmhos/cm | 1 | 4/18/2017 8:18:03 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 281.9 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 8:18:03 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 8:18:03 PM | R42224 |
| Total Alkalinity (as CaCO3) | 281.9 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 8:18:03 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1610 | 200 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.60 | | H | pH units | 1 | 4/18/2017 8:18:03 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **TES** | |
| Calcium | 370 | 10 | | mg/L | 10 | 4/27/2017 3:28:56 PM | A42438 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 7:15:21 PM | B42326 |
| Magnesium | 33 | 1.0 | | mg/L | 1 | 4/24/2017 7:15:21 PM | B42326 |
| Potassium | 2.9 | 1.0 | | mg/L | 1 | 4/24/2017 7:15:21 PM | B42326 |
| Sodium | 71 | 1.0 | | mg/L | 1 | 4/24/2017 7:15:21 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-006
**Matrix:** AQUEOUS
**Client Sample ID:** MW-7
**Collection Date:** 4/17/2017 10:36:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-006 **Matrix:** AQUEOUS

**Client Sample ID:** MW-7
**Collection Date:** 4/17/2017 10:36:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 88.8 | 70-130 | | %Rec | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 103 | 70-130 | | %Rec | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Surr: Dibromofluoromethane | 101 | 70-130 | | %Rec | 1 | 4/18/2017 6:36:00 PM | R42209 |
| Surr: Toluene-d8 | 106 | 70-130 | | %Rec | 1 | 4/18/2017 6:36:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-007
**Matrix:** AQUEOUS
**Client Sample ID:** MW-8
**Collection Date:** 4/17/2017 11:57:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **TES** | |
| Hardness (As CaCO3) | 1300 | 6.6 | | mg/L | 1 | 4/27/2017 | R42438 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9965 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 12 | 5.0 | | mg/L | 10 | 4/18/2017 7:24:02 PM | R42188 |
| Sulfate | 1200 | 50 | * | mg/L | 100 | 4/18/2017 7:36:26 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 2300 | 1.0 | | µmhos/cm | 1 | 4/18/2017 8:31:30 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 244.5 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 8:31:30 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 8:31:30 PM | R42224 |
| Total Alkalinity (as CaCO3) | 244.5 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 8:31:30 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1880 | 200 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.58 | | H | pH units | 1 | 4/18/2017 8:31:30 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **TES** | |
| Calcium | 430 | 10 | | mg/L | 10 | 4/27/2017 3:30:12 PM | A42438 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 7:19:18 PM | B42326 |
| Magnesium | 52 | 1.0 | | mg/L | 1 | 4/24/2017 7:19:18 PM | B42326 |
| Potassium | 4.0 | 1.0 | | mg/L | 1 | 4/24/2017 7:19:18 PM | B42326 |
| Sodium | 86 | 1.0 | | mg/L | 1 | 4/24/2017 7:19:18 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Client Sample ID:** MW-8
**Project:** GCU 170
**Collection Date:** 4/17/2017 11:57:00 AM
**Lab ID:** 1704739-007
**Matrix:** AQUEOUS
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-007
**Matrix:** AQUEOUS
**Client Sample ID:** MW-8
**Collection Date:** 4/17/2017 11:57:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 91.5 | 70-130 | | %Rec | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | %Rec | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Surr: Dibromofluoromethane | 104 | 70-130 | | %Rec | 1 | 4/18/2017 7:00:00 PM | R42209 |
| Surr: Toluene-d8 | 107 | 70-130 | | %Rec | 1 | 4/18/2017 7:00:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Client Sample ID:** MW-9
**Project:** GCU 170
**Collection Date:** 4/17/2017 11:30:00 AM
**Lab ID:** 1704739-008
**Matrix:** AQUEOUS
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SM2340B: HARDNESS** | | | | | | Analyst: **TES** | |
| Hardness (As CaCO3) | 470 | 6.6 | | mg/L | 1 | 4/27/2017 | R42438 |
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9948 | 0 | | | 1 | 4/21/2017 1:13:00 PM | R42289 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 55 | 5.0 | | mg/L | 10 | 4/18/2017 7:48:50 PM | R42188 |
| Sulfate | 220 | 5.0 | | mg/L | 10 | 4/18/2017 7:48:50 PM | R42188 |
| **SM2510B: SPECIFIC CONDUCTANCE** | | | | | | Analyst: **JRR** | |
| Conductivity | 1200 | 1.0 | | µmhos/cm | 1 | 4/18/2017 8:43:58 PM | R42224 |
| **SM2320B: ALKALINITY** | | | | | | Analyst: **JRR** | |
| Bicarbonate (As CaCO3) | 354.0 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 8:43:58 PM | R42224 |
| Carbonate (As CaCO3) | ND | 2.000 | | mg/L CaCO3 | 1 | 4/18/2017 8:43:58 PM | R42224 |
| Total Alkalinity (as CaCO3) | 354.0 | 20.00 | | mg/L CaCO3 | 1 | 4/18/2017 8:43:58 PM | R42224 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 800 | 200 | *D | mg/L | 1 | 4/19/2017 4:12:00 PM | 31296 |
| **SM4500-H+B: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.75 | | H | pH units | 1 | 4/18/2017 8:43:58 PM | R42224 |
| **EPA METHOD 200.7: DISSOLVED METALS** | | | | | | Analyst: **TES** | |
| Calcium | 160 | 10 | | mg/L | 10 | 4/27/2017 3:31:28 PM | A42438 |
| Iron | ND | 0.020 | | mg/L | 1 | 4/24/2017 7:31:02 PM | B42326 |
| Magnesium | 17 | 1.0 | | mg/L | 1 | 4/24/2017 7:31:02 PM | B42326 |
| Potassium | 2.5 | 1.0 | | mg/L | 1 | 4/24/2017 7:31:02 PM | B42326 |
| Sodium | 77 | 1.0 | | mg/L | 1 | 4/24/2017 7:31:02 PM | B42326 |
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Methyl tert-butyl ether (MTBE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2-Dichloroethane (EDC) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 2-Methylnaphthalene | ND | 4.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Acetone | ND | 10 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-008 **Matrix:** AQUEOUS

**Client Sample ID:** MW-9
**Collection Date:** 4/17/2017 11:30:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Bromoform | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 2-Butanone | ND | 10 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Carbon disulfide | ND | 10 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Carbon Tetrachloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Chloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 2-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 4-Chlorotoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| cis-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| cis-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2-Dibromo-3-chloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Dibromomethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,3-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Dichlorodifluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 2,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Hexachlorobutadiene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 2-Hexanone | ND | 10 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 4-Isopropyltoluene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 4-Methyl-2-pentanone | ND | 10 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Methylene Chloride | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| n-Butylbenzene | ND | 3.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| sec-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Styrene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| tert-Butylbenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |

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

**Qualifiers:**

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

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering
**Project:** GCU 170
**Lab ID:** 1704739-008
**Matrix:** AQUEOUS
**Client Sample ID:** MW-9
**Collection Date:** 4/17/2017 11:30:00 AM
**Received Date:** 4/18/2017 6:48:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 8260B: VOLATILES** | | | | | | Analyst: **rde** | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,1,2,2-Tetrachloroethane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Tetrachloroethene (PCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| trans-1,2-DCE | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| trans-1,3-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2,3-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Trichloroethene (TCE) | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Trichlorofluoromethane | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| 1,2,3-Trichloropropane | ND | 2.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Vinyl chloride | ND | 1.0 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Xylenes, Total | ND | 1.5 | | µg/L | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Surr: 1,2-Dichloroethane-d4 | 89.3 | 70-130 | | %Rec | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Surr: 4-Bromofluorobenzene | 103 | 70-130 | | %Rec | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Surr: Dibromofluoromethane | 104 | 70-130 | | %Rec | 1 | 4/18/2017 7:24:00 PM | R42209 |
| Surr: Toluene-d8 | 104 | 70-130 | | %Rec | 1 | 4/18/2017 7:24:00 PM | R42209 |

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

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

*01-May-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **MB-B** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **B42326** | RunNo: **42326** |
| Prep Date: | Analysis Date: **4/24/2017** | SeqNo: **1330882** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | ND | 1.0 | | | | | | | | |
| Iron | ND | 0.020 | | | | | | | | |
| Magnesium | ND | 1.0 | | | | | | | | |
| Potassium | ND | 1.0 | | | | | | | | |
| Sodium | ND | 1.0 | | | | | | | | |

| Sample ID **LCS-B** | SampType: **LCS** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **B42326** | RunNo: **42326** |
| Prep Date: | Analysis Date: **4/24/2017** | SeqNo: **1330884** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 52 | 1.0 | 50.00 | 0 | 104 | 85 | 115 | | | |
| Iron | 0.51 | 0.020 | 0.5000 | 0 | 101 | 85 | 115 | | | |
| Magnesium | 53 | 1.0 | 50.00 | 0 | 106 | 85 | 115 | | | |
| Potassium | 51 | 1.0 | 50.00 | 0 | 103 | 85 | 115 | | | |
| Sodium | 53 | 1.0 | 50.00 | 0 | 105 | 85 | 115 | | | |

| Sample ID **MB-A** | SampType: **MBLK** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **A42438** | RunNo: **42438** |
| Prep Date: | Analysis Date: **4/27/2017** | SeqNo: **1334323** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | ND | 1.0 | | | | | | | | |

| Sample ID **LCS-A** | SampType: **LCS** | TestCode: **EPA Method 200.7: Dissolved Metals** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **A42438** | RunNo: **42438** |
| Prep Date: | Analysis Date: **4/27/2017** | SeqNo: **1334325** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 49 | 1.0 | 50.00 | 0 | 97.1 | 85 | 115 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

***01-May-17***

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **MB** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R42188** | RunNo: **42188** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1326174** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |
| Sulfate | ND | 0.50 | | | | | | | | |

| Sample ID **LCS** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R42188** | RunNo: **42188** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1326175** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.9 | 0.50 | 5.000 | 0 | 97.1 | 90 | 110 | | | |
| Sulfate | 9.8 | 0.50 | 10.00 | 0 | 97.9 | 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 |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

*01-May-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R42209** | RunNo: **42209** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1325957** Units: **µg/L** |

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

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

***01-May-17***

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **rb** | SampType: **MBLK** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R42209** | RunNo: **42209** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1325957** 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 | 9.3 | | 10.00 | | 92.8 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 108 | 70 | 130 | | | |
| Surr: Toluene-d8 | 11 | | 10.00 | | 105 | 70 | 130 | | | |

| Sample ID **100ng lcs** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R42209** | RunNo: **42209** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1325958** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 21 | 1.0 | 20.00 | 0 | 105 | 70 | 130 | | | |
| Toluene | 21 | 1.0 | 20.00 | 0 | 107 | 70 | 130 | | | |
| Chlorobenzene | 22 | 1.0 | 20.00 | 0 | 112 | 70 | 130 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

*01-May-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **100ng lcs** | SampType: **LCS** | TestCode: **EPA Method 8260B: VOLATILES** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **R42209** | RunNo: **42209** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1325958** Units: **µg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 22 | 1.0 | 20.00 | 0 | 109 | 70 | 130 | | | |
| Trichloroethene (TCE) | 21 | 1.0 | 20.00 | 0 | 105 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 9.7 | | 10.00 | | 96.6 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 10 | | 10.00 | | 105 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 11 | | 10.00 | | 108 | 70 | 130 | | | |
| Surr: Toluene-d8 | 11 | | 10.00 | | 106 | 70 | 130 | | | |

**Qualifiers:**

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

*01-May-17*

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **mb-1** | SampType: **mblk** | TestCode: **SM2320B: Alkalinity** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R42224** | RunNo: **42224** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1326542** 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: **R42224** | RunNo: **42224** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1326543** Units: **mg/L CaCO3** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Alkalinity (as CaCO3) | 79.72 | 20.00 | 80.00 | 0 | 99.7 | 90 | 110 | | | |

| Sample ID **mb-2** | SampType: **mblk** | TestCode: **SM2320B: Alkalinity** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R42224** | RunNo: **42224** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1326566** 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: **R42224** | RunNo: **42224** |
| Prep Date: | Analysis Date: **4/18/2017** | SeqNo: **1326567** Units: **mg/L CaCO3** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Alkalinity (as CaCO3) | 81.24 | 20.00 | 80.00 | 0 | 102 | 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 |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1704739**

***01-May-17***

**Client:** Blagg Engineering
**Project:** GCU 170

| Sample ID **MB-31296** | SampType: **MBLK** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **31296** | RunNo: **42230** |
| Prep Date: **4/18/2017** | Analysis Date: **4/19/2017** | SeqNo: **1326717** 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-31296** | SampType: **LCS** | TestCode: **SM2540C MOD: Total Dissolved Solids** |
|---|---|---|
| Client ID: **LCSW** | Batch ID: **31296** | RunNo: **42230** |
| Prep Date: **4/18/2017** | Analysis Date: **4/19/2017** | SeqNo: **1326718** Units: **mg/L** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1000 | 20.0 | 1000 | 0 | 100 | 80 | 120 | | | |

**Qualifiers:**

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: BLAGG | Work Order Number: 1704739 | RcptNo: 1

Received By: Lindsay Mangin 4/18/2017 6:48:00 AM

Completed By: Ashley Gallegos 4/18/2017 8:25:34 AM

Reviewed By: ENM 04/18/17

## 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 ☐ | |

FOR DISSOLVED METALS ANALYSIS: ADDED .04 mL HNO3 TO ~20 mL FOR ACCEPTABLE pH FOR 24 HOURS PRIOR TO ANALYSIS

# of preserved bottles checked for pH: 8 (<2 or >12 unless noted)

Adjusted? YES

Checked by: [illegible] 04/18 CC

## 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: FILTERED FROM B FRACTIONS TO MAKE C FRACTIONS.

18. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.7 | Good | Yes | | | |

# Chain-of-Custody Record

Client: BP AMERICA

BLAGG Engineering Inc.

Mailing Address:

Phone #: (505) 320-1183

email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☒ Standard ☐ Rush _____

Project Name: GCU 170

Project #:

Project Manager: J. BLAGG

Sampler: J. BLAGG

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.7

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

| Date | Time | Matrix | Sample Request ID | Container Type and # | Preservative Type | HEAL No. 1704739 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH's (8310 or 8270 SIMS) | RCRA 8 Metals | Anions ($F,Cl,NO_3,NO_2,PO_4,SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | API WATER | (Including pH, TDS, cond) | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/7/2017 | 1002 | WATER | MW-2A | 3xVOA 1x1000 | HCL COOL | -001 | | | | | | | | | | X | | X | X | | | |
| | 1104 | | MW-3A | " | " | -002 | | | | | | | | | | X | | X | X | | | |
| | 0906 | | MW-4A | " | " | -003 | | | | | | | | | | X | | X | X | | | |
| | 1225 | | MW-5 | " | " | -004 | | | | | | | | | | X | | X | X | | | |
| | 0935 | | MW-6 | " | " | -005 | | | | | | | | | | X | | X | X | | | |
| | 1036 | | MW-7 | " | " | -006 | | | | | | | | | | X | | X | X | | | |
| | 1157 | | MW-8 | " | " | -007 | | | | | | | | | | X | | X | X | | | |
| | 1130 | | MW-9 | " | " | -008 | | | | | | | | | | X | | X | X | | | |

| Date | Time | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 4/7/2017 | 1710 | Jeff Blagg | | | |
| 4/17/17 | 2020 | | | 04/18/17 | 0748 |

Remarks: BILL BP CONTACT: STEVE MOSKAL

VID: VRITCJWFEC

WBS ELEMENT: L1-0018L-E: GCU 170

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