



March 29, 2019

Mr. Paul Herring  
Top Operating Co.  
3609 Wadsworth Blvd. Ste 340  
Lakewood, CO 80235

**Quarterly Progress Report – 1<sup>st</sup> Quarter 2019**  
**Rider #1**  
**Historical Release**  
**40.178822 / -105.058512**  
**NE¼ SE¼ SEC.36 T3N R69W 6PM**  
**Boulder County, Colorado**  
**Remediation # 11300**

Dear Mr. Herring,

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to present this Quarterly Progress Report – 1<sup>st</sup> Quarter 2019 for the Rider #1 location (site). A topographic site location map is presented in Figure 1.

## **1.0 SITE BACKGROUND**

On December 21, 2017, the City of Longmont (Longmont) submitted to the Colorado Oil and Gas Conservation Commission (COGCC) a report entitled *Limited Soil, Groundwater, and Soil Gas Investigation* for the Rider #1 Oil and Gas Well Site located in Longmont, Colorado. Based on analytical results reported by Longmont, soil and groundwater samples collected by Terracon Consultants, Inc. (Terracon) on September 15, 2017 and October 18, 2017, exceeded COGCC Table 910-1 regulatory limits. These results were reported by Longmont to the COGCC on December 21, 2017 and were first reported to Top Operating Company (TOP) upon issuance of Notice of Alleged Violation (NOAV) on March 5, 2018.

In April 2018, EAGLE was retained by TOP to perform assessment activities at the site in response to Longmont's report (COGCC Document No. 2496197) and the NOAV (COGCC Document No. 401562368). Terracon's report indicated 11 soil borings were advanced at the site in September and October, 2017. Based on analytical results of soil samples collected by Terracon, total petroleum hydrocarbons (TPH) concentrations in soil borings SB-06, SB-07, and SB-11 exceeded COGCC Table 910-1 regulatory limits. Based on these results, and at the request of TOP, EAGLE advanced 13 soil borings adjacent to the previous locations of SB-06, SB-07, and SB-11 in May 2018. EAGLE submitted two soil samples from each boring at different depths (surficial and subsurface) for laboratory analysis. Based on laboratory analytical results, soil samples SB-03@7.5-10', SB-07@7.5-10', and SB-11@7.5-10' contained concentrations of TPH exceeding the COGCC Table 910-1 regulatory limit of 500 milligrams per kilogram (mg/kg). Soil analytical results from EAGLE's soil boring assessment are presented in Table 1.

From August 13, 2018 through August 28, 2018, EAGLE supervised excavation activities to remove adsorbed petroleum hydrocarbon impacts beneath and adjacent to the petroleum hydrocarbon impacts identified in soil borings SB-03, SB-07, and SB-11. On August 13, 2018, groundwater was observed

within the excavation at approximately 9 to 9.5 feet bgs. EAGLE collected groundwater samples (EXC-GW-01 and EXC-GW-02) on August 13, 2018, placed the samples in an iced cooler, and delivered to Origins Laboratory (Origins), under standard chain-of-custody (COC) protocol, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) following modified Environmental Protection Agency (EPA) Method 8260C. The groundwater samples were received within the required holding time for the laboratory analysis. On August 16, 2018, EAGLE collected groundwater sample EXC-GW-03 for laboratory analysis. Soil sample locations and analytical data for soil excavation samples is summarized in Table 1 and presented in Figure 2.

To aid in the remediation of impacted groundwater, EC Trucking, coordinated through Wright Choice, was utilized to remove groundwater from the excavation. From August 20, 2018 through August 28, 2018, approximately 1,700 barrels (bbls) of groundwater were removed from the excavation by EC Trucking and transported to NGL C9 for disposal. Additional groundwater samples EXC-GW-04 and EXC-GW-05 were collected to monitor dissolved BTEX concentrations in the excavation.

During excavation activities, previously installed monitoring wells MW-01R, MW-03R, and MW-04R were destroyed. The following narrative details monitoring well replacement and groundwater monitoring activities completed at the site following excavation activities.

Per a Site Investigation and Remediation Workplan - Form 27 (COGCC Document No. 401748617) submitted to the COGCC on August 29, 2018, EAGLE proposed the installation of replacement monitoring well MW-01R to continue monitoring groundwater concentrations at the site. Following Form 27 approval on August 29, 2018, EAGLE scheduled soil boring advancement and monitoring well installation activities.

On October 2, 2018, soil boring (MW-01R2) was advanced adjacent to the previous monitoring well MW-01R location. Following advancement activities, the soil boring was completed as a 2-inch, groundwater monitoring well to continue monitoring groundwater concentrations at the site per the approved Form 27. Soil boring advancement/monitoring well installation activities were completed by EAGLE using a 7822DT Series Geoprobe track rig.

Based on photoionization detector (PID) readings, the soil sample with the highest organic vapor measurement (OVM) from the boring (MW-01R2@7.5-10') was submitted to Origins, following standard COC procedures, for laboratory analysis of BTEX, naphthalene, TPH – gasoline range organics (GRO), and TPH – diesel range organics (DRO), following modified EPA Methods 8260C and 8015.

Based on laboratory analytical results, the soil sample collected from monitoring wells MW-01R2 on October 2, 2018, 2018 did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits. Monitoring well soil analytical results are summarized in Table 1 and presented in Figure 3.

EAGLE returned to the site on October 3, 2018 to sample monitoring well MW-01R2. Groundwater samples were collected from the monitoring well in 40 milliliter (mL) amber vials and submitted for laboratory analysis of BTEX following EPA Method 8260C.

Based on laboratory analytical results, the groundwater sample collected from monitoring well MW-01R2 on October 3, 2018 did not contain concentrations of BTEX exceeding applicable COGCC Table 910-1 regulatory limits.

Top Operating Company submitted a Site Investigation and Remediation Workplan – Form 27 (COGCC Document No. 401799000) presenting soil and groundwater data associated with the installation of MW-01R2 to the COGCC on October 16, 2018. In addition, the Form 27 proposed quarterly monitoring of MW-01R2.

## **1.1 Site Hydrogeology**

The soil lithology observed beneath the site consists of stiff, silty clay from the ground surface to approximately 13 feet below ground surface (bgs), underlain by medium dense, gravelly clay from approximately 13 to 15 feet bgs. Groundwater was observed at a depth of approximately 9 to 9.5 feet bgs during initial assessment and excavation activities. Groundwater was observed at approximately 9 feet bgs during groundwater sampling activities.

## **2.0 GROUNDWATER MONITORING ACTIVITIES**

### **2.1 Groundwater Sampling Procedures**

EAGLE completed the 1<sup>st</sup> quarter 2019 groundwater sampling event on January 14, 2019. EAGLE collected a groundwater sample from monitoring well MW-01R2. Prior to groundwater sample collection, depth to groundwater data was collected using a decontaminated interface probe capable of measuring the depth to groundwater or light non-aqueous phase liquid (LNAPL) to an accuracy of 0.01 feet. Groundwater was observed at approximately 9.5 feet bgs. Groundwater samples were collected from the monitoring well in 40 mL amber vials and submitted for laboratory analysis of BTEX following EPA Method 8260C. The samples were transported in an iced cooler under standard chain-of-custody procedures to Origins and were received within the required holding time.

### **2.2 Groundwater Laboratory Analytical Results**

Based on laboratory analytical results, the groundwater sample collected from monitoring well MW-01R2 on January 14, 2019 did not contain concentrations of BTEX exceeding applicable COGCC Table 910-1 regulatory limits.

Groundwater analytical results are summarized in Table 2 and presented in Figure 4. The groundwater laboratory analytical report is included in Attachment A.

### 3.0 RECOMMENDATIONS

Based on the information presented in this report, EAGLE recommends continued quarterly groundwater monitoring on MW-01R2 through the 3<sup>rd</sup> quarter 2019.

EAGLE sincerely appreciates the opportunity to provide our services. If you have any questions or require further information, please contact us at (303) 433-0479.

Sincerely,

***EAGLE ENVIRONMENTAL CONSULTING, INC.***

A handwritten signature in blue ink, appearing to read 'D. Coloccia', is positioned above the printed name and title.

Daniel Coloccia  
Project Scientist

## **FIGURES**

**Figure 1: Topographic Site Location Map**

**Figure 2: Excavation Soil Analytical Map**

**Figure 3: Monitoring Well Soil Analytical Map**

**Figure 4: Groundwater Analytical Map**



Approximate site location

**Topographic Site Location Map**

Rider #1

Historical Release

40.178822 / -104.058512

NE¼ SE¼ SEC.36 T3N R69W 6PM

Boulder County, Colorado

Remediation #11300

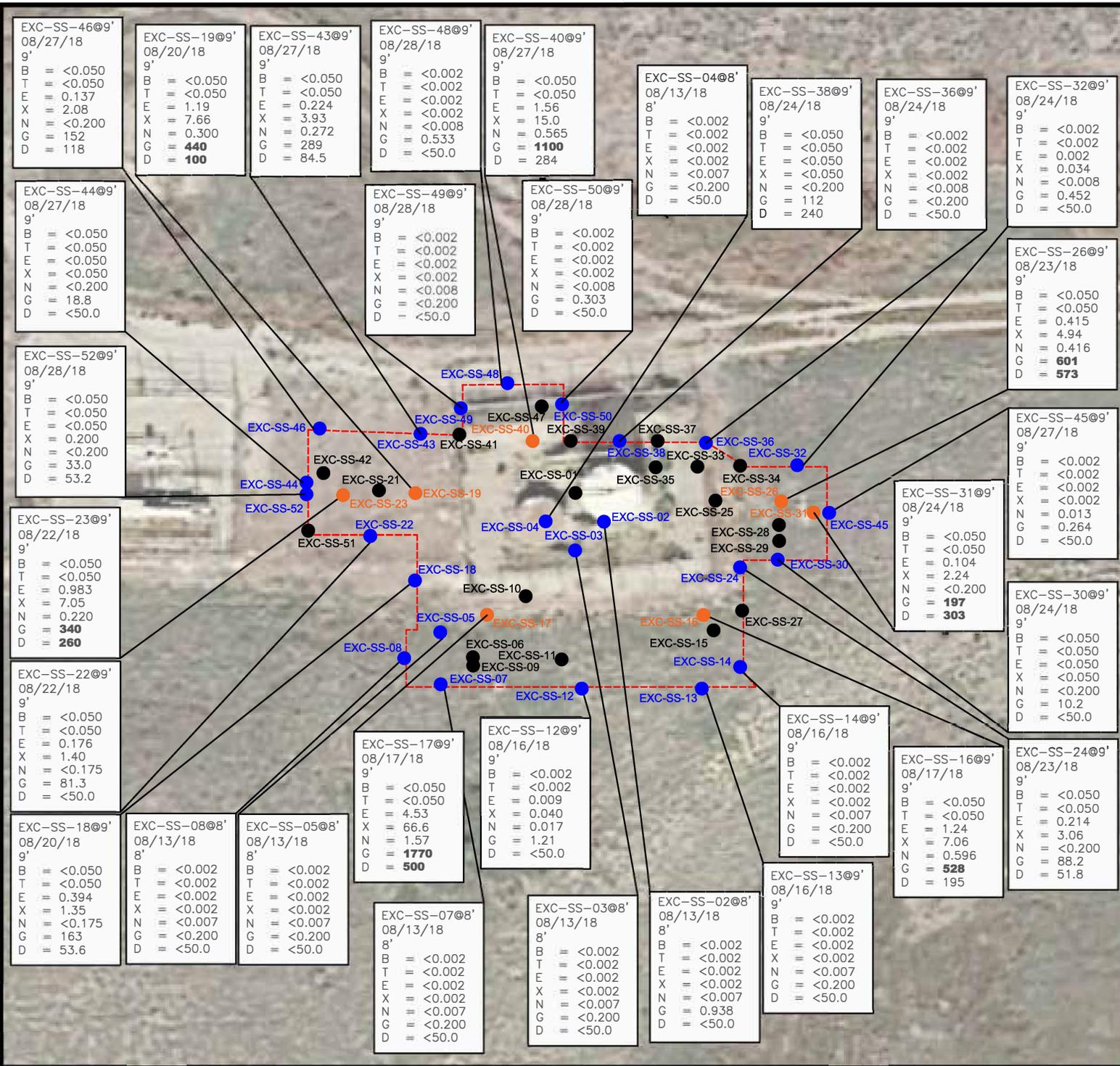


Source: USGS 7.5 Minute Topographic Map, Longmont, CO Quadrangle 2016

**Figure 1**



**EAGLE**  
ENVIRONMENTAL  
CONSULTING, INC.



**LEGEND**

- - - APPROXIMATE EXCAVATION BOUNDARIES
- APPROXIMATE LOCATION OF SOIL SAMPLES ABOVE COGCC TABLE 910-1 - IMPACTS REMOVED
- APPROXIMATE LOCATION OF SOIL SAMPLES BELOW COGCC TABLE 910-1
- APPROXIMATE LOCATION OF SOIL SAMPLES FIELD ANALYZED WITH PHOTOIONIZATION DETECTOR (PID)

**PARAMETERS**

**SOIL SAMPLE LOCATION**

DATE

DEPTH (FEET)

B = BENZENE (mg/kg)

T = TOLUENE (mg/kg)

E = ETHYLBENZENE (mg/kg)

X = TOTAL XYLENES (mg/kg)

N = NAPHTHALENE (mg/kg)

G = TPH-GRO (mg/kg)

D = TPH-DRO (mg/kg)

mg/kg = MILLIGRAMS PER KILOGRAM

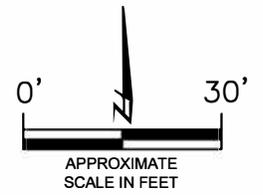
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS

TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

NOTE: VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS

VALUES PRESENTED IN **BOLD** TYPEFACE EXCEED COGCC TABLE 910-1 REGULATORY LIMITS FOR THE COMPOUND

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



**EXCAVATION SOIL ANALYTICAL MAP**

RIDER #1

HISTORICAL RELEASE

40.178822 / -105.058512

NE1/4 SE1/4 SEC.36 T3N R69W 6PM

BOULDER COUNTY, COLORADO

REMEDIATION # 11300

DATE: 08/29/18

DRAWN BY: or

FIG. NO. 2

**EAGLE ENVIRONMENTAL CONSULTING, INC.**

4101 INCA STREET, DENVER, CO 80211

Ph: 303-433-0479 - F: 303-325-5449



MW-01R2@7.5-10'  
 10/02/18  
 7.5-10'  
 B = <0.002  
 T = <0.002  
 E = <0.002  
 X = <0.002  
 N = <0.008  
 G = 0.352  
 D = <50.0

MW-01R2

**LEGEND**

- - - APPROXIMATE EXCAVATION BOUNDARIES
-  APPROXIMATE REPLACEMENT MONITORING WELL LOCATION

**PARAMETERS**

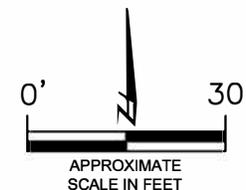
SOIL SAMPLE LOCATION  
 DATE  
 DEPTH (FEET)  
 B = BENZENE (mg/kg)  
 T = TOLUENE (mg/kg)  
 E = ETHYLBENZENE (mg/kg)  
 X = TOTAL XYLENES (mg/kg)  
 N = NAPHTHALENE (mg/kg)  
 G = TPH-GRO (mg/kg)  
 D = TPH-DRO (mg/kg)

mg/kg = MILLIGRAMS PER KILOGRAM

TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS

TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

NOTE: VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS

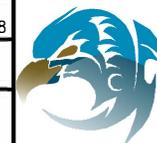


MONITORING WELL SOIL ANALYTICAL MAP  
 RIDER #1  
 HISTORICAL RELEASE  
 40.178822 / -105.058512  
 NE1/4 SE1/4 SEC.36 T3N R69W 6PM  
 BOULDER COUNTY, COLORADO  
 REMEDIATION # 11300

DATE:  
10/10/18

DRAWN BY:  
or

FIG.  
NO. 3



**EAGLE**  
 ENVIRONMENTAL  
 CONSULTING, INC.  
 4101 INCA STREET, DENVER, CO 80211  
 Ph: 303-433-0479 - F: 303-325-5449



**LEGEND**

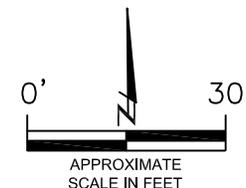
- - - APPROXIMATE EXCAVATION BOUNDARIES
- APPROXIMATE REPLACEMENT MONITORING WELL LOCATION

PARAMETERS

SAMPLE LOCATION	DATE
B = BENZENE (µg/L)	
T = TOLUENE (µg/L)	
E = ETHYLBENZENE (µg/L)	
X = TOTAL XYLENES (µg/L)	

µg/L = MICROGRAMS PER LITER

VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY REPORTING LIMITS.



GROUNDWATER ANALYTICAL MAP  
RIDER #1  
HISTORICAL RELEASE  
40.178822 / -105.058512  
NE1/4 SE1/4 SEC.36 T3N R69W 6PM  
BOULDER COUNTY, COLORADO  
REMEDIAATION # 11300

DATE:	01/24/19
DRAWN BY:	or
FIG. NO.	4

**EAGLE**  
ENVIRONMENTAL  
CONSULTING, INC.

4101 INCA STREET, DENVER, CO 80211  
Ph: 303-433-0479 • F: 303-325-5449

## **TABLES**

**Table 1: Soil Analytical Results Summary**

**Table 2: Groundwater Analytical Results Summary**

**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**RIDER #1**  
**HISTORICAL RELEASE**  
**40.178822 / -105.058512**  
**NE¼ SE¼ SEC.36 T3N R69W 6PM**  
**BOULDER COUNTY, COLORADO**  
**REMEDIATION #11300**

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Specific Conductance (mmhos/cm)	pH (pH units)	SAR
<b>COGCC - Regulatory Limits (Table 910-1) (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>			<b>&lt;4</b>	<b>6 to 9</b>	<b>&lt;12</b>
SB-01 @ 0-2.5' (40.178806/-105.058722)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.135	8.32	0.62
SB-01 @ 10-12.5' (40.178806/-105.058722)	05/17/18	10-12.5	<0.050	<0.050	<0.050	0.658	<0.175	101	24.4	5.32	NA	NA	NA
SB-02 @ 0-2.5' (40.178782/-105.058673)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.239	7.97	1.40
SB-02 @ 7.5-10' (40.178782/-105.058673)	05/17/18	7.5-10	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<13.0	<4.59	NA	NA	NA
SB-03 @ 0-2.5' (40.178756/-105.058741)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.196	7.65	0.49
SB-03 @ 7.5-10' (40.178756/-105.058741)	05/17/18	7.5-10	<0.050	<0.050	<0.050	4.63	0.448	<b>425</b>	<b>95.0</b>	<4.59	NA	NA	NA
SB-04 @ 0-2.5' (40.178778/-105.058722)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.187	7.99	0.46
SB-04 @ 7.5-10' (40.178778/-105.058722)	05/17/18	7.5-10	<0.050	<0.050	0.194	0.772	<0.175	101	18.8	<4.59	NA	NA	NA
SB-05 @ 7.5-10' (40.178827/-105.058516)	05/17/18	7.5-10	<0.002	<0.002	0.007	0.057	<0.007	12.5	59.0	<4.59	NA	NA	NA
SB-06 @ 0-2.5' (40.178845/-105.058516)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.178	8.21	4.07
SB-06 @ 7.5-10' (40.178845/-105.058516)	05/17/18	7.5-10	<0.002	0.002	0.661	7.90	0.184	295	70.9	<4.59	NA	NA	NA
SB-07 @ 0-2.5' (40.178826/-105.058485)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.113	8.73	2.62
SB-07 @ 7.5-10' (40.178826/-105.058485)	05/17/18	7.5-10	<0.050	<0.050	1.97	30.1	0.650	<b>877</b>	156	<4.59	NA	NA	NA
SB-08 @ 0-2.5' (40.178805/-105.058517)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.113	8.74	3.80
SB-08 @ 7.5-10' (40.178805/-105.058517)	05/17/18	7.5-10	<0.050	<0.050	0.098	1.46	0.212	196	37.8	<4.59	NA	NA	NA
SB-09 @ 0-2.5' (40.178821/-105.058550)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.144	8.65	1.35
SB-09 @ 7.5-10' (40.178821/-105.058550)	05/17/18	7.5-10	<0.002	<0.002	0.027	0.174	0.017	10.9	16.2	<4.59	NA	NA	NA
SB-10 @ 0-2.5' (40.178853/-105.058453)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.181	8.42	2.59



**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**RIDER #1**  
**HISTORICAL RELEASE**  
**40.178822 / -105.058512**  
**NE¼ SE¼ SEC.36 T3N R69W 6PM**  
**BOULDER COUNTY, COLORADO**  
**REMEDATION #11300**

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Specific Conductance (mmhos/cm)	pH (pH units)	SAR
<b>COGCC - Regulatory Limits (Table 910-1) (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>			<b>&lt;4</b>	<b>6 to 9</b>	<b>&lt;12</b>
SB-10 @ 10-12.5' (40.178853/-105.058453)	05/17/18	10-12.5	<0.050	<0.050	0.787	29.2	0.331	286	61.5	<4.59	NA	NA	NA
SB-11 @ 0-2.5' (40.178672/-105.058327)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.285	8.20	2.23
SB-11 @ 7.5-10' (40.178672/-105.058327)	05/17/18	7.5-10	<0.050	<0.050	<0.050	4.57	0.290	<b>847</b>	68.5	<4.59	NA	NA	NA
SB-12 @ 0-2.5' (40.178674/-105.058974)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.113	8.65	0.24
SB-12 @ 10-12.5' (40.178674/-105.058974)	05/17/18	10-12.5	<0.002	<0.002	<0.002	<0.002	<0.007	10.6	47.5	<4.59	NA	NA	NA
SB-13 @ 0-2.5' (40.179119/-105.058492)	05/17/18	0-2.5	NA	NA	NA	NA	NA	NA	NA	NA	0.0992	8.65	0.47
SB-13 @ 12.5-15' (40.179119/-105.058492)	05/17/18	12.5-15	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<13.0	<4.59	NA	NA	NA
EXC-SS-02 @ 8' (40.178817 / -105.058472)	08/13/18	8	<0.002	<0.002	<0.002	<0.002	<0.007	0.938	<50.0	NA	NA	NA	NA
EXC-SS-03 @ 8' (40.178802 / -105.058495)	08/13/18	8	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-04 @ 8' (40.178814 / -105.058520)	08/13/18	8	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-05 @ 8' (40.178751 / -105.058589)	08/13/18	8	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-07 @ 8' (40.178723 / -105.058611)	08/13/18	8	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-08 @ 8' (40.178726 / -105.058638)	08/13/18	8	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-12 @ 9' (40.178706 / -105.058474)	08/16/18	9	<0.002	<0.002	0.009	0.040	0.017	1.21	<50.0	NA	NA	NA	NA
EXC-SS-13 @ 9' (40.178705 / -105.058393)	08/16/18	9	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-14 @ 9' (40.178742 / -105.058370)	08/16/18	9	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-16 @ 9' (40.178785 / -105.058545)	08/17/18	9	<0.050	<0.050	1.24	7.06	0.596	<b>528</b>	195	NA	NA	NA	NA
EXC-SS-17 @ 9' (40.178766 / -105.058563)	08/17/18	9	<0.050	<0.050	4.53	66.6	1.57	<b>1770</b>	<b>500</b>	NA	NA	NA	NA



**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**RIDER #1**  
**HISTORICAL RELEASE**  
**40.178822 / -105.058512**  
**NE¼ SE¼ SEC.36 T3N R69W 6PM**  
**BOULDER COUNTY, COLORADO**  
**REMEDIATION #11300**

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Specific Conductance (mmhos/cm)	pH (pH units)	SAR
<b>COGCC - Regulatory Limits (Table 910-1) (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>			<b>&lt;4</b>	<b>6 to 9</b>	<b>&lt;12</b>
EXC-SS-18 @ 9' (40.178784 / -105.058619)	08/20/18	9	<0.050	<0.050	0.394	1.35	<0.175	163	53.6	NA	NA	NA	NA
EXC-SS-19 @ 9' (40.178829 / -105.058598)	08/20/18	9	<0.050	<0.050	1.19	7.66	0.300	<b>440</b>	<b>100</b>	NA	NA	NA	NA
EXC-SS-22 @ 9' (40.178807 / -105.058647)	08/22/18	9	<0.050	<0.050	0.176	1.40	<0.175	81.3	<50.0	NA	NA	NA	NA
EXC-SS-23 @ 9' (40.178833 / -105.058658)	08/22/18	9	<0.050	<0.050	0.983	7.05	0.220	<b>340</b>	<b>260</b>	NA	NA	NA	NA
EXC-SS-24 @ 9' (40.178795 / -105.058373)	08/23/18	9	<0.050	<0.050	0.214	3.06	<0.200	88.2	51.8	NA	NA	NA	NA
EXC-SS-26 @ 9' (40.178830 / -105.058357)	08/23/18	9	<0.050	<0.050	0.415	4.94	0.416	<b>601</b>	<b>573</b>	NA	NA	NA	NA
EXC-SS-30 @ 9' (40.178781 / -105.058331)	08/24/18	9	<0.050	<0.050	<0.050	<0.050	<0.200	10.2	<50.0	NA	NA	NA	NA
EXC-SS-31 @ 9' (40.178825 / -105.058312)	08/24/18	9	<0.050	<0.050	0.104	2.24	<0.200	<b>197</b>	<b>303</b>	NA	NA	NA	NA
EXC-SS-32 @ 9' (40.178864 / -105.058327)	08/24/18	9	<0.002	<0.002	0.002	0.034	<0.008	0.452	<50.0	NA	NA	NA	NA
EXC-SS-36 @ 9' (40.178950 / -105.058383)	08/24/18	9	<0.002	<0.002	<0.002	<0.002	<0.008	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-38 @ 9' (40.178910 / -105.058452)	08/24/18	9	<0.050	<0.050	<0.050	<0.050	<0.200	112	240	NA	NA	NA	NA
EXC-SS-40 @ 9' (40.178908 / -105.058449)	08/27/28	9	<0.050	<0.050	1.56	15.0	0.565	<b>1100</b>	284	NA	NA	NA	NA
EXC-SS-43 @ 9' (40.178904 / -105.058528)	08/27/28	9	<0.050	<0.050	0.224	3.93	0.272	289	84.5	NA	NA	NA	NA
EXC-SS-44 @ 9' (40.178876 / -105.058670)	08/27/28	9	<0.050	<0.050	<0.050	<0.050	<0.200	18.8	<50.0	NA	NA	NA	NA
EXC-SS-45 @ 9' (40.178823 / -105.058297)	08/27/28	9	<0.002	<0.002	<0.002	<0.002	0.013	0.264	<50.0	NA	NA	NA	NA
EXC-SS-46 @ 9' (40.178905 / -105.058636)	08/27/28	9	<0.050	<0.050	0.137	2.08	<0.200	152	118	NA	NA	NA	NA
EXC-SS-48 @ 9' (40.178937 / -105.058502)	08/28/18	9	<0.002	<0.002	<0.002	<0.002	<0.008	0.533	<50.0	NA	NA	NA	NA



**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**RIDER #1**  
**HISTORICAL RELEASE**  
**40.178822 / -105.058512**  
**NE¼ SE¼ SEC.36 T3N R69W 6PM**  
**BOULDER COUNTY, COLORADO**  
**REMEDIATION #11300**

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Specific Conductance (mmhos/cm)	pH (pH units)	SAR
<b>COGCC - Regulatory Limits (Table 910-1) (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>			<b>&lt;4</b>	<b>6 to 9</b>	<b>&lt;12</b>
EXC-SS-49 @ 9' (40.178921 / -105.058556)	08/28/18	9	<0.002	<0.002	<0.002	<0.002	<0.008	<0.200	<50.0	NA	NA	NA	NA
EXC-SS-50 @ 9' (40.178919 / -105.058461)	08/28/18	9	<0.002	<0.002	<0.002	<0.002	<0.008	0.303	<50.0	NA	NA	NA	NA
EXC-SS-52 @ 9' (40.178860 / -105.058677)	08/28/18	9	<0.050	<0.050	<0.050	0.200	<0.200	33.0	53.2	NA	NA	NA	NA
MW-01R2 @ 7.5-10' (40.178764 / -105.058722)	10/02/18	7.5-10	<0.002	<0.002	<0.002	<0.002	<0.008	0.352	<50.0	NA	NA	NA	NA

COGCC = Colorado Oil and Gas Conservation Commission

mg/kg = milligrams per kilogram

NA - Not Applicable

TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

TPH-RRO = Total Petroleum Hydrocarbons - Residual Range Organics

Values presented in **bold** indicate concentrations exceeded COGCC Table 910-1 regulatory limits.

Values presented with a "<" symbol indicate concentrations were not observed above the laboratory reporting limit.



**TABLE 2**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY**  
**RIDER #1**  
**HISTORICAL RELEASE**  
**40.178822 / -105.058512**  
**NE¼ SE¼ SEC.36 T3N R69W 6PM**  
**BOULDER COUNTY, COLORADO**  
**REMEDATION #11300**

Sample Location (Latitude/Longitude)	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Table 910-1 Regulatory Limits (µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1400</b>
MW-01R (40.178764 / -105.058722)	05/17/18	<4.00	<4.00	27.4	180
EXC-GW-01 (40.178816 / -105.058488)	08/13/18	<4.00	<4.00	<b>760</b>	<b>9420</b>
EXC-GW-02 (40.178741 / -105.058586)	08/13/18	<4.00	<4.00	66.4	370
EXC-GW-03 (40.178473 / -105.058411)	08/16/18	<4.00	<4.00	430	<b>6330</b>
EXC-GW-04 (40.178817 / -105.058338)	08/24/18	<4.00	<4.00	85.4	<b>1400</b>
EXC-GW-05 (40.178836 / -105.058509)	08/28/18	<4.00	<4.00	26.1	428
MW-01R2 (40.178764 / -105.058722)	10/03/18	<1.00	<1.00	<1.00	<1.00
MW-01R2 (40.178764 / -105.058722)	01/14/19	<4.00	<4.00	<4.00	<4.00

COGCC = Colorado Oil and Gas Conservation Commission

µg/L - micrograms per liter

Note: Values presented with a less than symbol (<) indicate concentrations were not observed at or above the laboratory reporting limit.

Values presented in **bold** indicate concentrations exceeded COGCC Table 910-1 regulatory limits.

# **ATTACHMENT A**

## **Laboratory Analytical Report**



January 17, 2019

**Eagle Environmental Consulting, Inc.**

**Dan Coloccia**

**4101 Inca Street**

**Denver CO 80211**

**Project Name - Rider #1**

**Project Number - [none]**

Attached are your analytical results for Rider #1 received by Origins Laboratory, Inc. January 14, 2019. This project is associated with Origins project number Y901169-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Eagle Environmental Consulting, Inc.  
4101 Inca Street  
Denver CO 80211

Dan Coloccia  
Project Number: [none]  
Project: Rider #1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-01R2	Y901169-01	Water	January 14, 2019 14:20	01/14/2019 15:53

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Jen Pellegrini For Noelle Doyle Mathis, President



Eagle Environmental Consulting, Inc.  
 4101 Inca Street  
 Denver CO 80211

Dan Coloccia  
 Project Number: [none]  
 Project: Rider #1

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: Y901169 Client: Eagle  
 Client Project ID: Rider #1  
 Checklist Completed by: JG Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Date/time completed: 1/15/2019 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply): Soil/Solid  Water  Other:   
 Cooler Number/Temperature: 1 3.8 °C 1 °C 1 °C 1 °C (Describe)  
 Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JAP

Date/Time Reviewed 1/16/19

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
4101 Inca Street  
Denver CO 80211

Dan Coloccia  
Project Number: [none]  
Project: Rider #1

**MW-01R2**

**1/14/2019 2:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y901169-01 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B9A1605	KDK	01/16/2019	01/17/2019	U
Toluene	ND	4.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	4.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	4.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	84-121			"	"	"	"	
Surrogate: Toluene-d8	96.6 %	85-115			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	99.9 %	84-114			"	"	"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
 4101 Inca Street  
 Denver CO 80211

Dan Coloccia  
 Project Number: [none]  
 Project: Rider #1

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9A1605 - EPA 5030B (Water)**

**Blank (B9A1605-BLK1)**

Prepared: 01/16/2019 Analyzed: 01/16/2019

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	67		"	62.5	108		84-121			
<i>Surrogate: Toluene-d8</i>	61		"	62.5	98.0		85-115			
<i>Surrogate: 4-Bromofluorobenzene</i>	62		"	62.5	98.9		84-114			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
 4101 Inca Street  
 Denver CO 80211

Dan Coloccia  
 Project Number: [none]  
 Project: Rider #1

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9A1605 - EPA 5030B (Water)**

**LCS (B9A1605-BS1)**

Prepared: 01/16/2019 Analyzed: 01/16/2019

Benzene	53.7	1.00	ug/L	50.0		107	73.3-129			
Toluene	53.5	1.00	"	50.0		107	76.2-123			
Ethylbenzene	50.8	1.00	"	50.0		102	73.6-130			
m,p-Xylene	106	2.00	"	100		106	76.1-126			
o-Xylene	51.8	1.00	"	50.0		104	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	84-121			
Surrogate: Toluene-d8	61		"	62.5		98.0	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.0	84-114			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
 4101 Inca Street  
 Denver CO 80211

Dan Coloccia  
 Project Number: [none]  
 Project: Rider #1

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9A1605 - EPA 5030B (Water)**

<b>Matrix Spike (B9A1605-MS1)</b>	<b>Source: Y901174-01</b>			<b>Prepared: 01/16/2019 Analyzed: 01/16/2019</b>						
Benzene	103	1.00	ug/L	100	ND	103	74-130			
Toluene	99.2	1.00	"	100	0.160	99.0	73-131			
Ethylbenzene	90.9	1.00	"	100	0.330	90.6	76-132			
m,p-Xylene	183	2.00	"	200	0.780	90.9	69-139			
o-Xylene	95.1	1.00	"	100	0.410	94.7	74-131			
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5		108	84-121			
Surrogate: Toluene-d8	59		"	62.5		95.0	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.6	84-114			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
 4101 Inca Street  
 Denver CO 80211

Dan Coloccia  
 Project Number: [none]  
 Project: Rider #1

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9A1605 - EPA 5030B (Water)**

<b>Matrix Spike Dup (B9A1605-MSD1)</b>	<b>Source: Y901174-01</b>			<b>Prepared: 01/16/2019 Analyzed: 01/16/2019</b>						
Benzene	102	1.00	ug/L	100	ND	102	74-130	0.558	20	
Toluene	98.4	1.00	"	100	0.160	98.2	73-131	0.830	20	
Ethylbenzene	86.1	1.00	"	100	0.330	85.8	76-132	5.47	20	
m,p-Xylene	175	2.00	"	200	0.780	86.9	69-139	4.45	20	
o-Xylene	92.8	1.00	"	100	0.410	92.4	74-131	2.48	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	70		"	62.5		112	84-121			
<i>Surrogate: Toluene-d8</i>	59		"	62.5		94.0	85-115			
<i>Surrogate: 4-Bromofluorobenzene</i>	60		"	62.5		95.5	84-114			

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Eagle Environmental Consulting, Inc.  
4101 Inca Street  
Denver CO 80211

Dan Coloccia  
Project Number: [none]  
Project: Rider #1

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President