



March 20, 2019

Mr. Jacob Evans  
Noble Energy, Inc.  
2115 117<sup>th</sup> Avenue  
Greeley, CO 80631

**Site Assessment Report and Remediation Proposal  
Wells Ranch AE 32 Econode  
Flow Line Release  
40.4440 / -104.3552  
SW¼ NW¼ SEC.32 T6N R62W 6PM  
Weld County, Colorado  
Remediation # 12140**

Dear Mr. Evans:

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to provide Noble Energy, Inc. (Noble) with this Site Assessment Report and Remediation Proposal for the above-referenced site.

## **1.0 SITE BACKGROUND**

During production, a produced water dump line unintentionally released at the Wells Ranch AE 32 Econode. On May 9, 2018, EAGLE was requested by Noble to perform subsurface assessment activities in response to potential petroleum hydrocarbon impacts associated with the flow line release. Upon arrival, EAGLE collected soil samples (SS-01 through SS-09) around the flow line release area to identify any petroleum hydrocarbon impacts above Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 regulatory limits.

The following narrative details assessment and proposed remediation activities at the site.

### **1.1 Site Description**

The Wells Ranch AE 32 Econode site is located within the southwest quarter of the northwest quarter of Section 32, Township 6 North, Range 62 West, of the 6<sup>th</sup> Prime Meridian, in Weld County, Colorado. The flow line release associated with the site was located at latitude: 40.4440 and longitude: -104.3552. A topographic site location map is presented as Figure 1.

### **1.2 Site Hydrogeology**

The soil lithology observed beneath the release location consists of road base from the ground surface to approximately 2 feet below ground surface (bgs), underlain by dense to very dense, clayey sand from approximately 2 feet bgs to 15 feet bgs. Groundwater was not observed during assessment activities.

## **2.0 INITIAL ASSESSMENT ACTIVITIES**

On May 9, 2018, Noble requested EAGLE to perform subsurface assessment activities at the site in response to potential petroleum hydrocarbon impacts as a result of an unintentional produced water dump line release associated with the Wells Ranch AE 32 Econode. Upon arrival, EAGLE observed two limited hydrovac excavations completed by 1888 Industrial Services (1888) and collected soil samples (SS-01 through SS-09) around the release area.

Following sample collection, a portion of each soil sample was placed in a sealable plastic bag for volatile organic compound (VOC) headspace analysis utilizing a field calibrated photoionization detector (PID). Another portion of the soil sample was placed in a 2-ounce glass jar and packed in an iced cooler.

Based on location and PID readings, EAGLE submitted nine (9) soil samples (SS-01@9', SS-02@7', SS-03@6', SS-04@6', SS-05@6', SS-06@8', SS-07@7', SS-08@6', and SS-09@6') to Origins Laboratory, Inc. (Origins) located in Denver, Colorado, under standard chain of custody (COC) procedures. The soil samples were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons – gasoline range organics (TPH-GRO), and total petroleum hydrocarbons – diesel range organics (TPH-DRO) following modified Environmental Protection Agency (EPA) Methods 8260c and 8015. The soil samples were received within the required holding time for each laboratory analysis. Spatial location of each soil sample location was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting the soil sample locations is included in Figure 2.

Approximately 80 barrels (bbls) of slurry (approx. 12 cubic yards) were removed and transported for disposal to Republic Services, located in Commerce City, Colorado.

### **2.1 Initial Assessment Laboratory Analytical Results**

Based on soil laboratory analytical results:

- Soil samples SS-01@9', SS-02@7', SS-03@6', SS-08@6', and SS-09@6' contained concentrations of benzene (10.1 milligrams per kilogram (mg/kg), 9.80 mg/kg, 19.6 mg/kg, 18.8 mg/kg, and 3.91 mg/kg, respectively) and total petroleum hydrocarbons (TPH) (9,860 mg/kg, 11,610 mg/kg, 9,610 mg/kg, 8,280 mg/kg, and 3,990 mg/kg, respectively) exceeding their applicable COGCC Table 910-1 regulatory limits of 0.17 mg/kg and 500 mg/kg.
- Soil sample SS-03@6' contained a concentration of toluene (90.0 mg/kg) exceeding the COGCC Table 910-1 regulatory limit of 85 mg/kg.
- Soil samples SS-04@6', SS-05@6', SS-06@8', and SS-07@7', did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.

Soil analytical results are summarized in Table 1 and presented in Figure 2. The laboratory analytical report is included in Attachment A.

## **3.0 POTHOLE ASSESSMENT ACTIVITIES**

In January 2019, EAGLE returned to the site to vertically and laterally define adsorbed petroleum hydrocarbon impacts at the site. Due to health and safety concerns regarding the current infrastructure at the site, assessment activities were completed utilizing a hydrovac operated by 1888 and a stainless-steel hand auger. On January 17, 2019, EAGLE and Noble utilized 1888 to advance eight (8) potholes (PH-01 through PH-08) adjacent to previously identified soil impacts above COGCC Table 910-1 regulatory limits. Hydrovac and/or hand auger refusal was encountered between 10 and 15 feet bgs.

Based on location and PID readings, EAGLE collected 16 soil samples (PH-01@10-11', PH-01@14-15', PH-02@8-9', PH-02@14-15', PH-03@10-11', PH-03@14-15', PH-04@10-11', PH-04@12-13', PH-05@10-11', PH-05@12-13', PH-06@8-9', PH-06@9-10', PH-07@12-13', PH-07@14-15', PH-08@12-13', and PH-08@14-15') for laboratory analysis. The soil samples were analyzed for BTEX, naphthalene, TPH-GRO, and TPH-DRO following modified EPA Methods 8260c and 8015. The soil samples were received within the required holding time for each laboratory analysis. Spatial location of each pothole soil sample location was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting the pothole soil sample locations is included in Figure 3.

Approximately 40 bbls of slurry (approx. 6 cubic yards) were removed and transported for disposal to Republic Services, located in Commerce City, Colorado.

### 3.1 Pothole Assessment Laboratory Analytical Results

Based on soil laboratory analytical results:

- Soil samples PH-01@10-11', PH-01@14-15', PH-02@8-9', PH-02@14-15', PH-03@10-11', PH-03@14-15', and PH-04@12-13' contained concentrations of benzene (4.20 mg/kg, 18.5 mg/kg, 0.293 mg/kg, 6.42 mg/kg, 0.675 mg/kg, 0.890 mg/kg, and 0.247 mg/kg, respectively) exceeding the COGCC Table 910-1 regulatory limit of 0.17 mg/kg.
- Soil samples PH-01@10-11', PH-01@14-15', PH-02@8-9', PH-02@14-15', PH-03@10-11', PH-03@14-15', PH-04@10-11', PH-04@12-13', and PH-06@8-9' contained concentrations of TPH (5,360 mg/kg, 8,790 mg/kg, 624 mg/kg, 4,460 mg/kg, 1,669 mg/kg, 1,981 mg/kg, 691 mg/kg, 763 mg/kg, and 1,248 mg/kg, respectively) exceeding the COGCC Table 910-1 regulatory limit 500 mg/kg.
- Soil samples PH-05@10-11', PH-05@12-13', PH-06@9-10', PH-07@12-13', PH-07@14-15', PH-08@12-13', and PH-08@14-15' did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.

Pothole soil analytical results are summarized in Table 1 and presented in Figure 3. The laboratory analytical report is included in Attachment A.

### 4.0 PROPOSED REMEDIAL ACTIVITIES

Vertical and lateral definition of the soil impacts is limited due to overall health and safety concerns at the site. Based on the location of adsorbed petroleum hydrocarbon impacts at the site relative to on-going oil and gas (O&G) operations (above-ground and below-ground utilities and/or infrastructure), soil vapor extraction (SVE) is proposed to address residual soil impacts.

EAGLE proposes the installation of five (5) SVE remedial wells within close proximity of previously identified soil impacts at the site, taking into account onsite health and safety concerns. SVE wells will be installed via hydrovac and/or direct-push technology utilizing a 7822 DT Series Geoprobe track rig. Installation procedures will be dictated by above-ground infrastructure and below-ground utility lines. Each location will be completed with 2-inch, schedule 40, poly-vinyl chloride (PVC) pipe to a maximum depth of 20 feet. Total depth of each well will be limited to 15 feet if required to be installed via hydrovac.

Approximately 10 to 15 feet of 0.020 factory slotted, 2-inch PVC screen will be placed at the bottom of each boring followed by solid PVC riser to grade. The well annulus will be backfilled with 10/20 silica

sand to approximately 1-foot above the screen section, following by a hydrated bentonite seal to the surface. Each SVE well will be finished to grade with a traffic-rated steel flush mount.

Following SVE well installation, EAGLE will complete individual 2-hour pilot test activities on each SVE well. Following approximately 2-hours of operation, an SVE effluent air sample will be collected and submitted to Origins for BTEX, and TPH-GRO analysis following EPA Air Method TO-15. An effective radius of influence (ROI) on each location will be evaluated by the relative concentrations of each individual air sample.

Following pilot test activities and ROI evaluation, EAGLE will perform bi-weekly, SVE activities, utilizing a mobile remediation system, on the SVE wells that had detectable BTEX and TPH-GRO concentrations from the pilot test. The mobile SVE unit will consist of a Tuthill, 15-horse power (HP) positive displacement blower. Following operation of the SVE unit, effluent air samples will be collected to monitor petroleum hydrocarbon VOC removal at the site. Overall remedial progress will be confirmed by decreasing concentrations within each air sample. Remedial activities will be complete pending non-detect laboratory analytical results. A proposed SVE remedial well location map is presented in Figure 4.

#### **4.1 Confirmation Soil Sampling**

Following SVE remediation activities, confirmation soil samples will be collected to determine if soil meets COGCC Table 910-1 regulatory limits. Confirmation soil samples will be collected from locations with petroleum hydrocarbon impacts above COGCC Table 910-1 regulatory limits identified during assessment activities.

### **5.0 CONCLUSIONS**

Based on the information presented in this report, EAGLE concludes the following:

- Soil samples SS-01 through SS-09 were collected on May 9, 2018 following hydrovac excavation activities, adjacent to an unintentional flow line release at the Wells Ranch AE 32 Econode. Approximately 80 bbls. of slurry (approx. 12 cubic yards of soil) were removed for disposal.
- Soil samples SS-01@9', SS-02@7', SS-03@6', SS-08@6', and SS-09@6' contained concentrations of benzene and TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Soil sample SS-03@6' contained a concentration of toluene exceeding the applicable COGCC Table 910-1 regulatory limit.
- EAGLE returned on January 17, 2019 to laterally and vertically define soil impacts. Sixteen soil samples were collected from eight potholes (PH-01 through PH-08). Approximately 40 bbls of slurry (approx. 6 cubic yards of soil) were removed for disposal.
- Soil samples PH-01@10-11', PH-01@14-15', PH-02@8-9', PH-02@14-15', PH-03@10-11', PH-03@14-15', and PH-04@12-13' contained concentrations of benzene exceeding the COGCC Table 910-1 regulatory limit.
- Soil samples PH-01@10-11', PH-01@14-15', PH-02@8-9', PH-02@14-15', PH-03@10-11', PH-03@14-15', PH-04@10-11', PH-04@12-13', and PH-06@8-9' contained concentrations of TPH exceeding the COGCC Table 910-1 regulatory limit.

- Soil is not vertically defined adjacent to soil samples SS-01@9', SS-02@7', SS-03@6', SS-08@6', PH-01@14-15', PH-02@14-15', PH-03@14-15', and PH-04@12-13', but due to current infrastructure and safety concerns, vertical definition cannot be achieved at this time.

## 6.0 RECOMMENDATIONS

Based on the information presented in this report, EAGLE recommends the following:

- Install soil vapor extraction remedial wells adjacent to residual adsorbed petroleum hydrocarbon impacts and complete SVE pilot testing activities.
- Continue bi-weekly SVE remedial activities until vapor effluent samples are non-detect.
- Collect confirmation soil samples from locations with petroleum hydrocarbon impacts above COGCC Table 910-1 regulatory limits identified during assessment activities.

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.***



Andrew Newberry  
Project Geologist



Robin Lockwood  
Project Scientist

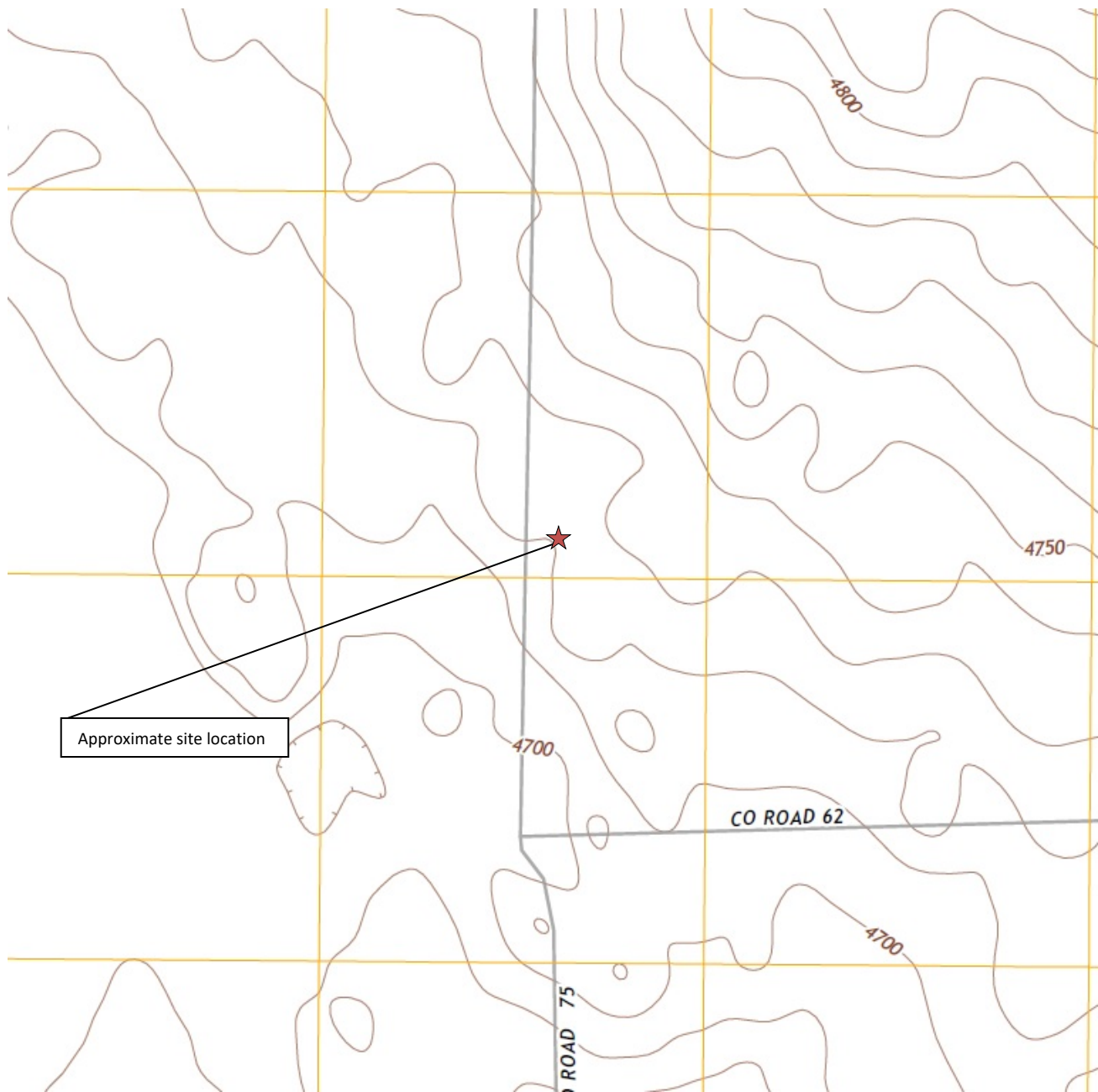
## **FIGURES**

**Figure 1: Topographic Site Location Map**

**Figure 2: Initial Assessment Soil Analytical Map**

**Figure 3: Pothole Assessment Map**

**Figure 4: Proposed Soil Vapor Extraction Well Location**



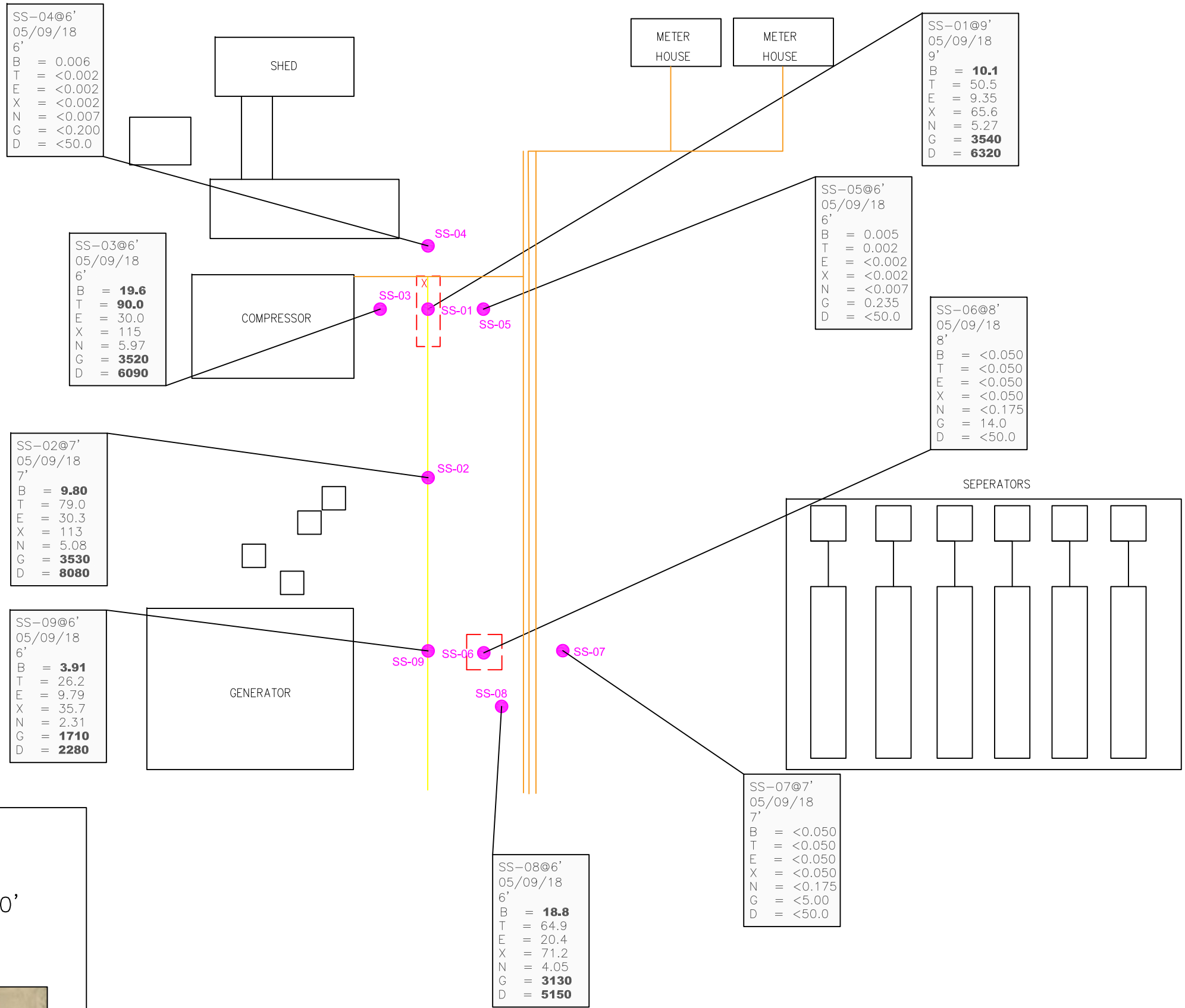
**Topographic Site Location Map**  
 Wells Ranch AE32 Ecnode  
 Flow Line Release  
 40.4440 / -104.3552  
 SW¼ NW¼ SEC.32 T6N R62W 6PM  
 Weld County, Colorado  
 Remediation # 12140



**EAGLE**  
 ENVIRONMENTAL  
 CONSULTING, INC.

Source: USGS 7.5 Minute Topographic  
 Map, Point of Rocks, CO Quadrangle  
 2013

**Figure 1**



- LEGEND**
- X APPROXIMATE RELEASE LOCATION
  - ABOVEGROUND INFRASTRUCTURE
  - APPROXIMATE UNDERGROUND (ABANDONED) LINE
  - APPROXIMATE ABOVE GROUND FLOWLINE LOCATIONS
  - - - APPROXIMATE SURFACING/EXCAVATION BOUNDARIES 05/09/18
  - SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

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

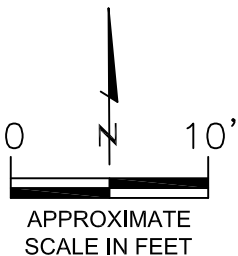
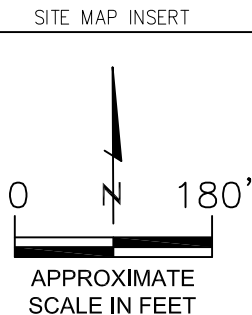
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS

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 IN **BOLD** EXCEED COGCC TABLE 910-1 REGULATORY LIMITS.

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



INITIAL ASSESSMENT SOIL ANALYTICAL MAP  
WELLS RANCH AE32 ECONODE  
FLOW LINE RELEASE  
40.4440 / -104.3552  
SW1/4 NW1/4 SEC.32 T6N R62W 6PM  
WELD COUNTY, COLORADO  
REMEDATION # 12140

NOTE: CLEAR AERIAL IMAGE NOT AVAILABLE FOR LOCATION.  
DRAWING BASED ON FIELD OBSERVATIONS AND MEASUREMENTS

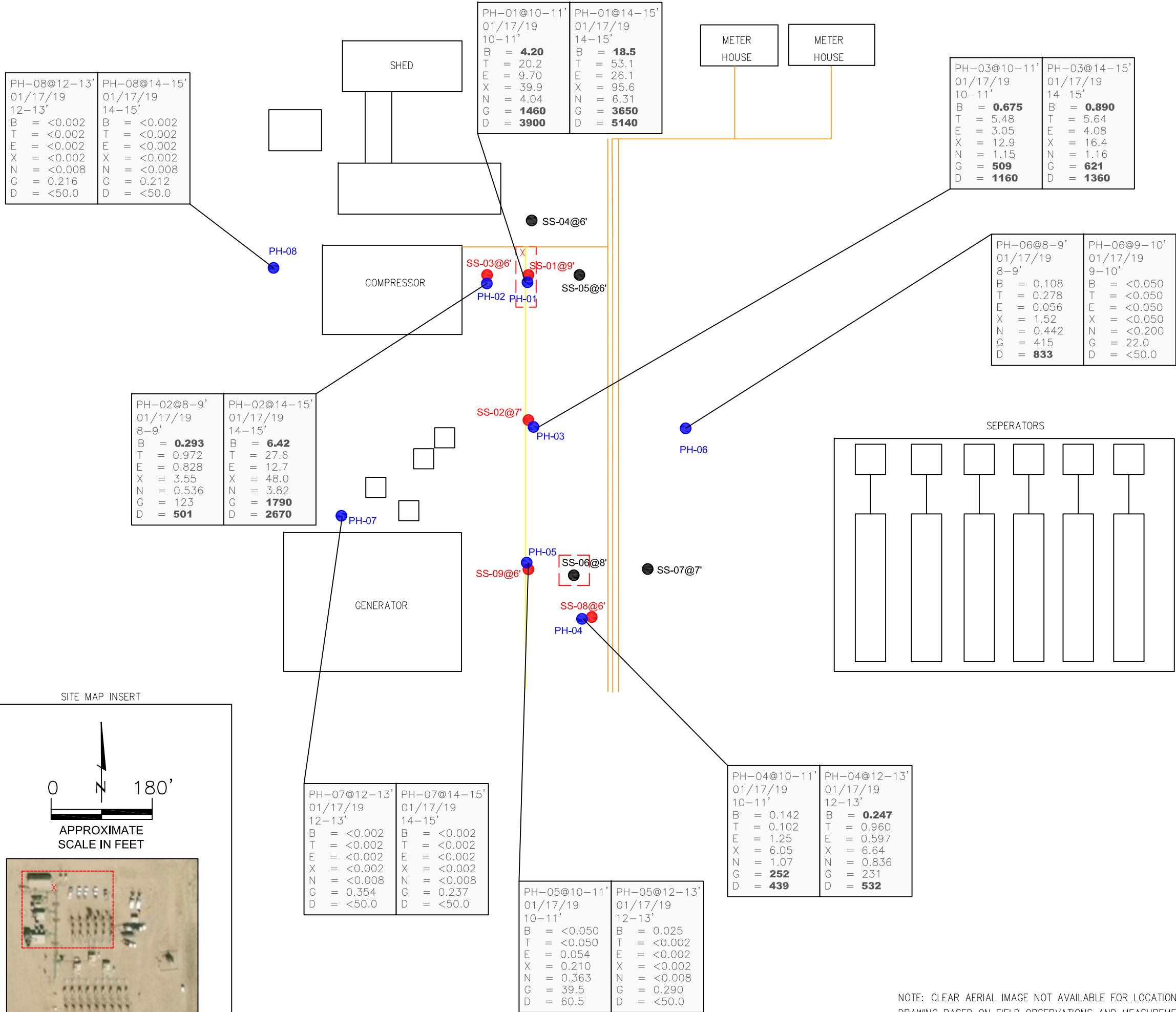
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**LEGEND**

X APPROXIMATE RELEASE LOCATION

ABOVEGROUND INFRASTRUCTURE

APPROXIMATE UNDERGROUND (ABANDONED) LINE

APPROXIMATE ABOVE GROUND FLOWLINE LOCATIONS

APPROXIMATE SURFACING/EXCAVATION BOUNDARIES 05/09/18

SS-02 APPROXIMATE LOCATION OF INITIAL SOIL SAMPLES BELOW COGCC TABLE 910-1 REGULATORY LIMITS

SS-02 APPROXIMATE LOCATION OF INITIAL SOIL SAMPLES **ABOVE** COGCC TABLE 910-1 REGULATORY LIMITS

APPROXIMATE POTHOLE ASSESSMENT LOCATIONS

**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 IN **BOLD** EXCEED COGCC TABLE 910-1 REGULATORY LIMITS.

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION

0 10' APPROXIMATE SCALE IN FEET

POTHOLE ASSESSMENT MAP

WELLS RANCH AE32 ECONODE

FLOW LINE RELEASE

40.4440 / -104.3552

SW1/4 NW1/4 SEC.32 T6N R62W 6PM

WELD COUNTY, COLORADO

REMEDATION # 12140

DATE 01/22/19

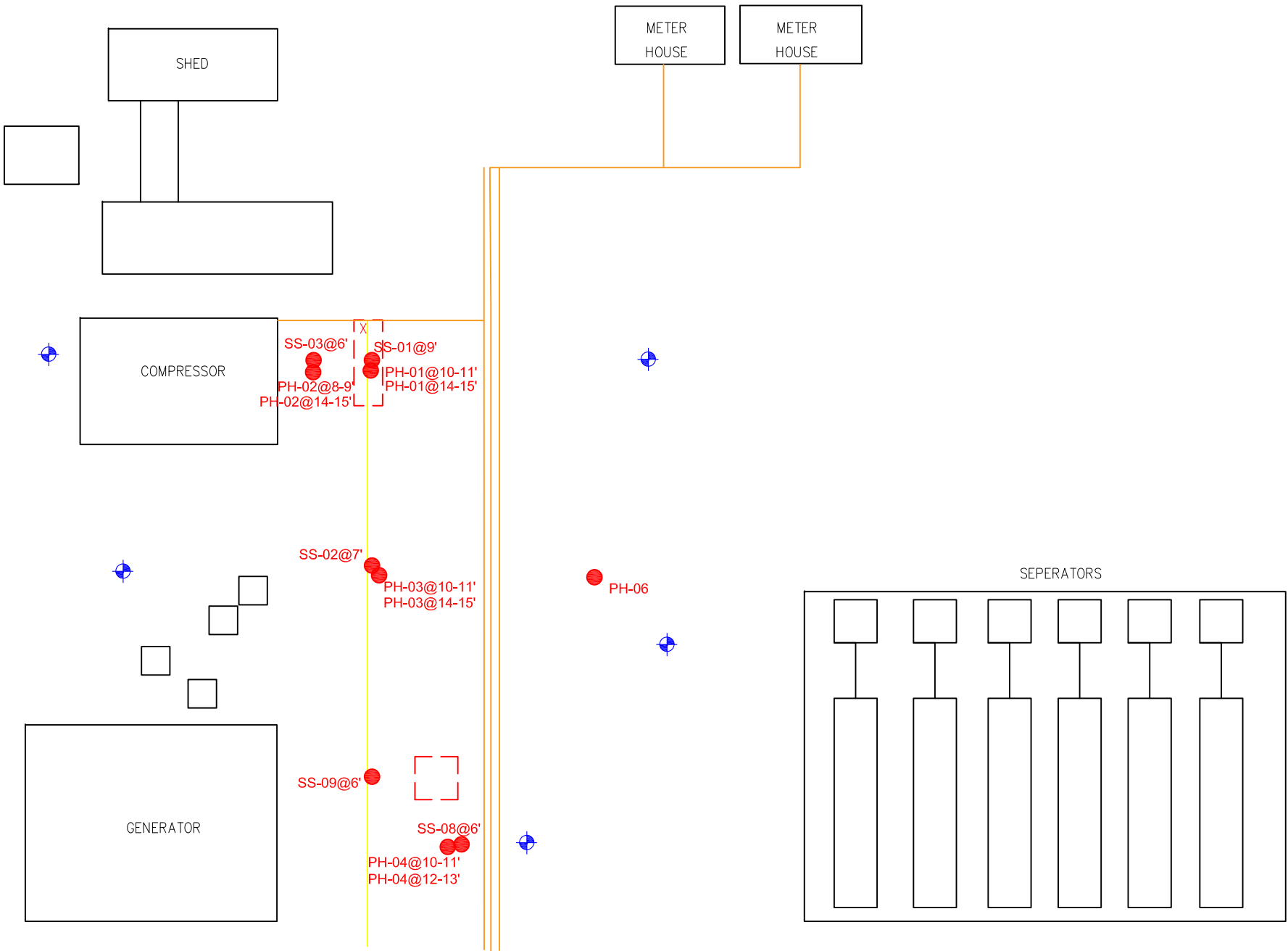
FIG. NO. 3

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**EAGLE ENVIRONMENTAL CONSULTING, INC.**

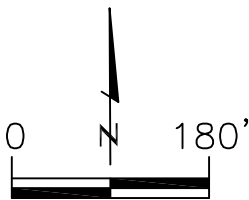
4101 INCA STREET, DENVER, CO 80211

PH: 303-433-0479 • F: 303-325-5449

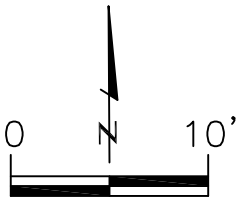


- LEGEND**
- X APPROXIMATE RELEASE LOCATION
  - ABOVEGROUND INFRASTRUCTURE
  - APPROXIMATE UNDERGROUND (ABANDONED) LINE
  - APPROXIMATE ABOVE GROUND FLOWLINE LOCATIONS
  - - - APPROXIMATE SURFACING/EXCAVATION BOUNDARIES 05/09/18
  - SS-02 APPROXIMATE LOCATION INITIAL SOIL SAMPLES **ABOVE** COGCC TABLE 910-1 REGULATORY LIMITS
  - ⊕ PROPOSED SOIL VAPOR EXTRACTION WELL LOCATIONS

SITE MAP INSERT



APPROXIMATE  
SCALE IN FEET



APPROXIMATE  
SCALE IN FEET

PROPOSED SOIL VAPOR EXTRACTION WELL LOCATION MAP  
WELLS RANCH AE32 ECONODE  
FLOW LINE RELEASE  
40.4440 / -104.3552  
SW1/4 NW1/4 SEC.32 T6N R62W 6PM  
WELD COUNTY, COLORADO  
REMEDATION # 12140

NOTE: CLEAR AERIAL IMAGE NOT AVAILABLE FOR LOCATION.  
DRAWING BASED ON FIELD OBSERVATIONS AND MEASUREMENTS

DATE  
03/18/19

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4

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## **TABLES**

**Table 1:     Soil Analytical Results Summary**

**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**WELLS RANCH AE 32 ECOCODE**  
**FLOW LINE RELEASE**  
**40.4440 / -104.3552**  
**SW1/4 NW1/4 SEC.32 T6N R62W 6PM**  
**WELD COUNTY, COLORADO**  
**REMEDIATION # 12140**

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)
<b>COGCC Table 910-1 Regulatory Limits (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>	
SS-01 @ 9' (40.443805782 / -104.355188906)	05/09/18	9	10.1	50.5	9.35	65.6	5.27	3540	6320
SS-02 @ 7' (40.443773212 / -104.355184696)	05/09/18	7	9.80	79.0	30.3	113	5.08	3530	8080
SS-03 @ 6' (40.443814348 / -104.355200477)	05/09/18	6	19.6	90.0	30.0	115	5.97	3520	6090
SS-04 @ 6' (40.443824696 / -104.355188227)	05/09/18	6	0.006	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
SS-05 @ 6' (40.443805372 / -104.355171177)	05/09/18	6	0.005	0.002	<0.002	<0.002	<0.007	0.235	<50.0
SS-06 @ 8' (40.443726401 / -104.355189284)	05/09/18	8	<0.050	<0.050	<0.050	<0.050	<0.175	14.0	<50.0
SS-07 @ 7' (40.433725717 / -104.355170263)	05/09/18	7	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-08 @ 6' (40.44372107 / -104.355188625)	05/09/18	6	18.8	64.9	20.4	71.2	4.05	3130	5150
SS-09 @ 6' (40.443726389 / -104.35520129)	05/09/18	6	3.91	26.2	9.79	35.7	2.31	1710	2280
PH-01 @ 10-11' (40.443805782 / -104.355188906)	01/17/19	10-11.0	4.20	20.2	9.70	39.9	4.04	1460	3900
PH-01 @ 14-15' (40.443805782 / -104.355188906)	01/17/19	14-15.0	18.5	53.1	26.1	95.6	6.31	3650	5140
PH-02 @ 8-9' (40.443814348 / -104.355200477)	01/17/19	8-9.0	0.293	0.972	0.828	3.55	0.536	123	501
PH-02 @ 14-15' (40.443814348 / -104.355200477)	01/17/19	14-15.0	6.42	27.6	12.7	48.0	3.82	1790	2670
PH-03 @ 10-11' (40.443773212 / -104.355184696)	01/17/19	10-11.0	0.675	5.48	3.05	12.9	1.15	509	1160
PH-03 @ 14-15' (40.443773212 / -104.355184696)	01/17/19	14-15.0	0.890	5.64	4.08	16.4	1.16	621	1360

TABLE 1  
SOIL ANALYTICAL RESULTS SUMMARY  
WELLS RANCH AE 32 ECOCODE  
FLOW LINE RELEASE  
40.4440 / -104.3552  
SW1/4 NW1/4 SEC.32 T6N R62W 6PM  
WELD COUNTY, COLORADO  
REMEDATION # 12140

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)
<b>COGCC Table 910-1 Regulatory Limits (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>	
PH-04 @ 10-11' (40.44372107 / -104.355188625)	01/17/19	10-11.0	0.142	0.102	1.25	6.05	1.07	<b>252</b>	<b>439</b>
PH-04 @ 12-13' (40.44372107 / -104.355188625)	01/17/19	12-13.0	<b>0.247</b>	0.960	0.597	6.64	0.836	231	<b>532</b>
PH-05 @ 10-11' (40.443726389 / -104.35520129)	01/17/19	10-11.0	<0.050	<0.050	0.054	0.210	0.363	39.5	60.5
PH-05 @ 12-13' (40.443726389 / -104.35520129)	01/17/19	12-13.0	0.025	<0.002	<0.002	<0.002	<0.008	0.290	<50.0
PH-06 @ 8-9' (40.443770362 / -104.355141909)	01/17/19	8-9.0	0.108	0.278	0.056	1.52	0.442	415	<b>833</b>
PH-06 @ 9-10' (40.443770362 / -104.355141909)	01/17/19	9-10.0	<0.050	<0.050	<0.050	<0.050	<0.200	22.0	<50.0
PH-07 @ 12-13' (40.443700479 / -104.355307349)	01/17/19	12-13.0	<0.002	<0.002	<0.002	<0.002	<0.008	0.354	<50.0
PH-07 @ 14-15' (40.443700479 / -104.355307349)	01/17/19	14-15.0	<0.002	<0.002	<0.002	<0.002	<0.008	0.237	<50.0
PH-08 @ 12-13' (40.443807778 / -104.355334288)	01/17/19	12-13.0	<0.002	<0.002	<0.002	<0.002	<0.008	0.216	<50.0
PH-08 @ 14-15' (40.443807778 / -104.355334288)	01/17/19	14-15.0	<0.002	<0.002	<0.002	<0.002	<0.008	0.212	<50.0

COGCC = Colorado Oil and Gas Conservation Commission  
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 the laboratory reporting limit.  
Note: Values presented in **BOLD** contained concentrations exceeding COGCC Table 910-1 Regulatory Limits

## **ATTACHMENT A**

### **Laboratory Analytical Reports**



May 10, 2018

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - Wells Ranch AE32  
Econode**

**Project Number - [none]**

Attached are your analytical results for Noble - Wells Ranch AE32 Econode received by Origins Laboratory, Inc. May 09, 2018. This project is associated with Origins project number Y805148-01.

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

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-01 @ 9'	Y805148-01	Soil	May 9, 2018 12:25	05/09/2018 15:16
SS-02 @ 7'	Y805148-02	Soil	May 9, 2018 10:58	05/09/2018 15:16
SS-03 @ 6'	Y805148-03	Soil	May 9, 2018 11:34	05/09/2018 15:16
SS-04 @ 6'	Y805148-04	Soil	May 9, 2018 11:18	05/09/2018 15:16
SS-05 @ 6'	Y805148-05	Soil	May 9, 2018 11:15	05/09/2018 15:16
SS-06 @ 8'	Y805148-06	Soil	May 9, 2018 11:45	05/09/2018 15:16
SS-07 @ 7'	Y805148-07	Soil	May 9, 2018 11:54	05/09/2018 15:16
SS-08 @ 6'	Y805148-08	Soil	May 9, 2018 12:09	05/09/2018 15:16
SS-09 @ 6'	Y805148-09	Soil	May 9, 2018 12:39	05/09/2018 15:16

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.*



Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

# ORIGINS

LABORATORY, INC

www.originslaboratory.com

page 1 of 1

Client: EGGLE ENV CONSULTING  
 Address: 4101 INLA ST,  
DENVER, CO  
 Telephone Number: 303-433-0474  
 Email Address: MLB@EGGLE-ENVIR.CO

Project Manager: MARTIN ELLERTZ III  
 Project Name: WELLS RAVENH AE32 ELWOOD  
 Project Number:           
 Samples Collected By: KY

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix		Analysis			Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Alt Summa #	Other	As	
SS-01 @ 4'	5-9-18	1225	2	X				X		X	X	X	1
SS-02 @ 7'		1058	1										2
SS-03 @ 6'		1134	1										3
SS-04 @ 6'		1118	1										4
SS-05 @ 6'		1115	1										5
SS-06 @ 8'		1145	1										6
SS-07 @ 7'		1154	1										7
SS-08 @ 6'		1209	1										8
SS-09 @ 6'	✓	1234	1					✓					9
													10
Relinquished By: <u>                    </u>	Date: <u>5-9-18</u>	Time: <u>1516</u>	Received By: <u>                    </u>	Date: <u>5/9/18</u>	Time: <u>1516</u>	Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/>							
Relinquished By: <u>                    </u>	Date: <u>                    </u>	Time: <u>                    </u>	Received By: <u>                    </u>	Date: <u>                    </u>	Time: <u>                    </u>								

LAB: 81509726 \$361.00  
 DATE: 5/15/18  
 HOWARD

Temp Received: 3.9

Date Results Needed

\$ 1000.00

Origins Laboratory, Inc.

Jeff Pellgrini

*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.*

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: Y805148

Client: Eagle

Client Project ID: Noble - Wells Ranch AE32 Econode

Checklist Completed by: JG

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 5/9/2018

Airbill #: N/A

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other:

Cooler Number/Temperature: 1 / 5 °C / 5 °C / 5 °C / 5 °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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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 HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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)

Date/Time Reviewed

Origins Laboratory, Inc.

*Jen Pellegrini*

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-01 @ 9'  
5/9/2018 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.  
Y805148-01 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	6320	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018
------------------	------	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	84.3 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	3540	500	mg/kg	2500	B8E0907	05/09/2018	05/10/2018
Benzene	10.1	4.98	"	"	"	"	"
Toluene	50.5	4.98	"	"	"	"	"
Ethylbenzene	9.35	4.98	"	"	"	"	"
Xylenes, total	65.6	4.98	"	"	"	"	"
Naphthalene	5.27	0.175	"	25	"	"	05/09/2018

Surrogate: 1,2-Dichloroethane-d4	92.2 %	70-130			"	"	05/10/2018
Surrogate: Toluene-d8	83.8 %	70-130			"	"	05/09/2018
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	05/10/2018

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-02 @ 7'  
5/9/2018 10:58:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y805148-02 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	8080	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018
------------------	------	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	108 %	59-131			"	"	"
------------------------	-------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	3530	500	mg/kg	2500	B8E0907	05/09/2018	05/10/2018
Benzene	9.80	4.98	"	"	"	"	"
Toluene	79.0	4.98	"	"	"	"	"
Ethylbenzene	30.3	4.98	"	"	"	"	"
Xylenes, total	113	4.98	"	"	"	"	"
Naphthalene	5.08	0.175	"	25	"	"	05/09/2018

Surrogate: 1,2-Dichloroethane-d4	126 %	70-130			"	"	"
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Surrogate: Toluene-d8	96.8 %	70-130			"	"	"
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Surrogate: 4-Bromofluorobenzene	99.0 %	70-130			"	"	05/10/2018
---------------------------------	--------	--------	--	--	---	---	------------

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-03 @ 6'  
5/9/2018 11:34:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y805148-03 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	6090	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018
------------------	------	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	88.8 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	3520	500	mg/kg	2500	B8E0907	05/09/2018	05/10/2018
Benzene	19.6	4.98	"	"	"	"	"
Toluene	90.0	4.98	"	"	"	"	"
Ethylbenzene	30.0	4.98	"	"	"	"	"
Xylenes, total	115	4.98	"	"	"	"	"
Naphthalene	5.97	0.175	"	25	"	"	05/09/2018

Surrogate: 1,2-Dichloroethane-d4	99.8 %	70-130			"	"	05/10/2018
Surrogate: Toluene-d8	97.7 %	70-130			"	"	05/09/2018
Surrogate: 4-Bromofluorobenzene	97.6 %	70-130			"	"	05/10/2018

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-04 @ 6'  
5/9/2018 11:18:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y805148-04 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018	U
------------------	----	------	-------	---	---------	------------	------------	---

Surrogate: o-Terphenyl	94.4 %	59-131			"	"	"	
------------------------	--------	--------	--	--	---	---	---	--

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8E0907	05/09/2018	05/10/2018	U
Benzene	0.006	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"	
Surrogate: Toluene-d8	95.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-05 @ 6'  
5/9/2018 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y805148-05 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018	U
------------------	----	------	-------	---	---------	------------	------------	---

Surrogate: o-Terphenyl	97.1 %	59-131			"	"	"	
------------------------	--------	--------	--	--	---	---	---	--

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	0.235	0.200	mg/kg	1	B8E0907	05/09/2018	05/10/2018	
Benzene	0.005	0.002	"	"	"	"	"	
Toluene	0.002	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Naphthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.0 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

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.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-06 @ 8'  
5/9/2018 11:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y805148-06 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018	U
------------------	----	------	-------	---	---------	------------	------------	---

Surrogate: o-Terphenyl	106 %	59-131			"	"	"	
------------------------	-------	--------	--	--	---	---	---	--

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	14.0	5.00	mg/kg	25	B8E0907	05/09/2018	05/09/2018	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Napthalene	ND	0.175	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	82.4 %	70-130			"	"	"	
Surrogate: Toluene-d8	115 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

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.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-07 @ 7'  
5/9/2018 11:54:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.  
Y805148-07 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018	U
Surrogate: o-Terphenyl	96.2 %	59-131			"	"	"	

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B8E0907	05/09/2018	05/09/2018	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Napthalene	ND	0.175	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	86.2 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.3 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.6 %	70-130			"	"	"	

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-08 @ 6'  
5/9/2018 12:09:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y805148-08 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	5150	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018
------------------	------	------	-------	---	---------	------------	------------

Surrogate: o-Terphenyl	62.5 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	3130	50.0	mg/kg	250	B8E0907	05/09/2018	05/10/2018
Benzene	18.8	0.498	"	"	"	"	"
Toluene	64.9	0.498	"	"	"	"	"
Ethylbenzene	20.4	0.498	"	"	"	"	"
Xylenes, total	71.2	0.498	"	"	"	"	"
Naphthalene	4.05	0.175	"	25	"	"	05/09/2018

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"
----------------------------------	-------	--------	--	--	---	---	---

Surrogate: Toluene-d8	101 %	70-130			"	"	"
-----------------------	-------	--------	--	--	---	---	---

Surrogate: 4-Bromofluorobenzene	97.8 %	70-130			"	"	05/10/2018
---------------------------------	--------	--------	--	--	---	---	------------

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

SS-09 @ 6'  
5/9/2018 12:39:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.  
Y805148-09 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	2280	50.0	mg/kg	1	B8E0903	05/09/2018	05/09/2018	
Surrogate: o-Terphenyl	184 %	59-131			"	"	"	S-DUP

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	1710	50.0	mg/kg	250	B8E0907	05/09/2018	05/10/2018	
Benzene	3.91	0.050	"	25	"	"	05/09/2018	
Toluene	26.2	0.498	"	250	"	"	05/10/2018	
Ethylbenzene	9.79	0.498	"	"	"	"	"	
Xylenes, total	35.7	0.498	"	"	"	"	"	
Naphthalene	2.31	0.175	"	25	"	"	05/09/2018	
Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	108 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	70-130			"	"	05/10/2018	

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.

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>Blank (B8E0907-BLK1)</b>					Prepared: 05/09/2018 Analyzed: 05/09/2018					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>Blank (B8E0907-BLK2)</b>					Prepared: 05/09/2018 Analyzed: 05/10/2018					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.007	"							U
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.5	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>LCS (B8E0907-BS1)</b>					Prepared: 05/09/2018 Analyzed: 05/09/2018					
Benzene	0.109	0.002	mg/kg	0.100		109	70-130			
Toluene	0.108	0.002	"	0.100		108	70-130			
Ethylbenzene	0.110	0.002	"	0.100		110	70-130			
m,p-Xylene	0.206	0.004	"	0.200		103	70-130			
o-Xylene	0.105	0.002	"	0.100		105	70-130			
Naphthalene	0.098	0.007	"	0.100		97.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>LCS (B8E0907-BS2)</b>					Prepared: 05/09/2018 Analyzed: 05/10/2018					
Benzene	0.114	0.002	mg/kg	0.100		114	70-130			
Toluene	0.112	0.002	"	0.100		112	70-130			
Ethylbenzene	0.115	0.002	"	0.100		115	70-130			
m,p-Xylene	0.215	0.004	"	0.200		108	70-130			
o-Xylene	0.110	0.002	"	0.100		110	70-130			
Naphthalene	0.094	0.007	"	0.100		94.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B8E0907-MS1)</b>		<b>Source: Y805148-04</b>			Prepared: 05/09/2018 Analyzed: 05/09/2018					
Benzene	0.269	0.002	mg/kg	0.100	0.006	263	70-130			QM-07
Toluene	0.113	0.002	"	0.100	0.001	112	70-130			
Ethylbenzene	0.125	0.002	"	0.100	ND	125	70-130			
m,p-Xylene	0.232	0.004	"	0.200	0.002	115	70-130			
o-Xylene	0.110	0.002	"	0.100	ND	110	70-130			
Naphthalene	0.094	0.007	"	0.100	ND	93.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.8	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	70-130			

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.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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 B8E0907 - EPA 5030 (soil)

Matrix Spike (B8E0907-MS2)		Source: Y805151-01			Prepared: 05/09/2018 Analyzed: 05/09/2018					
Benzene	0.111	0.002	mg/kg	0.100	ND	111	70-130			
Toluene	0.108	0.002	"	0.100	ND	108	70-130			
Ethylbenzene	0.106	0.002	"	0.100	ND	106	70-130			
m,p-Xylene	0.196	0.004	"	0.200	ND	98.0	70-130			
o-Xylene	0.101	0.002	"	0.100	ND	101	70-130			
Naphthalene	0.096	0.007	"	0.100	ND	95.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.7	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B8E0907-MSD1)</b>		<b>Source: Y805148-04</b>			Prepared: 05/09/2018 Analyzed: 05/09/2018					
Benzene	0.243	0.002	mg/kg	0.100	0.006	237	70-130	10.2	20	QM-07
Toluene	0.114	0.002	"	0.100	0.001	113	70-130	0.968	20	
Ethylbenzene	0.121	0.002	"	0.100	ND	121	70-130	2.57	20	
m,p-Xylene	0.227	0.004	"	0.200	0.002	112	70-130	2.26	20	
o-Xylene	0.107	0.002	"	0.100	ND	107	70-130	2.10	20	
Naphthalene	0.093	0.007	"	0.100	ND	93.4	70-130	0.449	20	
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.5	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B8E0907 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B8E0907-MSD2)</b>		<b>Source: Y805151-01</b>			Prepared: 05/09/2018 Analyzed: 05/09/2018					
Benzene	0.106	0.002	mg/kg	0.100	ND	106	70-130	4.63	20	
Toluene	0.104	0.002	"	0.100	ND	104	70-130	3.60	20	
Ethylbenzene	0.107	0.002	"	0.100	ND	107	70-130	1.13	20	
m,p-Xylene	0.197	0.004	"	0.200	ND	98.5	70-130	0.540	20	
o-Xylene	0.102	0.002	"	0.100	ND	102	70-130	0.907	20	
Naphthalene	0.095	0.007	"	0.100	ND	95.1	70-130	0.503	20	
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.5	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	70-130			

Origins Laboratory, Inc.



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4101 Inca Street  
Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

## 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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## Extractable Petroleum Hydrocarbons by 8015C - 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 B8E0903 - EPA 3550B

<b>Blank (B8E0903-BLK1)</b>				Prepared: 05/09/2018 Analyzed: 05/09/2018						
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	47		"	50.0		95.0	59-131			
<b>Blank (B8E0903-BLK2)</b>				Prepared: 05/09/2018 Analyzed: 05/09/2018						
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	48		"	50.0		96.8	59-131			
<b>LCS (B8E0903-BS1)</b>				Prepared: 05/09/2018 Analyzed: 05/09/2018						
Diesel (C10-C28)	996	50.0	mg/kg	1000		99.6	64-121			
Surrogate: o-Terphenyl	55		"	50.0		109	59-131			
<b>LCS (B8E0903-BS2)</b>				Prepared: 05/09/2018 Analyzed: 05/09/2018						
Diesel (C10-C28)	975	50.0	mg/kg	1000		97.5	64-121			
Surrogate: o-Terphenyl	59		"	50.0		117	59-131			
<b>Matrix Spike (B8E0903-MS1)</b>				<b>Source: Y805128-02</b>		Prepared: 05/09/2018 Analyzed: 05/10/2018				
Diesel (C10-C28)	1070	50.0	mg/kg	1000	25.5	104	53-125			
Surrogate: o-Terphenyl	57		"	50.0		114	59-131			
<b>Matrix Spike (B8E0903-MS2)</b>				<b>Source: Y805148-04</b>		Prepared: 05/09/2018 Analyzed: 05/09/2018				
Diesel (C10-C28)	979	50.0	mg/kg	1000	ND	97.9	53-125			
Surrogate: o-Terphenyl	49		"	50.0		98.0	59-131			

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B8E0903 - EPA 3550B</b>										
<b>Matrix Spike Dup (B8E0903-MSD1)</b>			<b>Source: Y805128-02</b>		Prepared: 05/09/2018 Analyzed: 05/10/2018					
Diesel (C10-C28)	974	50.0	mg/kg	1000	25.5	94.8	53-125	9.41	20	
Surrogate: o-Terphenyl	63		"	50.0		126	59-131			
<b>Matrix Spike Dup (B8E0903-MSD2)</b>			<b>Source: Y805148-04</b>		Prepared: 05/09/2018 Analyzed: 05/09/2018					
Diesel (C10-C28)	963	50.0	mg/kg	1000	ND	96.3	53-125	1.70	20	
Surrogate: o-Terphenyl	51		"	50.0		102	59-131			

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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

### Notes and Definitions

U Sample is Non-Detect.

S-DUP Duplicate analysis confirmed surrogate failure due to matrix effects.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

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.



*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.*



January 21, 2019

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - Wells Ranch AE32  
Econode**

**Project Number - [none]**

Attached are your analytical results for Noble - Wells Ranch AE32 Econode received by Origins Laboratory, Inc. January 18, 2019. This project is associated with Origins project number Y901219-01.

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

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PH-01@10-11'	Y901219-01	Soil	January 17, 2019 11:51	01/18/2019 08:37
PH-01@14-15'	Y901219-02	Soil	January 17, 2019 11:55	01/18/2019 08:37
PH-02@8-9'	Y901219-03	Soil	January 17, 2019 11:22	01/18/2019 08:37
PH-02@14-15'	Y901219-04	Soil	January 17, 2019 11:28	01/18/2019 08:37
PH-03@10-11'	Y901219-05	Soil	January 17, 2019 12:06	01/18/2019 08:37
PH-03@14-15'	Y901219-06	Soil	January 17, 2019 12:10	01/18/2019 08:37
PH-04@10-11'	Y901219-07	Soil	January 17, 2019 14:52	01/18/2019 08:37
PH-04@12-13'	Y901219-08	Soil	January 17, 2019 14:54	01/18/2019 08:37
PH-05@10-11'	Y901219-09	Soil	January 17, 2019 14:24	01/18/2019 08:37
PH-05@12-13'	Y901219-10	Soil	January 17, 2019 14:26	01/18/2019 08:37
PH-06@8-9'	Y901219-11	Soil	January 17, 2019 13:54	01/18/2019 08:37
PH-06@9-10'	Y901219-12	Soil	January 17, 2019 13:56	01/18/2019 08:37
PH-07@12-13'	Y901219-13	Soil	January 17, 2019 13:24	01/18/2019 08:37
PH-07@14-15'	Y901219-14	Soil	January 17, 2019 13:31	01/18/2019 08:37

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PH-08@12-13'	Y901219-15	Soil	January 17, 2019 13:00	01/18/2019 08:37
PH-08@14-15'	Y901219-16	Soil	January 17, 2019 13:02	01/18/2019 08:37

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

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990219

page 1 of 2

**ORIGINS**  
LABORATORY, INC

Client: EAGLE ENV. CONSULTING  
Address: 4101 INCA ST.  
DENVER, CO  
Telephone Number: 303-433-0479  
Email Address: MCE@EAGLE-ENVIRONMENTAL.COM

Project Manager: MARTIN ECKERT III  
Project Name: WELLS RANCH AE32 ECONODE  
Project Number:         
Samples Collected By: KE

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix		Analysis				Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa Canister #	Other	7161	620	
PH-01 @ 10-11	1-17-19	1151	2	X					X				X	1
PH-01 @ 14-15		1155											X	2
PH-02 @ 8-9		1122												3
PH-02 @ 14-15		1128												4
PH-03 @ 10-11		1206												5
PH-03 @ 14-15		1210												6
PH-04 @ 10-11		1452												7
PH-04 @ 12-13		1454												8
PH-05 @ 10-11		1424												9
PH-05 @ 12-13		1426												10

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☒ Standard

Relinquished By:        Date: 1-18-19 Time: 0837  
Relinquished By:        Date: 01-18-19 Time: 0832

Date Results Needed: Noble

Temp Received: 1.3

Full to Howard

Origins Laboratory, Inc.

*Jefe Pellegrini*

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

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page 2 of 2  
1901219

ORIGINS  
LABORATORY, INC

Client: EMBLE ENV. CONSULTING  
Address: 4101 INCA ST  
DENVER, CO  
Telephone Number: 303-433-0471  
Email Address: MYLES@EMBLE-ENVIRONMENT.COM

Project Manager: MARTIN ECKERT III  
Project Name: WELLS RANCH AE32 ECONODE  
Project Number: K-7  
Samples Collected By: K-7

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summ #	Other	BTEX	BP	DP	
PH-06 @ 8-11	1-17-14	1354	2	X					X				X	X	1
PH-06 @ 9-10		1356	1												2
PH-07 @ 12-13		1324	1												3
PH-07 @ 14-15		1331	1												4
PH-08 @ 12-13		1300	1												5
PH-08 @ 14-15		1302	1												6
															7
															8
															9
															10

Relinquished By: [Signature] Date: 1-18-14 Time: 0837  
Relinquished By: [Signature] Date: 01-18-14 Time: 0837

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☒ Standard

Date Results Needed 1/23 Noble

Temp Received: 13

ABU TO HOWARD

Origins Laboratory, Inc.

*Jefe Pellegrini*

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.

Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver

CO

80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: 4901219

Client: Eagle Env

Client Project ID: Noble - wells Ranch

Checklist Completed by: JP

Shipped Via: HD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1/18/19

Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_ (Describe)

Cooler Number/Temperature: 1 / 1.3 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C

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? If yes, contact client and note in narrative.			<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 HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +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)

Date/Time Reviewed

Origins Laboratory, Inc.

*Jefe Pellegrini*

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-01@10-11'

1/17/2019 11:51:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-01 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	3900	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
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Surrogate: o-Terphenyl	97.8 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	1460	50.0	mg/kg	250	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	4.20	0.498	"	"	"	JTD	"	"
Toluene	20.2	0.498	"	"	"	JTD	"	"
Ethylbenzene	9.70	0.498	"	"	"	JTD	"	"
Xylenes, total	39.9	0.498	"	"	"	JTD	"	"
Naphthalene	4.04	2.00	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	87.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	99.6 %	70-130			"	"	"

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.

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-01@14-15'

1/17/2019 11:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-02 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	5140	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	------	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	103 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	3650	50.0	mg/kg	250	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	18.5	0.498	"	"	"	JTD	"	"
Toluene	53.1	0.498	"	"	"	JTD	"	"
Ethylbenzene	26.1	0.498	"	"	"	JTD	"	"
Xylenes, total	95.6	0.498	"	"	"	JTD	"	"
Naphthalene	6.31	2.00	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"
Surrogate: Toluene-d8	78.1 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-02@8-9'

1/17/2019 11:22:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-03 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	501	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	-----	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	101 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	123	5.00	mg/kg	25	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	0.293	0.050	"	"	"	JTD	"	"
Toluene	0.972	0.050	"	"	"	JTD	"	"
Ethylbenzene	0.828	0.050	"	"	"	JTD	"	"
Xylenes, total	3.55	0.050	"	"	"	JTD	"	"
Naphthalene	0.536	0.200	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"
Surrogate: Toluene-d8	88.1 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	99.4 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-02@14-15'

1/17/2019 11:28:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-04 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	2670	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	------	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	96.9 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	1790	50.0	mg/kg	250	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	6.42	0.498	"	"	"	JTD	"	"
Toluene	27.6	0.498	"	"	"	JTD	"	"
Ethylbenzene	12.7	0.498	"	"	"	JTD	"	"
Xylenes, total	48.0	0.498	"	"	"	JTD	"	"
Naphthalene	3.82	2.00	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	85.3 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-03@10-11'

1/17/2019 12:06:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-05 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	1160	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	------	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	113 %	59-131			"	"	"
------------------------	-------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	509	50.0	mg/kg	250	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	0.675	0.498	"	"	"	JTD	"	"
Toluene	5.48	0.498	"	"	"	JTD	"	"
Ethylbenzene	3.05	0.498	"	"	"	JTD	"	"
Xylenes, total	12.9	0.498	"	"	"	JTD	"	"
Naphthalene	1.15	0.200	"	25	"	JTD	"	01/21/2019

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	01/18/2019
Surrogate: Toluene-d8	94.0 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	99.9 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-03@14-15'

1/17/2019 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-06 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	1360	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	------	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	107 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	621	50.0	mg/kg	250	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	0.890	0.498	"	"	"	JTD	"	"
Toluene	5.64	0.498	"	"	"	JTD	"	"
Ethylbenzene	4.08	0.498	"	"	"	JTD	"	"
Xylenes, total	16.4	0.498	"	"	"	JTD	"	"
Naphthalene	1.16	0.200	"	25	"	JTD	"	01/21/2019

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130			"	"	01/18/2019
Surrogate: Toluene-d8	92.2 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	99.4 %	70-130			"	"	"

Origins Laboratory, Inc.



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4101 Inca Street  
Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-04@10-11'  
1/17/2019 2:52:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-07 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	439	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
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Surrogate: o-Terphenyl	92.3 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	252	5.00	mg/kg	25	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	0.142	0.050	"	"	"	JTD	"	"
Toluene	0.102	0.050	"	"	"	JTD	"	"
Ethylbenzene	1.25	0.050	"	"	"	JTD	"	"
Xylenes, total	6.05	0.050	"	"	"	JTD	"	"
Naphthalene	1.07	0.200	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"
Surrogate: Toluene-d8	78.2 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-04@12-13'  
1/17/2019 2:54:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-08 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	532	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	-----	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	91.5 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	231	5.00	mg/kg	25	B9A1803	JTD	01/18/2019	01/18/2019
Benzene	0.247	0.050	"	"	"	JTD	"	"
Toluene	0.960	0.050	"	"	"	JTD	"	"
Ethylbenzene	0.597	0.050	"	"	"	JTD	"	"
Xylenes, total	6.64	0.050	"	"	"	JTD	"	"
Naphthalene	0.836	0.200	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"
Surrogate: Toluene-d8	80.8 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-05@10-11'  
1/17/2019 2:24:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-09 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	60.5	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	------	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	87.9 %	59-131			"	"	"
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	39.5	5.00	mg/kg	25	B9A1803	JTD	01/18/2019	01/18/2019	
Benzene	ND	0.050	"	"	"	JTD	"	"	U
Toluene	ND	0.050	"	"	"	JTD	"	"	U
Ethylbenzene	0.054	0.050	"	"	"	JTD	"	"	
Xylenes, total	0.210	0.050	"	"	"	JTD	"	"	
Napthalene	0.363	0.200	"	"	"	JTD	"	"	

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	93.8 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	98.7 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-05@12-13'  
1/17/2019 2:26:00PM

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-10 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	82.9 %	59-131			"	"	"		
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	0.290	0.200	mg/kg	1	B9A1803	JTD	01/18/2019	01/18/2019	
Benzene	0.025	0.002	"	"	"	JTD	"	"	
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U
Naphthalene	ND	0.008	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	89.5 %	70-130			"	"	"		
Surrogate: Toluene-d8	104 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	105 %	70-130			"	"	"		

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-06@8-9'

1/17/2019 1:54:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-11 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	833	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019
------------------	-----	------	-------	---	---------	-----	------------	------------

Surrogate: o-Terphenyl	105 %	59-131			"	"	"
------------------------	-------	--------	--	--	---	---	---

## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	415	5.00	mg/kg	25	B9A1803	JTD	01/18/2019	01/20/2019
Benzene	0.108	0.050	"	"	"	JTD	"	"
Toluene	0.278	0.050	"	"	"	JTD	"	"
Ethylbenzene	0.056	0.050	"	"	"	JTD	"	"
Xylenes, total	1.52	0.050	"	"	"	JTD	"	"
Naphthalene	0.442	0.200	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	83.8 %	70-130			"	"	"
Surrogate: Toluene-d8	97.8 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	113 %	70-130			"	"	"

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-06@9-10'  
1/17/2019 1:56:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
Y901219-12 (Soil)

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	77.7 %	59-131			"	"	"		
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**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	22.0	5.00	mg/kg	25	B9A1803	JTD	01/18/2019	01/21/2019	
Benzene	ND	0.050	"	"	"	JTD	"	"	U
Toluene	ND	0.050	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.050	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.050	"	"	"	JTD	"	"	U
Napthalene	ND	0.200	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	83.0 %	70-130			"	"	"		
Surrogate: Toluene-d8	99.1 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	94.7 %	70-130			"	"	"		

Origins Laboratory, Inc.



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-07@12-13'  
1/17/2019 1:24:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y901219-13 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019	U
------------------	----	------	-------	---	---------	-----	------------	------------	---

Surrogate: o-Terphenyl	84.9 %	59-131			"	"	"		
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**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	0.354	0.200	mg/kg	1	B9A1803	JTD	01/18/2019	01/21/2019	
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U
Napthalene	ND	0.008	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	88.0 %	70-130			"	"	"		
Surrogate: Toluene-d8	97.3 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	95.9 %	70-130			"	"	"		

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-07@14-15'  
1/17/2019 1:31:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y901219-14 (Soil)**

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019	U
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Surrogate: o-Terphenyl	81.9 %	59-131			"	"	"		
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**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	0.237	0.200	mg/kg	1	B9A1803	JTD	01/18/2019	01/21/2019	
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U
Napthalene	ND	0.008	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	90.5 %	70-130			"	"	"		
Surrogate: Toluene-d8	97.2 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	95.1 %	70-130			"	"	"		

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Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-08@12-13'  
1/17/2019 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y901219-15 (Soil)

## Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019	U
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Surrogate: o-Terphenyl	87.5 %	59-131			"	"	"		
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## GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	0.216	0.200	mg/kg	1	B9A1803	JTD	01/18/2019	01/21/2019	
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U
Napthalene	ND	0.008	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	90.6 %	70-130			"	"	"		
Surrogate: Toluene-d8	97.9 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	96.8 %	70-130			"	"	"		

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Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

PH-08@14-15'  
1/17/2019 1:02:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
Y901219-16 (Soil)

**Diesel Range Organics (DRO/TEPH) by EPA 8015C**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9A1804	JTD	01/18/2019	01/18/2019	U
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Surrogate: o-Terphenyl	81.8 %	59-131			"	"	"		
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**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	0.212	0.200	mg/kg	1	B9A1803	JTD	01/18/2019	01/21/2019	
Benzene	ND	0.002	"	"	"	JTD	"	"	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U
Napthalene	ND	0.008	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	89.5 %	70-130			"	"	"		
Surrogate: Toluene-d8	98.0 %	70-130			"	"	"		
Surrogate: 4-Bromofluorobenzene	96.5 %	70-130			"	"	"		

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Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

## 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
Batch B9A1803 - EPA 5030 (soil)										
Blank (B9A1803-BLK1)					Prepared: 01/18/2019 Analyzed: 01/18/2019					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		113	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.3	70-130			

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Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>Blank (B9A1803-BLK2)</b>					Prepared: 01/18/2019 Analyzed: 01/18/2019					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.2	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.6	70-130			

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4101 Inca Street

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Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>Blank (B9A1803-BLK3)</b>					Prepared: 01/18/2019 Analyzed: 01/18/2019					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		108	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.3	70-130			

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Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

## 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
Batch B9A1803 - EPA 5030 (soil)										
LCS (B9A1803-BS1)					Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.108	0.002	mg/kg	0.100		108	70-130			
Toluene	0.102	0.002	"	0.100		102	70-130			
Ethylbenzene	0.094	0.002	"	0.100		94.3	70-130			
m,p-Xylene	0.197	0.004	"	0.200		98.4	70-130			
o-Xylene	0.097	0.002	"	0.100		96.7	70-130			
Naphthalene	0.112	0.008	"	0.100		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		110	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.2	70-130			

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Jen Pellegrini For Noelle Doyle Mathis, President



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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>LCS (B9A1803-BS2)</b>					Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.109	0.002	mg/kg	0.100		109	70-130			
Toluene	0.110	0.002	"	0.100		110	70-130			
Ethylbenzene	0.114	0.002	"	0.100		114	70-130			
m,p-Xylene	0.229	0.004	"	0.200		115	70-130			
o-Xylene	0.115	0.002	"	0.100		115	70-130			
Naphthalene	0.096	0.008	"	0.100		95.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		93.2	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		100	70-130			

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4101 Inca Street  
Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>LCS (B9A1803-BS3)</b>					Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.118	0.002	mg/kg	0.100		118	70-130			
Toluene	0.117	0.002	"	0.100		117	70-130			
Ethylbenzene	0.110	0.002	"	0.100		110	70-130			
m,p-Xylene	0.229	0.004	"	0.200		115	70-130			
o-Xylene	0.112	0.002	"	0.100		112	70-130			
Naphthalene	0.119	0.008	"	0.100		119	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.3	70-130			

Origins Laboratory, Inc.



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4101 Inca Street  
Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B9A1803-MS1)</b>		<b>Source: Y901210-01</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.107	0.002	mg/kg	0.100	0.0009	106	70-130			
Toluene	0.103	0.002	"	0.100	ND	103	70-130			
Ethylbenzene	0.098	0.002	"	0.100	ND	98.1	70-130			
m,p-Xylene	0.203	0.004	"	0.200	ND	101	70-130			
o-Xylene	0.100	0.002	"	0.100	0.0004	99.4	70-130			
Naphthalene	0.105	0.008	"	0.100	0.009	96.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		107	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.3	70-130			

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4101 Inca Street

Denver CO 80211

Martin C Eckert III

Project Number: [none]

Project: Noble - Wells Ranch AE32 Econode

## 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 B9A1803 - EPA 5030 (soil)

Matrix Spike (B9A1803-MS2)		Source: Y901223-01			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.092	0.002	mg/kg	0.100	ND	92.5	70-130			
Toluene	0.092	0.002	"	0.100	ND	91.6	70-130			
Ethylbenzene	0.096	0.002	"	0.100	ND	95.7	70-130			
m,p-Xylene	0.195	0.004	"	0.200	0.0009	97.4	70-130			
o-Xylene	0.099	0.002	"	0.100	0.0004	98.5	70-130			
Naphthalene	0.096	0.008	"	0.100	0.009	86.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		99.1	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		104	70-130			

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Eagle Environmental Consulting, Inc.  
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Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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 B9A1803 - EPA 5030 (soil)**

Matrix Spike (B9A1803-MS3)		Source: Y901220-04			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.112	0.002	mg/kg	0.100	ND	112	70-130			
Toluene	0.110	0.002	"	0.100	ND	110	70-130			
Ethylbenzene	0.104	0.002	"	0.100	ND	104	70-130			
m,p-Xylene	0.215	0.004	"	0.200	ND	108	70-130			
o-Xylene	0.106	0.002	"	0.100	ND	106	70-130			
Naphthalene	0.104	0.008	"	0.100	ND	104	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.7	70-130			

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Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

## 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
Batch B9A1803 - EPA 5030 (soil)										
Matrix Spike Dup (B9A1803-MSD1)		Source: Y901210-01			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.116	0.002	mg/kg	0.100	0.0009	115	70-130	8.23	20	
Toluene	0.116	0.002	"	0.100	ND	116	70-130	11.6	20	
Ethylbenzene	0.115	0.002	"	0.100	ND	115	70-130	15.9	20	
m,p-Xylene	0.236	0.004	"	0.200	ND	118	70-130	15.2	20	
o-Xylene	0.114	0.002	"	0.100	0.0004	114	70-130	13.6	20	
Naphthalene	0.104	0.008	"	0.100	0.009	95.5	70-130	0.860	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.8	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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4101 Inca Street  
Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9A1803-MSD2)</b>		<b>Source: Y901223-01</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.106	0.002	mg/kg	0.100	ND	106	70-130	13.3	20	
Toluene	0.104	0.002	"	0.100	ND	104	70-130	12.5	20	
Ethylbenzene	0.107	0.002	"	0.100	ND	107	70-130	11.2	20	
m,p-Xylene	0.217	0.004	"	0.200	0.0009	109	70-130	10.9	20	
o-Xylene	0.110	0.002	"	0.100	0.0004	110	70-130	10.6	20	
Naphthalene	0.108	0.008	"	0.100	0.009	98.9	70-130	12.0	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.6	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

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Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

**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
<b>Batch B9A1803 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9A1803-MSD3)</b>			<b>Source: Y901220-04</b>		Prepared: 01/18/2019 Analyzed: 01/18/2019					
Benzene	0.109	0.002	mg/kg	0.100	ND	109	70-130	2.05	20	
Toluene	0.114	0.002	"	0.100	ND	114	70-130	3.42	20	
Ethylbenzene	0.118	0.002	"	0.100	ND	118	70-130	12.6	20	
m,p-Xylene	0.244	0.004	"	0.200	ND	122	70-130	12.7	20	
o-Xylene	0.116	0.002	"	0.100	ND	116	70-130	9.47	20	
Naphthalene	0.080	0.008	"	0.100	ND	80.4	70-130	25.6	20	QR-02
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		87.3	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wells Ranch AE32 Econode

## 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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## Extractable Petroleum Hydrocarbons by 8015C - 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 B9A1804 - EPA 3550B

<b>Blank (B9A1804-BLK1)</b>				Prepared: 01/18/2019 Analyzed: 01/18/2019						
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	38		"	50.0		75.3	59-131			
<b>Blank (B9A1804-BLK2)</b>				Prepared: 01/18/2019 Analyzed: 01/18/2019						
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	42		"	50.0		84.7	59-131			
<b>Blank (B9A1804-BLK3)</b>				Prepared: 01/18/2019 Analyzed: 01/18/2019						
Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	40		"	50.0		79.4	59-131			
<b>LCS (B9A1804-BS1)</b>				Prepared: 01/18/2019 Analyzed: 01/18/2019						
Diesel (C10-C28)	983	50.0	mg/kg	1000		98.3	64-121			
Surrogate: o-Terphenyl	50		"	50.0		99.6	59-131			
<b>LCS (B9A1804-BS2)</b>				Prepared: 01/18/2019 Analyzed: 01/18/2019						
Diesel (C10-C28)	877	50.0	mg/kg	1000		87.7	64-121			
Surrogate: o-Terphenyl	44		"	50.0		88.3	59-131			
<b>LCS (B9A1804-BS3)</b>				Prepared: 01/18/2019 Analyzed: 01/18/2019						
Diesel (C10-C28)	914	50.0	mg/kg	1000		91.4	64-121			
Surrogate: o-Terphenyl	45		"	50.0		90.4	59-131			

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## Extractable Petroleum Hydrocarbons by 8015C - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B9A1804 - EPA 3550B</b>										
<b>Matrix Spike (B9A1804-MS1)</b>		<b>Source: Y901213-01</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Diesel (C10-C28)	1050	50.0	mg/kg	1000	172	87.9	53-125			
Surrogate: o-Terphenyl	45		"	50.0		90.8	59-131			
<b>Matrix Spike (B9A1804-MS2)</b>		<b>Source: Y901223-01</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Diesel (C10-C28)	1030	50.0	mg/kg	1000	ND	103	53-125			
Surrogate: o-Terphenyl	47		"	50.0		94.9	59-131			
<b>Matrix Spike (B9A1804-MS3)</b>		<b>Source: Y901220-04</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Diesel (C10-C28)	1060	50.0	mg/kg	1000	ND	106	53-125			
Surrogate: o-Terphenyl	47		"	50.0		94.0	59-131			
<b>Matrix Spike Dup (B9A1804-MSD1)</b>		<b>Source: Y901213-01</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Diesel (C10-C28)	1080	50.0	mg/kg	1000	172	91.0	53-125	2.85	20	
Surrogate: o-Terphenyl	46		"	50.0		92.5	59-131			
<b>Matrix Spike Dup (B9A1804-MSD2)</b>		<b>Source: Y901223-01</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Diesel (C10-C28)	954	50.0	mg/kg	1000	ND	95.4	53-125	7.93	20	
Surrogate: o-Terphenyl	45		"	50.0		89.3	59-131			
<b>Matrix Spike Dup (B9A1804-MSD3)</b>		<b>Source: Y901220-04</b>			Prepared: 01/18/2019 Analyzed: 01/18/2019					
Diesel (C10-C28)	936	50.0	mg/kg	1000	ND	93.6	53-125	12.5	20	
Surrogate: o-Terphenyl	42		"	50.0		83.2	59-131			

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### Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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