



May 1, 2017

Mr. Jacob Evans  
Noble Energy, Inc.  
2115 117th Avenue  
Greeley, CO 80631

**RE:                   Assessment and Remediation Report  
                      Wardlaw #20-28  
                      Flow Line Release  
                      40.452377 / -104.550395  
                      SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
                      WELD COUNTY, COLORADO  
                      API # 05-123-22511  
                      Spill ID 449192**

Dear Mr. Evans,

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to present this Assessment and Remediation Report (Report) for the above referenced site (Site).

## **1.0     SITE BACKGROUND**

Based on records on file with the Colorado Oil and Gas Conservation Commission (COGCC), the Wardlaw #20-28 well is located within the southeast quarter of the southeast quarter of Section 28, Township 6 north, Range 64 west of the 6<sup>th</sup> Prime Meridian. The Unintentional Release location is located at latitude: 40.452377 and longitude: -104.550395. Owl Creek is located approximately 5 feet to the east of the Unintentional Release location. A topographic site location map is presented as Figure 1. An aerial site location map is presented in Figure 2.

On February 9, 2017, EAGLE was requested by Noble Energy, Inc. (Noble) to perform surface assessment activities following an unintentional flow line release associated with the Wardlaw #20-28 well. The following narrative details assessment and remediation activities that have been completed at the Site in response to the unintentional release.

### **1.1     Site Hydrogeology**

The soil lithology observed beneath the Unintentional Release location consists of a loose, sandy, clayey silt from the surface to approximately 2 feet below ground surface (bgs), underlain by a medium stiff sandy clay from approximately 2 feet bgs to 12 feet bgs. Depth to groundwater during excavation activities was observed at approximately 4.5 feet bgs. Depth to groundwater during monitoring well installation activities ranged from approximately 3.5 to 5 feet bgs. A detailed description of the subsurface lithology beneath the site is presented within the boring logs included in Attachment A.

Owl Creek flows to the south and converges with the South Platte River, approximately 4.6 miles south of the Site.

## **2.0 FIELD ASSESSMENT ACTIVITIES**

### **2.1 Emergency Response and Remedial Activities**

On February 9, 2017, EAGLE and Noble performed emergency response activities related to the unintentional release of approximately 10 barrels (bbls) of condensate at the Site due to an acute line failure of the Wardlaw #20-28 flow line (Unintentional Release). During the unintentional release, condensate flowed east over the bank and into the partially frozen Owl Creek, migrating south and downstream/downgradient from the release location.

Upon notification of the unintentional release, Noble deployed hydrophobic pads and booms to absorb condensate present on the vegetation and surface water adjacent to, and downgradient of the Site. Hydrophobic booms were also placed downstream along Owl Creek to mitigate migration of any light non-aqueous phase liquid (LNAPL) in the area.

On February 10, 2017 and February 13, 2017, Energes Oilfield Solutions (Energes) was utilized to remove approximately 110 bbls of water from the surface of Owl Creek.

### **2.2 Field Activities – Field Assessment**

On February 9, 2017, EAGLE collected surface soil samples, SS-01 through SS-07, adjacent to the flowline where the unintentional release occurred. 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) with a 10.6 electron volt (eV) lamp. Another portion of each soil sample was placed in two, 2-ounce glass jars and sealed for laboratory analysis. The jarred soil samples were placed in a laboratory supplied cooler, filled with ice, for delivery to Origins Laboratory, Inc. (Origins) in Denver, Colorado.

Soil samples, SS-01 through SS-07, were submitted to Origins Laboratory, Inc. (Origins) located in Denver, Colorado, under standard chain-of-custody procedures, for analysis of 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. All soil samples were received by the laboratory within the required holding time and quality assurance/quality control (QA/QC) parameters.

In addition, EAGLE assessed visually stained areas within Owl Creek, adjacent to the Unintentional Release location. Yellow discoloration was observed on the frozen water and in the vegetation within and along the west bank the creek. EAGLE collected surface water samples, SW-01 through SW-03, to determine if dissolved phase petroleum hydrocarbon impacts were present within the surface water. The surface water samples were collected in 40 milliliter (mL) amber vials and submitted for laboratory analysis of BTEX following EPA Method 8260c. The water samples were transported in an iced cooler, under standard chain-of-custody procedures, to Origins, and were received by the laboratory within the required holding time and QA/QC parameters.

#### **2.2.1 Soil Analytical Results – Field Assessment**

Based on soil laboratory analytical results:

- Soil samples SS-04@0-0.25' and SS-06@0-0.25', collected adjacent to the Unintentional Release location, contained concentrations of benzene (3.11 milligrams per kilogram (mg/kg) and 0.910 mg/kg, respectively) and total petroleum hydrocarbons (TPH) (12,810 mg/kg, and 2,430 mg/kg,

respectively) exceeding respective COGCC Table 910-1 regulatory limits of 0.17 mg/kg and 500 mg/kg.

- Soil samples SS-01@0-0.25', SS-02@0-0.25', and SS-03@0-0.25', collected in the adjacent agricultural field east of Owl Creek, did not contain concentrations of BTEX, TPH, or naphthalene exceeding respective COGCC Table 910-1 regulatory limits.
- Soil samples SS-05@0-0.25' and SS-07@0-0.25', collected along the west bank of Owl Creek, did not contain concentrations of BTEX, TPH, or naphthalene exceeding respective COGCC Table 910-1 regulatory limits.

Laboratory analytical results for the surface soil samples collected on February 9, 2017 confirmed additional source removal was required beneath and adjacent to the Unintentional Release area. Soil laboratory analytical results are summarized in Table 1. Laboratory analytical reports are included in Attachment B. A site map illustrating initial assessment soil sample locations and analytical results is presented in Figure 3.

### **2.2.2 Surface Water Analytical Results – Field Assessment**

Based on water laboratory analytical results, surface water samples SW-02 and SW-03 contained concentrations of benzene (100 micrograms per liter ( $\mu\text{g/L}$ ) and 90.7  $\mu\text{g/L}$ , respectively) exceeding the COGCC Table 910-1 regulatory limit of 5  $\mu\text{g/L}$ .

Water laboratory analytical results are summarized in Table 2. Laboratory analytical reports are included in Attachment B. A site map illustrating surface water sample locations and analytical results is presented in Figure 4.

### **2.3 Biological Survey**

On February 9, 2017, SWCA Environmental Consultants (SWCA) completed a biological survey of the estimated area, as well as the surrounding area, from the unintentional release and along the Owl Creek bank. As part of the biological survey, SWCA completed a vegetation evaluation and wetlands delineation.

Based on results of the survey, no evidence of direct impacts to wildlife species was observed. SWCA identified wetlands and waters of the United States within the impacted area that could fall under the jurisdiction of the United States Army Corps of Engineers (USACE) and Clean Water regulations. SWCA identified approximately 0.056 acre of emergent wetland and approximately 0.097 acre within the ordinary highwater mark of Owl Creek.

A copy of the completed SWCA report, including a figure detailing the designated wetland and surface water areas, is included in Attachment C.

### 3.0 SOIL EXCAVATION ACTIVITIES

#### 3.1 Excavation Activities

From February 10, 2017 through February 13, 2017, EAGLE supervised excavation activities to remove adsorbed petroleum hydrocarbon impacts beneath the Unintentional Release area. Energes provided the necessary equipment and personnel to remove and transport petroleum hydrocarbon impacted soil from the Site.

Waste characterization/confirmation soil samples (SS-08 through SS-26) were collected at various locations to determine the lateral and vertical extent of petroleum hydrocarbon impacts in the soil beneath and adjacent to the flowline release. A portion of each soil sample was placed in a sealable plastic bag for VOC headspace analysis utilizing a field calibrated PID. Another portion of the soil sample was placed in two, 2-ounce glass jars and packed in an iced cooler for laboratory analysis. Based on location and PID analysis, selected jarred soil samples were submitted to Origins, under standard chain of custody procedures, for analysis of BTEX, naphthalene, TPH-GRO, and TPH-DRO following modified EPA Methods 8260c and 8015. The laboratory received the samples within the required holding time and QA/QC parameters.

A total of 19 confirmation soil samples (SS-08@2.5', SS-09@2.5', SS-10@2.5', SS-11@2.5', SS-12@2.5', SS-13@2.5', SS-14@2.5', SS-15@2.5', SS-16@2.5', SS-17@2.5', SS-18@2.5', SS-19@2.5', SS-20@2.5', SS-21@2.5', SS-22@2.5', SS-23@2.5', SS-24@2.5', SS-25@2.5', and SS-26@2.5') were submitted for laboratory analysis.

Spatial location of each soil sample was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting the limits of the excavation, as well as soil sample locations, is included as Figure 5.

On February 11, 2017, groundwater was observed within the excavation at a depth of approximately 4.5 feet bgs. EAGLE collected a grab groundwater sample (GW-01), placed the sample in an iced cooler, and delivered to Origins, under standard COC protocol, for analysis of BTEX following modified EPA Method 8260c. The groundwater sample was received within the required holding time and QA/QC parameters.

On February 13, 2017, Energes was utilized to remove petroleum hydrocarbon impacted groundwater/LNAPL from the excavation. Approximately 2 bbls of groundwater was removed from the excavation and delivered for disposal at Republic Services Tower Landfill.

The excavation was then backfilled with clean structural fill and compacted to grade.

The final limits of the Wardlaw #20-28 excavation extended approximately 135 feet north to south and 37 feet east to west. The north side of the excavation, adjacent to the Unintentional Release location, measured approximately 51 feet east to west. The excavation was advanced to a total depth of approximately 5.5 feet bgs. Approximately 1,004 cubic yards of soil was removed during excavation activities and transported for disposal at North Weld Landfill, located in Ault, Colorado.

#### 3.1.1 Excavation Laboratory Analytical Results

Based on soil laboratory analytical results:

- Soil samples SS-08@2.5', SS-09@2.5', SS-10@2.5' and SS-22@2.5' contained concentrations of benzene (0.540 mg/kg, 0.982 mg/kg, 0.228 mg/kg, and 0.308 mg/kg, respectively) exceeding the COGCC Table 910-1 regulatory limit of 0.17 mg/kg.

- Soil samples SS-08@2.5', SS-09@2.5', SS-10@2.5', SS-21@2.5', and SS-22@2.5' contained concentrations of TPH (3,040 mg/kg, 6,690 mg/kg, 1,652 mg/kg, 1,162 mg/kg, and 1,637 mg/kg, respectively) exceeding the COGCC Table 910-1 regulatory limit of 500 mg/kg.
- Confirmation soil samples (SS-11@2.5', SS-12@2.5', SS-13@2.5', SS-14@2.5', SS-15@2.5', SS-16@2.5', SS-17@2.5', SS-18@2.5', SS-19@2.5', SS-20@2.5', SS-23@2.5', SS-24@2.5', SS-25@2.5', and SS-26@2.5') collected from the Wardlaw #20-28 excavation did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.

Due to the proximity of Owl Creek on the east side of the excavation and laboratory analytical results of SS-21@2.5' and SS-22@2.5', source removal activities concluded following analytical results from soil samples collected from the north, west, and south sides of the excavation. Residual petroleum hydrocarbon soil impacts around SS-21 and SS-22 are anticipated to be addressed in-situ during groundwater remediation activities.

Based on groundwater laboratory analytical results:

- Grab groundwater sample GW-01 contained concentrations of benzene (434 µg/L), toluene (1,560 µg/L), and total xylenes (1,530 µg/L) exceeding respective COGCC Table 910-1 regulatory limits of 5 µg/L, 560 µg/L, and 1,400 µg/L.

Excavation soil analytical results are summarized in Table 1 and presented in Figure 5. Grab groundwater sample analytical results are summarized in Table 2 and presented in Figure 6. The laboratory analytical reports for the soil and groundwater samples collected during source removal activities at the Wardlaw #20-28 site are included in Attachment B.

## **4.0 SURFACE WATER REMEDIATION ACTIVITIES**

### **4.1 Surface Water Abatement Activities**

On February 10, 2017 and February 13, 2017, EAGLE performed surface water remediation activities, including recovery and containment of observed petroleum hydrocarbon surface water impacts within Owl Creek.

On February 10, 2017, EAGLE utilized hydrophobic pads and booms to remove petroleum hydrocarbon impacts from the surface of Owl Creek and mitigate downstream migration. Energes was utilized to remove and transport approximately 60 bbls of water from Owl Creek to Republic Services Tower Landfill for disposal. A second vacuum truck removed an additional five bbl of water from Owl Creek for transportation and disposal at High Plains Disposal.

On February 13, 2017, EAGLE continued petroleum hydrocarbon abatement activities by utilizing hydrophobic pads to recover visually observed LNAPL on the surface of the water. Energes was utilized to remove and transport approximately 45 bbls of water from Owl Creek to Republic Services Tower Landfill for disposal.

As of February 13, 2017, approximately 110 bbls of water have been removed from Owl Creek. EAGLE will continue LNAPL and petroleum hydrocarbon abatement activities as needed. A summary documenting the amount of water removed from Owl Creek is included in Table 3.

## 4.2 Surface Water Sampling Activities

On February 10, 2017 and February 13, 2017, February 20, 2017, and March 17, 2017. EAGLE collected additional surface water samples from Owl Creek to determine the extent of petroleum hydrocarbon impacted surface water at the site. Surface water samples were collected from locations SW-03 through SW-09 on February 10, 2017. Surface water samples were collected from locations SW-01 through SW-09 on February 13, 2017, February 20, 2017, and March 17, 2017.

Surface water samples were collected following petroleum hydrocarbon abatement activities to gauge the effectiveness of remediation activities and confirm definition. Surface water samples SW-01 and SW-05 through SW-09 were collected to establish point of compliance (POC). Surface water samples SW-02 through SW-04 were collected to determine remaining dissolved petroleum hydrocarbon impacts proximal to areas of observed surface water impacts. Surface water sample locations are presented in Figure 4.

### 4.2.1 Surface Water Laboratory Analytical Results

Based on laboratory analytical results from surface water samples collected on February 10, 2017:

- SW-03 contained a concentration of dissolved benzene (6.24 µg/L) exceeding the COGCC Table 910-1 regulatory limit of 5 µg/L.

Based on laboratory analytical results from surface water samples collected on February 13, 2017:

- SW-02, SW-03, and SW-04 contained concentrations of dissolved benzene (11.3 µg/L, 8.52 µg/L, and 6.80 µg/L, respectively) exceeding the COGCC Table 910-1 regulatory limit of 5 µg/L.

Based on laboratory analytical results from surface water samples collected on February 20, 2017:

- Surface water samples SW-01 through SW-09 did not contain concentrations of dissolved BTEX exceeding applicable COGCC Table 910-1 regulatory limits.

Based on laboratory analytical results from surface water samples collected on March 17, 2017:

- Surface water samples SW-01 through SW-09 did not contain concentrations of dissolved BTEX exceeding applicable COGCC Table 910-1 regulatory limits or laboratory reporting limits.

Surface water laboratory analytical results are summarized in Table 2 and presented in Figure 4. Laboratory analytical reports are included in Attachment B.

On March 20, 2017, based on laboratory analytical results, EAGLE removed the hydrophobic booms that were deployed along the banks of Owl Creek. EAGLE will continue to monitor Owl Creek, on a quarterly basis, to confirm dissolved BTEX concentrations remain below COGCC Table 910-1 regulatory limits.

## 5.0 SOIL BORING ADVANCEMENT/WELL INSTALLATION ACTIVITIES

To assess dissolved BTEX impacts associated with the Unintentional Release, 17 initial monitoring wells (MW-01 through MW-17) were proposed for installation. Following Noble approval, EAGLE scheduled soil boring advancement and well installation activities.

## **5.1 Field Work Preparation and Planning**

The Utility Notification Center of Colorado (UNCC) was called at least 48 hours in advance of drilling activities to confirm that no unmarked utilities or other obstacles were present within the proposed drilling locations. Tier II facility owners were also contacted to confirm the necessary buried utility notifications were completed.

## **5.2 Soil Boring Advancement/Monitoring Well Completion Activities**

On March 27-28, 2017, a total of 17 soil borings (MW-01 through MW-17) were advanced around the flow line release area. Following advancement activities, each soil boring was completed as a 1-inch, groundwater monitoring well to define the extents of dissolved petroleum hydrocarbons impacts beneath the site. Soil boring advancement/monitoring well installation activities were completed by EAGLE utilizing a 7822DT Series Geoprobe track rig.

Each location was logged in the field according to soil description, soil classification, moisture content, staining, and VOC concentrations. Groundwater was observed within the soil borings at approximately 4-4.5 feet bgs. Monitoring wells, MW-01 through MW-17, were each completed with 1-inch, schedule 40, poly vinyl chloride (PVC) pipe to a total depth of approximately 12 feet bgs. Ten feet of 0.010 slot, 1-inch, PVC screen was placed at the bottom of the boring followed by approximately two feet of PVC riser. The well annulus was backfilled with 10/20 silica sand to approximately 1 foot above the screened section followed by a hydrated bentonite seal to the surface. All monitoring wells (MW-01 through MW-17) were completed as approximately 2.5-foot PVC stickups.

EAGLE recorded spatial locations of each soil boring and monitoring well using a Trimble GeoXT 6000 series instrument. Soil boring logs/monitoring well completion diagrams are included in Attachment A. Monitoring well locations are presented in Figure 7 and a geologic cross-section is presented in Figure 8.

## **5.3 Soil Sampling Procedures**

During soil boring advancement/monitoring well installation activities, soil samples were collected continuously within 5-foot, plastic sample liners. The samples within the plastic liners were separated in 2.5-foot intervals for soil identification and analysis. A portion from each interval was placed in a sealable plastic bag for 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 for laboratory analysis.

Based on PID reading and sample locations above the observed saturated zone, one soil sample from each boring (MW-02 through MW-11, MW-13, and MW-15 through MW-17) was submitted to Origins, following standard chain of custody procedures, for laboratory analysis. Each soil sample was analyzed for BTEX, naphthalene, TPH-GRO, and TPH-DRO, following modified EPA Methods 8260c and 8015. The laboratory received the soil samples within the required holding time for each laboratory analysis. Based on previous excavation boundaries and monitoring well locations, soil samples were not collected from monitoring wells MW-01, MW-12, or MW-14.

## **5.4 Groundwater Sampling Procedures**

Groundwater samples were collected from each monitoring well following installation activities. Based on the tight soil lithology, several monitoring wells were surge blocked with de-ionized water to enhance well development.

Each monitoring well was developed through purging the location a minimum of six well volumes using disposable PVC bailers. Following recharge, groundwater samples were collected from each monitoring well in 40 milliliter (mL) amber vials. The groundwater samples were submitted for laboratory analysis of BTEX following EPA Method 8260C. The samples were transported in an iced cooler under standard chain-of-custody procedures to Origins, and were received within the required holding time.

On March 28, 2017, depth to groundwater data was collected using a decontaminated interface probe capable of measuring the depth to groundwater or light non-aqueous phase liquid (LNAPL) to an accuracy of 0.01 feet. Relative groundwater elevations within each monitoring well ranged from 91.04 feet (MW-01) to 92.42 feet (MW-04). The groundwater flow direction beneath the site was predominantly to the east. Groundwater elevation data is summarized in Table 4 and presented in Figure 9.

## **5.5 Laboratory Analytical Results**

### **5.5.1 Soil Analytical Results**

Based on laboratory analytical results:

- Soil samples collected from monitoring wells MW-02 through MW-11, MW-13, and MW-15 through MW-17 did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits and/or laboratory reporting limits.

Soil analytical results are summarized in Table 1. Soil analytical results from monitoring well installation activities are presented in Figure 7 and soil sample laboratory analytical reports are included in Attachment B.

### **5.5.2 Groundwater Analytical Results**

Based on laboratory analytical results:

- The groundwater samples collected from monitoring wells MW-01 and MW-12 contained concentrations of benzene (188 µg/L and 210 µg/L, respectively) exceeding the COGCC Table 910-1 regulatory limit of 5 µg/L.
- The groundwater samples collected from monitoring wells MW-02 through MW-11, and MW-13 through MW-17 did not contain concentrations of BTEX exceeding applicable COGCC Table 910-1 regulatory limits.

Monitoring well groundwater analytical results are summarized in Table 3 and presented in Figure 10. Groundwater laboratory analytical reports are included in Attachment B.

## **5.6 Remedial Well Installation/Vapor Extraction Activities**

To address residual adsorbed petroleum hydrocarbon impacts onsite, EAGLE installed two (2) passive soil vapor extraction (SVE) remedial wells (SVE-01 and SVE-02). On March 28, 2017, EAGLE installed SVE-01 and SVE-02 adjacent to previously collected soil samples SS-21@2.5' and SS-22@2.5'. Remedial well installation activities were completed by EAGLE utilizing a 7822DT Series Geoprobe track rig.

Remedial wells SVE-01 and SVE-02 were completed with 2-inch, schedule 40, poly vinyl chloride (PVC) pipe to a total depth of approximately 6 feet bgs. Five feet of 0.010 slot, 2-inch, PVC screen was placed at

the bottom of the boring followed by 1 foot of PVC Riser. The well annulus was backfilled with 10/20 silica sand to approximately 6-inches above the screen section followed by a hydrated bentonite seal to the surface. Soil samples from SVE-01 and SVE-02 were not submitted for laboratory analysis.

On March 28, 2017, EAGLE installed a 4-inch passive ventilation, wind turbine, on SVE-01 and SVE-02. The wind turbine should passively and continuously remove residual adsorbed petroleum impacts in the surrounding area. EAGLE will return to the site at a later date to collect confirmation soil samples. The remedial well locations are presented in Figure 11.

## 6.0 CONCLUSIONS

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

- On February 9, 2017, EAGLE, and Noble responded to an unintentional flowline release associated with the Wardlaw #20-28 well.
- Initial surface soil samples SS-04@0-0.25' and SS-06@0-0.25' contained concentrations of benzene and TPH exceeding their respective COGCC Table 910-1 regulatory limits.
- Surface water samples (SW-02 and SW-03), collected on February 9, 2017, contained concentrations of dissolved benzene exceeding the COGCC Table 910-1 regulatory limit.
- Approximately 1,004 cubic yards of soil was removed from the Unintentional Release location from February 10 through February 13, 2017 and disposed of at an appropriately permitted facility.
- Excavation soil samples SS-08@2.5', SS-09@2.5', SS-10@2.5', and SS-22@2.5' contained concentrations of benzene exceeding applicable COGCC Table 910-1 regulatory limits.
- Excavation soil samples SS-08@2.5', SS-09@2.5', SS-10@2.5', SS-21@2.5', and SS-22@2.5' contained concentrations of TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Confirmation soil samples (SS-11@2.5', SS-12@2.5', SS-13@2.5', SS-14@2.5', SS-15@2.5', SS-16@2.5', SS-17@2.5', SS-18@2.5', SS-19@2.5', SS-20@2.5', SS-23@2.5', SS-24@2.5', SS-25@2.5', and SS-26@2.5') collected from the Unintentional Release location did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Due to the proximity of Owl Creek on the east side of the excavation and laboratory analytical results of SS-21@2.5' and SS-22@2.5', source removal activities concluded following analytical results from soil samples collected from the north, west, and south sides of the excavation.
- On February 11, 2017, groundwater was observed in the excavation at a depth of approximately 4.5 feet bgs. Grab groundwater sample (GW-01) contained concentrations of benzene, toluene, and total xylenes exceeding applicable COGCC Table 910-1 regulatory limits.
- On February 10, 2017 and February 13, 2017, EAGLE completed petroleum hydrocarbon abatement activities on Owl Creek. Absorbent booms, pads, and a vacuum truck were utilized to remove visually observed LNAPL and petroleum hydrocarbon impacts from the surface water associated with Owl Creek. A total of 110 bbls of water was removed during those dates and transported and disposed at an appropriately permitted facility.

- Surface water samples were collected from Owl Creek following surface water abatement activities on February 10, 2017 and February 13, 2017.
- On February 10, 2017, SW-03 contained a concentration of dissolved benzene (6.24 µg/L) exceeding the COGCC Table 910-1 regulatory limit of 5 µg/L.
- On February 13, 2017, SW-02, SW-03, and SW-04 contained concentrations of dissolved benzene (11.3 µg/L, 8.52 µg/L, and 6.80 µg/L, respectively) exceeding the COGCC Table 910-1 regulatory limit of 5 µg/L.
- On February 20, 2017, surface water samples SW-01 through SW-09 did not contain concentrations of dissolved BTEX exceeding applicable COGCC Table 910-1 regulatory limits.
- On March 17, 2017, surface water samples SW-01 through SW-09 did not contain concentrations of dissolved BTEX exceeding applicable COGCC Table 910-1 regulatory limits or laboratory reporting limits.
- On March 27-28, 2017, EAGLE installed 17 groundwater monitoring wells (MW-01 through MW-17) at the site to delineate dissolved phase petroleum hydrocarbon impacts associated with an unintentional flow line release associated with the Wardlaw #20-28 well head.
- Soil samples collected from monitoring wells MW-02 through MW-11, MW-13, and MW-15 through MW-17 did not contain concentrations of BTEX, naphthalene, or TPH exceeding applicable COGCC Table 910-1 regulatory limits and/or laboratory reporting limits.
- The groundwater samples collected from monitoring wells MW-01 and MW-12 contained concentrations of benzene exceeding the COGCC Table 910-1 regulatory limit.
- The groundwater samples collected from monitoring wells MW-02 through MW-11, and MW-13 through MW-17 did not contain concentrations of BTEX exceeding applicable COGCC Table 910-1 regulatory limits.
- On March 28, 2017, EAGLE installed two (2) 2-inch SVE remedial wells (SVE-01 and SVE-02) and attached a 4-inch passive ventilation wind turbine to passively and continuously remove residual adsorbed petroleum impacts in the area surrounding previously collected soil samples SS-21@2.5' and SS-22@2.5'.

## 7.0 RECOMMENDATIONS

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

- Complete quarterly groundwater sampling activities at the site to monitor natural attenuation.
- Continue surface water petroleum hydrocarbon monitoring activities in Owl Creek.

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.**



Robin Lockwood  
Project Scientist



Martin Eckert III  
Senior Project Manager

## **FIGURES**

**Figure 1: Topographic Site Location Map**

**Figure 2: Aerial Site Location Map**

**Figure 3: Initial Assessment Soil Sample Location Map**

**Figure 4: Grab Surface Water Sample Location Map**

**Figure 5: Excavation Soil Sample Analytical Map**

**Figure 6: Excavation Groundwater Analytical Map**

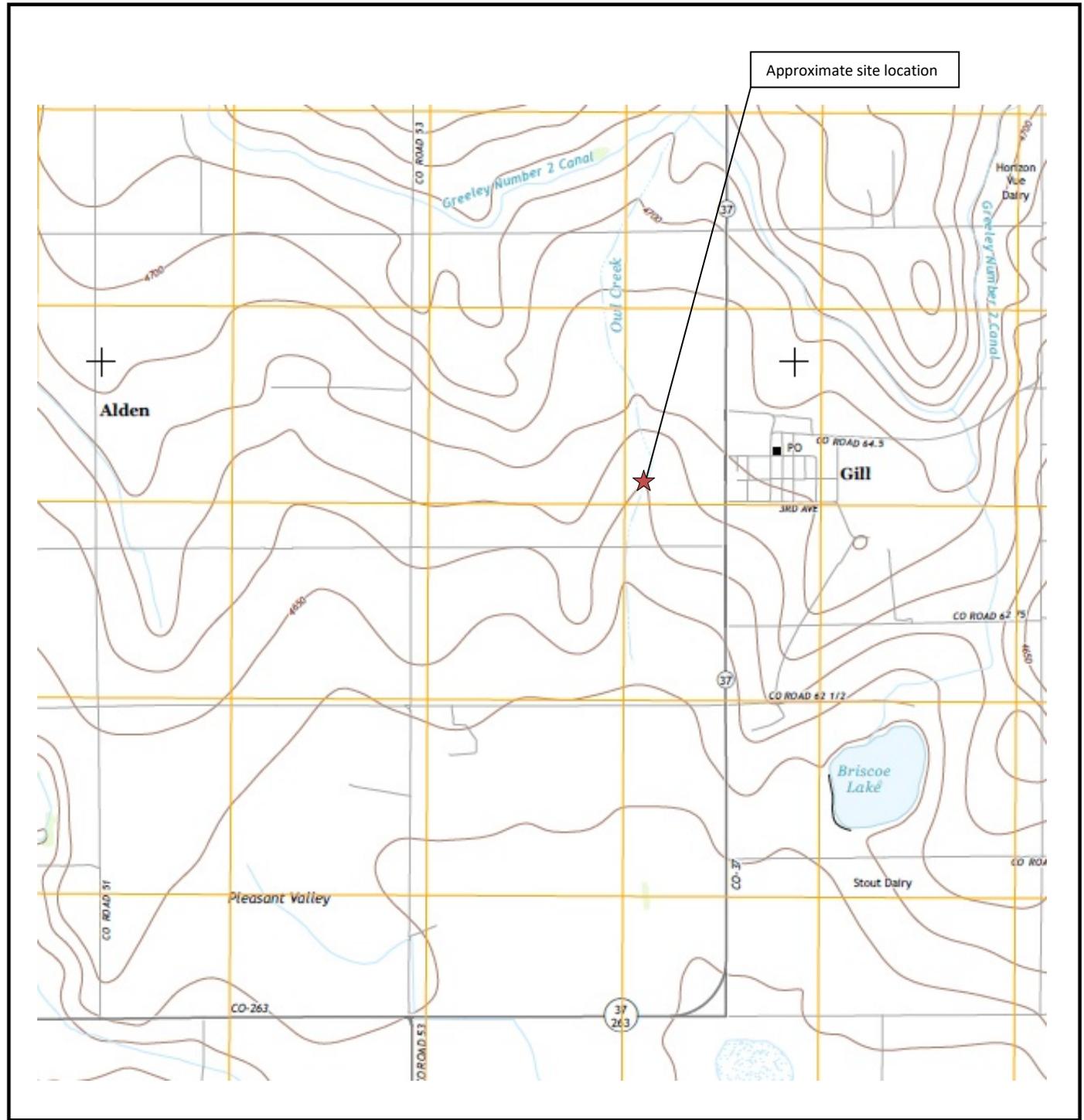
**Figure 7: Monitoring Well Soil Analytical Map**

**Figure 8: Geologic Cross-Section A-A'**

**Figure 9: Groundwater Elevation Map**

**Figure 10: Monitoring Well Groundwater Analytical Map**

**Figure 11: Remedial Well Location Map**



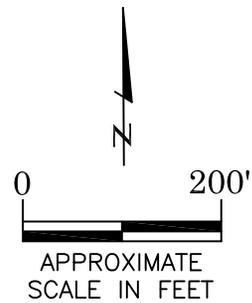
Approximate site location

	<p><b>Site Location Map</b>          Wardlaw #20-28          Flow Line Release          40.452377 / -104.550395          SESE SEC.28 T6N R64W 6PM          Weld County, CO          API # 05-123-22511          Spill ID 449192</p>	<p><b>EAGLE</b>          ENVIRONMENTAL          CONSULTING, INC.</p>
<p>Source: USGS 7.5 Minute Topographic Map, Kersey, CO Quadrangle 2013</p>	<p><b>Figure 1</b></p>	



**LEGEND**

-  WARDLAW #20-28 WELL PAD
-  APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE



AERIAL SITE LOCATION MAP

WARDLAW #20-28  
FLOW LINE RELEASE  
40.452377 / -104.550395  
SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-22511  
SPILL ID 449192

DATE:  
02/09/17

FIG. NO. DRAWN BY:  
2 AMN



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



SS-05@0-0.25'  
02/09/17  
0-0.25'  
B = <0.050  
T = <0.050  
E = <0.050  
X = <0.050  
N = <0.175  
G = <5.00  
D = <50.0

SS-01@0-0.25'  
02/09/17  
0-0.25'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
N = <0.007  
G = <0.200  
D = 60.6

SS-06@0-0.25'  
02/09/17  
0-0.25'  
B = **0.910**  
T = 7.79  
E = 5.47  
X = 53.0  
N = 1.21  
G = **820**  
D = **1610**

SS-02@0-0.25'  
02/09/17  
0-0.25'  
B = <0.050  
T = <0.050  
E = <0.050  
X = <0.050  
N = <0.175  
G = <5.00  
D = <50.0

SS-04@0-0.25'  
02/09/17  
0-0.25'  
B = **3.11**  
T = 33.3  
E = 10.3  
X = 116  
N = 7.71  
G = **2110**  
D = **10700**

SS-03@0-0.25'  
02/09/17  
0-0.25'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
N = <0.007  
G = <0.200  
D = <50.0

SS-07@0-0.25'  
02/09/17  
0-0.25'  
B = <0.002  
T = 0.003  
E = 0.005  
X = 0.013  
N = <0.007  
G = <0.200  
D = <50.0

- LEGEND**
- X APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
  - WELL HEAD LOCATION
  - APPROXIMATE FLOW LINE LOCATION
  - APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS

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

mg/kg = MILLIGRAMS PER KILOGRAM

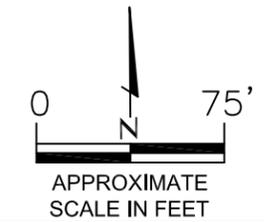
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS

TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

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

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

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



**INITIAL ASSESSMENT SOIL SAMPLE LOCATION MAP**  
WARDLAW #20-28  
FLOW LINE RELEASE  
40.452377 / -104.550395  
SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-22511  
SPILL ID 449192

DATE  
02/10/17

FIG. NO.  
3

DRAWN BY  
amn

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



**LEGEND**

-  APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
-  WELL HEAD LOCATION
-  APPROXIMATE LOCATION OF SURFACE WATER SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

**PARAMETERS**

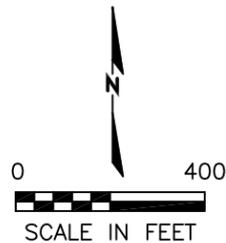
SURFACE WATER SAMPLE LOCATION DATE	
B	= BENZENE (µg/L)
T	= TOLUENE (µg/L)
E	= ETHYLBENZENE (µg/L)
X	= TOTAL XYLENES (µg/L)

µg/L = MICROGRAMS PER LITER

NOTES: VALUES PRESENTED IN **BOLD** EXCEEDING COGCC TABLE 910-1 REGULATORY LIMITS

COGCC = COLORADO OIL AND GAS CONSERVATION COMMISSION

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



**GRAB SURFACE WATER SAMPLE LOCATION MAP**  
 WARDLAW #20-28  
 FLOW LINE RELEASE  
 40.452377 / -104.550395  
 SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-22511  
 SPILL ID 449192

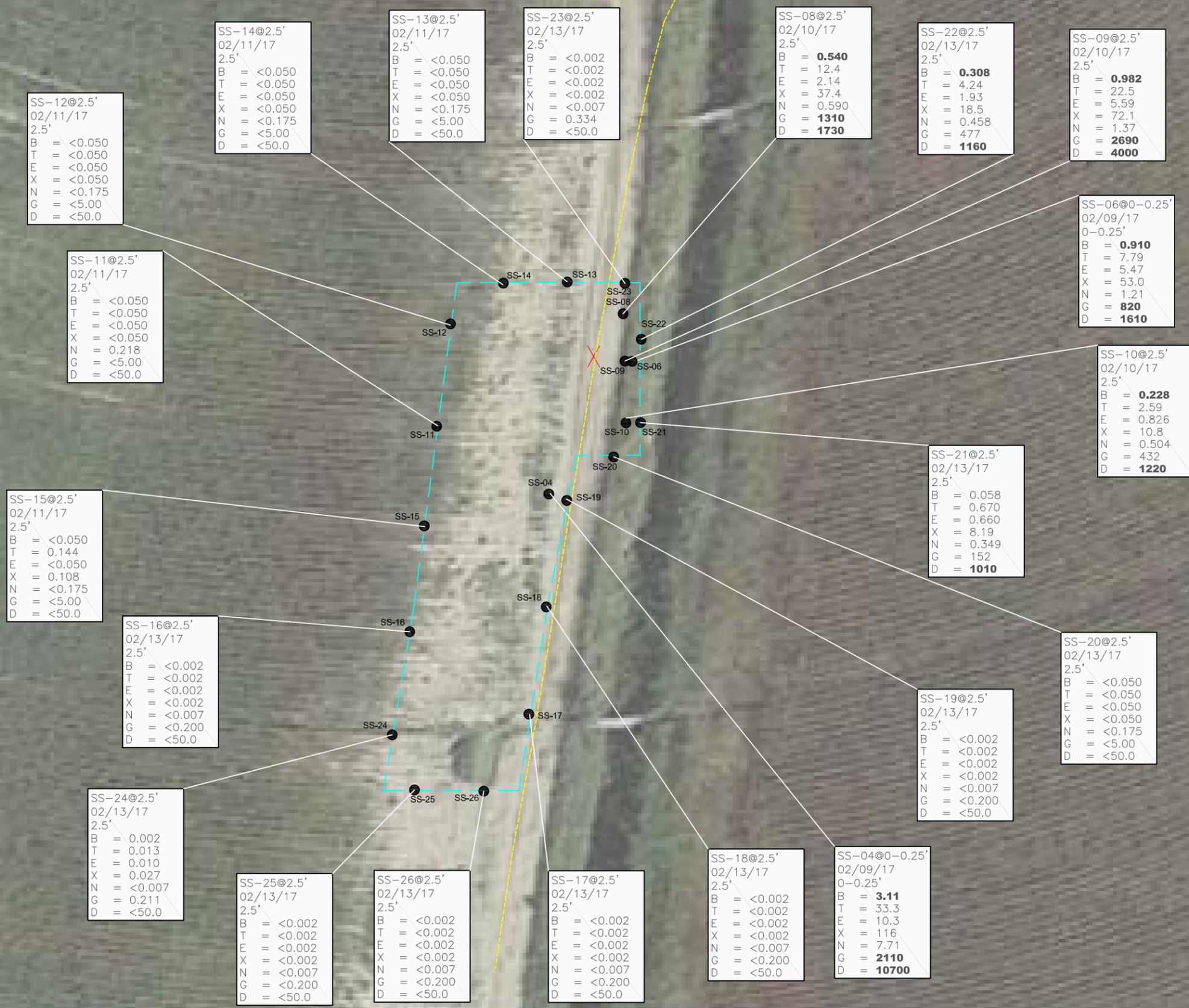
DATE: 03/20/17

FIG. NO. 4

DRAWN BY:  
RAL



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- LEGEND**
- APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
  - APPROXIMATE FLOW LINE LOCATION
  - APPROXIMATE EXCAVATION BOUNDARIES
  - APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

**PARAMETERS**

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

mg/kg = MILLIGRAMS PER KILOGRAM

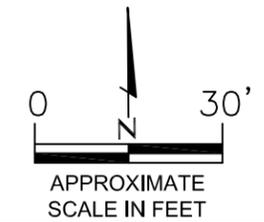
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS

TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

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

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

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



**EXCAVATION SOIL SAMPLE ANALYTICAL MAP**  
WARDLAW #20-28  
FLOW LINE RELEASE  
40.452377 / -104.550395  
SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-22511  
SPILL ID 449192

DATE	02/20/17	
FIG. NO.	5	DRAWN BY amn
<p><b>EAGLE ENVIRONMENTAL CONSULTING, INC.</b> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449</p>		



GW-01  
 02/11/17  
 B = **434**  
 T = **1560**  
 E = 138  
 X = **1530**

- LEGEND**
-  APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
  -  APPROXIMATE FLOW LINE LOCATION
  -  APPROXIMATE EXCAVATION BOUNDARIES
  -  APPROXIMATE LOCATION OF GRAB GROUNDWATER SAMPLE SUBMITTED FOR LABORATORY ANALYSIS

**PARAMETERS**

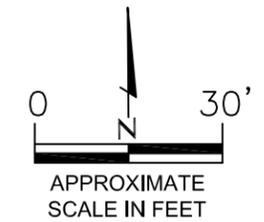
SAMPLE LOCATION  
 DATE  
 B = BENZENE (µg/L)  
 T = TOLUENE (µg/L)  
 E = ETHYLBENZENE (µg/L)  
 X = TOTAL XYLENES (µg/L)

µg/L = MICROGRAMS PER LITER

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

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

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



**EXCAVATION GROUNDWATER ANALYTICAL MAP**  
 WARDLAW #20-28  
 FLOW LINE RELEASE  
 40.452377 / -104.550395  
 SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-22511  
 SPILL ID 449192

DATE  
 02/20/17  
 FIG. NO.  
 6



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**LEGEND**

- X APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
- APPROXIMATE FLOW LINE LOCATION
- APPROXIMATE EXCAVATION BOUNDARIES
- APPROXIMATE MONITORING WELL LOCATIONS

**PARAMETERS**

**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)

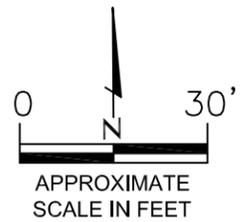
mg/kg = MILLIGRAMS PER KILOGRAM

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

NOTE:  
BASED ON PREVIOUS EXCAVATION BOUNDARIES AND MONITORING WELL LOCATIONS, SOIL SAMPLES WERE NOT COLLECTED FROM MONITORING WELLS MW-01, MW-12, AND MW-14.



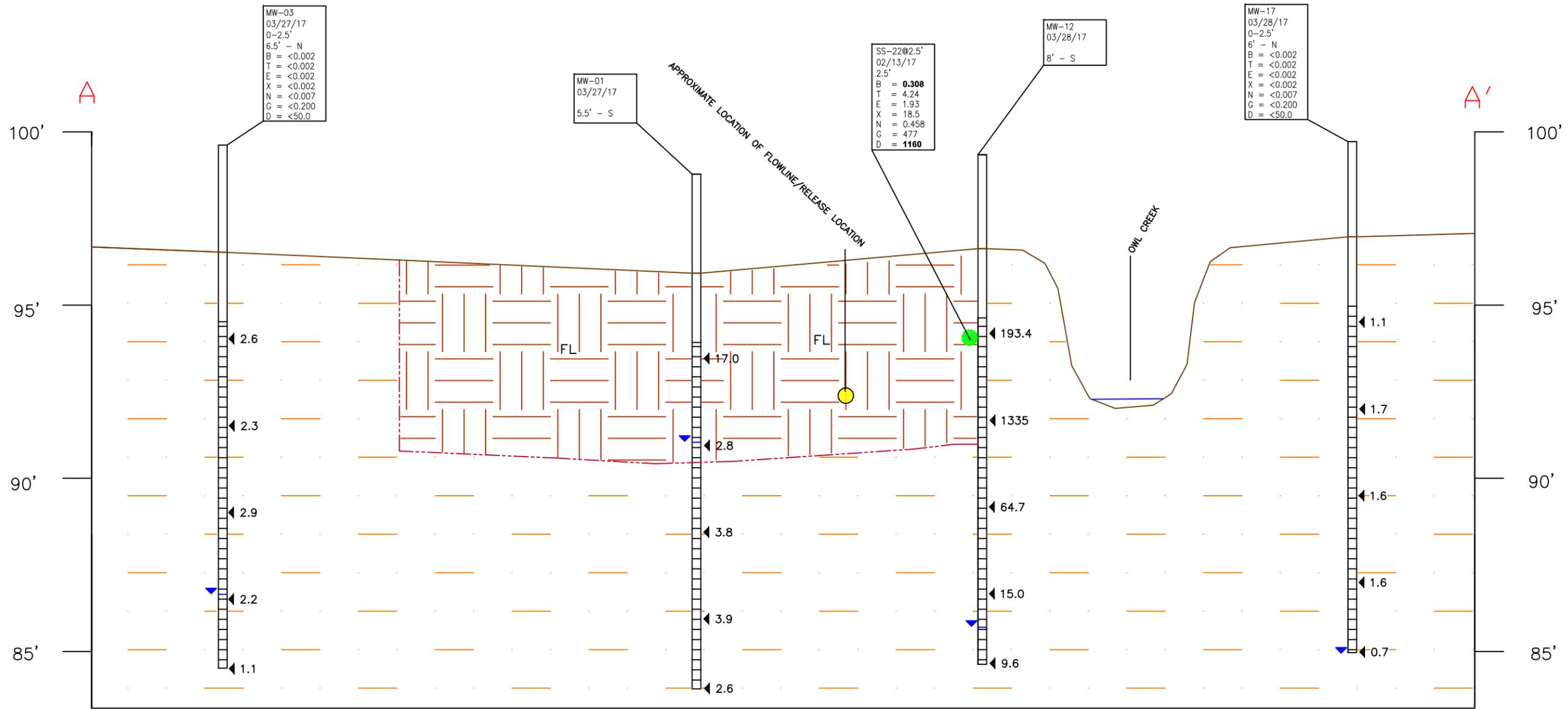
**MONITORING WELL SOIL ANALYTICAL MAP**  
 WARDLAW #20-28  
 FLOW LINE RELEASE  
 40.452377 / -104.550395  
 SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-22511  
 SPILL ID 449192

DATE  
04/24/17

FIG. NO. 7

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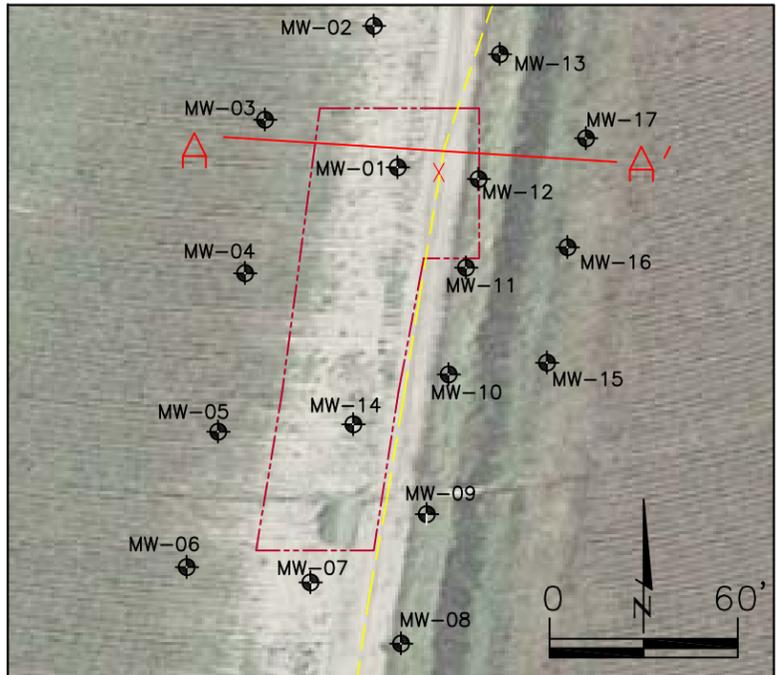
MW-03  
03/27/17  
0-2.5'  
6.5' - N  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
N = <0.007  
G = <0.200  
D = <50.0

MW-01  
03/27/17  
5.5' - S

SS-22@2.5'  
02/13/17  
2.5'  
B = **0.308**  
T = 4.24  
E = 1.93  
X = 18.5  
N = 0.458  
G = 477  
D = **1160**

MW-12  
03/28/17  
8' - S

MW-17  
03/28/17  
0-2.5'  
6' - N  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
N = <0.007  
G = <0.200  
D = <50.0



LEGEND	
	FILL (CLAY AND GRAVELS)
	SILTY SANDY CLAY
	GROUND SURFACE
	EXCAVATION BOUNDARIES
	OBSERVED CONTACT
	OBSERVED GROUNDWATER (03/28/17*)
	A—A' LINE OF CROSS SECTION

\*OBSERVED GROUNDWATER ELEVATIONS ON 03/28/17 NOT REFLECTIVE OF STATIC CONDITIONS

PARAMETERS	
SAMPLE LOCATION	DATE
DEPTH (FEET)	OFFSET FROM A-A'(FEET-DIRECTION)
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)	

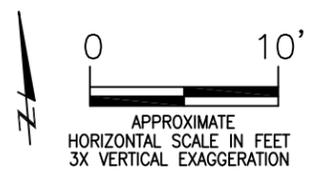
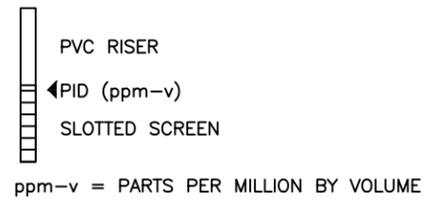
mg/kg = MILLIGRAMS PER KILOGRAM  
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS  
TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

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

VALUES PRESENTED IN **BOLD** CONTAINED CONCENTRATIONS EXCEEDING THE COGCC TABLE 910-1 STANDARDS

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION

NOTE: NO SOIL SAMPLES SUBMITTED FOR MW-01 AND MW-12. LOCATED WITHIN EXCAVATION (FILL DIRT)



**GEOLOGIC CROSS SECTION (A-A')**  
WARDLAW #20-28  
FLOW LINE RELEASE  
40.452377 / -104.550395  
SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-22511  
SPILL ID 449192





- LEGEND**
- APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
  - APPROXIMATE FLOW LINE LOCATION
  - APPROXIMATE EXCAVATION BOUNDARIES
  - APPROXIMATE MONITORING WELL LOCATIONS

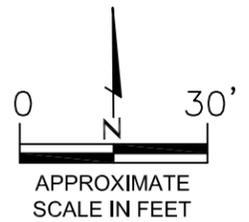
(4748.25) GROUNDWATER ELEVATION (FT.)

INFERRED GROUNDWATER ELEVATION CONTOUR (FT.)

APPROXIMATE GROUNDWATER FLOW DIRECTION

FT. = FEET

NOTE:  
 GROUNDWATER ELEVATION DATA WAS COLLECTED ON 03/28/17.  
 GROUNDWATER ELEVATION DATA COLLECTED FROM MONITORING WELLS MW-02, MW-03, MW-10, MW-11, MW-12, MW-13, MW-15, MW-16, MW-17 WAS NOT USED IN THE CONSTRUCTION OF INFERRED GROUNDWATER ELEVATION CONTOURS.



**GROUNDWATER ELEVATION MAP**  
 WARDLAW #20-28  
 FLOW LINE RELEASE  
 40.452377 / -104.550395  
 SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-22511  
 SPILL ID 449192

DATE  
04/24/17

FIG. NO.  
9

DRAWN BY  
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- LEGEND**
- APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
  - APPROXIMATE FLOW LINE LOCATION
  - APPROXIMATE EXCAVATION BOUNDARIES
  - APPROXIMATE MONITORING WELL LOCATIONS

**PARAMETERS**

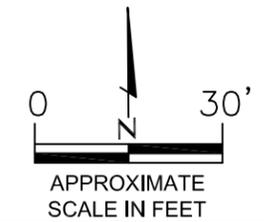
SAMPLE LOCATION  
 DATE  
 B = BENZENE (µg/L)  
 T = TOLUENE (µg/L)  
 E = ETHYLBENZENE (µg/L)  
 X = TOTAL XYLENES (µg/L)

µg/L = MICROGRAMS PER LITER

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

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

COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION



**MONITORING WELL GROUNDWATER ANALYTICAL MAP**  
 WARDLAW #20-28  
 FLOW LINE RELEASE  
 40.452377 / -104.550395  
 SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-22511  
 SPILL ID 449192

DATE  
04/24/17

FIG. NO.  
10

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MW-03  
03/30/17  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-01  
03/27/17  
B = **188**  
T = <4.00  
E = 12.6  
X = 327

MW-02  
03/30/17  
B = <1.00  
T = <1.00  
E = 6.58  
X = 43.4

MW-13  
03/30/17  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-04  
03/27/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-12  
03/30/17  
B = **210**  
T = 480  
E = 19.8  
X = 424

MW-17  
03/30/17  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-05  
03/27/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-11  
03/30/17  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-16  
03/30/17  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-06  
03/27/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-10  
03/28/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-15  
03/30/17  
B = <1.00  
T = <1.00  
E = <1.00  
X = <1.00

MW-07  
03/27/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

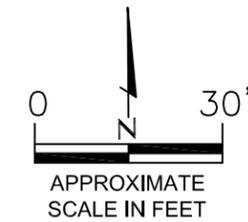
MW-08  
03/27/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-14  
03/28/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00

MW-09  
03/27/17  
B = <4.00  
T = <4.00  
E = <4.00  
X = <4.00



- LEGEND**
-  APPROXIMATE LOCATION OF UNINTENTIONAL RELEASE
  -  APPROXIMATE FLOW LINE LOCATION
  -  APPROXIMATE EXCAVATION BOUNDARIES
  -  APPROXIMATE MONITORING WELL LOCATIONS
  -  APPROXIMATE PASSIVE SOIL VAPOR EXTRACTION WELL LOCATIONS



**REMEDIAL WELL LOCATION MAP**  
 WARDLAW #20-28  
 FLOW LINE RELEASE  
 40.452377 / -104.550395  
 SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
 WELD COUNTY, COLORADO  
 API # 05-123-22511  
 SPILL ID 449192

DATE 04/24/17

FIG. NO. 11

DRAWN BY amn



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## **TABLES**

**Table 1: Soil Analytical Results Summary**

**Table 2: Water Analytical Results Summary**

**Table 3: Surface Water Removal Summary**

**Table 4: Groundwater Elevation Summary**

**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

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 @ 0-0.25' (40.452447524/-104.550227221)	02/09/17	0-0.25	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	60.6
SS-02 @ 0-0.25' (40.452349385/-104.550234539)	02/09/17	0-0.25	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-03 @ 0-0.25' (40.45225096/-104.550256109)	02/09/17	0-0.25	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
SS-04 @ 0-0.25' (40.452269542/-104.550446517)	02/09/17	0-0.25	<b>3.11</b>	33.3	10.3	116	7.71	<b>2110</b>	<b>10700</b>
SS-05 @ 0-0.25' (40.452438231/-104.550337801)	02/09/17	0-0.25	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-06 @ 0-0.25' (40.452359194/-104.550355944)	02/09/17	0-0.25	<b>0.910</b>	7.79	5.47	53.0	1.21	<b>820</b>	<b>1610</b>
SS-07 @ 0-0.25' (40.451329451/-104.550618245)	02/09/17	0-0.25	<0.002	0.003	0.005	0.013	<0.007	<0.200	<50.0
SS-08 @ 2.5' (40.452408473/-104.550377526)	02/10/17	2.5	<b>0.540</b>	12.4	2.14	37.4	0.590	<b>1310</b>	<b>1730</b>
SS-09 @ 2.5' (40.452381167/-104.550378831)	02/10/17	2.5	<b>0.982</b>	22.5	5.59	72.1	1.37	<b>2690</b>	<b>4000</b>
SS-10 @ 2.5' (40.452368941/-104.550381277)	02/10/17	2.5	<b>0.228</b>	2.59	0.826	10.8	0.504	432	<b>1220</b>
SS-11 @ 2.5' (40.452354426/-104.550505746)	02/11/17	2.5	<0.050	<0.050	<0.050	<0.050	0.218	<5.00	<50.0
SS-12 @ 2.5' (40.452420814/-104.550474765)	02/11/17	2.5	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-13 @ 2.5' (40.452438664/-104.550409312)	02/11/17	2.5	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-14 @ 2.5' (40.452451844/-104.550470629)	02/11/17	2.5	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-15 @ 2.5' (40.452280017/-104.550531153)	02/11/17	2.5	<0.050	0.144	<0.050	0.108	<0.175	<5.00	<50.0
SS-16 @ 2.5' (40.452200008/-104.550556068)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
SS-17 @ 2.5' (40.452141253/-104.550438293)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
SS-18 @ 2.5' (40.452208054/-104.550429149)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0

**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

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-19 @ 2.5' (40.452269681/-104.550416571)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
SS-20 @ 2.5' (40.452334006/-104.550387928)	02/13/17	2.5	<0.050	<0.050	<0.050	<0.050	<0.175	<5.00	<50.0
SS-21 @ 2.5' (40.452353541/-104.550366664)	02/13/17	2.5	0.058	0.670	0.660	8.19	0.349	152	<b>1010</b>
SS-22 @ 2.5' (40.452381911/-104.550361448)	02/13/17	2.5	<b>0.308</b>	4.24	1.93	18.5	0.458	477	<b>1160</b>
SS-23 @ 2.5' (40.452431894/-104.550373124)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	0.334	<50.0
SS-24 @ 2.5' (40.452119438/-104.550560733)	02/13/17	2.5	0.002	0.013	0.010	0.027	<0.007	0.211	<50.0
SS-25 @ 2.5' (40.452068747/-104.550529751)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
SS-26 @ 2.5' (40.452067728/-104.550497261)	02/13/17	2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0

**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

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>	
MW-02 @ 0-2.5' (40.452504816/-104.550455313)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-03 @ 0-2.5' (40.452454447/-104.550546129)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-04 @ 0-2.5' (40.452342502/-104.550577837)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-05 @ 0-2.5' (40.452208431/-104.550603406)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-06 @ 0-2.5' (40.452070696/-104.550630887)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-07 @ 0-2.5' (40.452002981/-104.55055025)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-08 @ 0-2.5' (40.451924937/-104.550467803)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-09 @ 0-2.5' (40.452077465/-104.550441169)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-10 @ 0-2.5' (40.452207178/-104.55040854)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-11 @ 0-2.5' (40.452321549/-104.550383609)	03/27/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-13 @ 0-2.5' (40.452664489/-104.550339323)	03/28/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-15 @ 0-2.5' (40.452232004/-104.550269649)	03/28/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-16 @ 0-2.5' (40.452334255/-104.550243785)	03/28/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<50.0
MW-17 @ 0-2.5' (40.452418346/-104.55022411)	03/28/17	0-2.5	<0.002	<0.002	<0.002	<0.002	<0.007	<0.200	<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 in **bold** typeface exceed their respective COGCC - Regulatory Limits (Table 910-1).

Values presented with a less than symbol (<) did not contain concentrations at or above the laboratory reporting limit.



**TABLE 2**  
**WATER ANALYTICAL RESULTS SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

Sample Location (Latitude/Longitude)	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Table 910-1 Regulatory Limits ( µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1400</b>
SW-01 (40.452432487/-104.550326268)	02/09/17	<1.00	2.54	<1.00	2.58
	02/13/17	<1.00	<1.00	<1.00	<1.00
	02/20/17	<1.00	<1.00	<1.00	<1.00
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-02 (40.451283697/-104.550667387)	02/09/17	<b>100</b>	514	54.9	659
	02/13/17	<b>11.3</b>	83.8	9.64	240
	02/20/17	<1.00	<1.00	<1.00	3.18
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-03 (40.451208284/-104.550759293)	02/09/17	<b>90.7</b>	459	48.8	605
	02/10/17	<b>6.24</b>	40.2	4.92	109
	02/13/17	<b>8.52</b>	42.8	4.36	152
	02/20/17	<1.00	<1.00	<1.00	2.45
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-04 (40.450779462/-104.551161230)	02/10/17	4.92	28.4	<4.00	90.9
	02/13/17	<b>6.80</b>	32.0	<4.00	147
	02/20/17	<1.00	<1.00	<1.00	1.49
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-05 (40.449982352/-104.551611892)	02/10/17	<4.00	8.20	<4.00	73.8
	02/13/17	<1.00	1.06	<1.00	22.8
	02/20/17	<1.00	<1.00	<1.00	<1.00
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-06 (40.449897202/-104.551692223)	02/10/17	<4.00	<4.00	<4.00	16.5
	02/13/17	<1.00	<1.00	<1.00	<1.00
	02/20/17	<1.00	<1.00	<1.00	<1.00
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-07 (40.449690628/-104.551677355)	02/10/17	<4.00	<4.00	<4.00	<4.00
	02/13/17	<1.00	<1.00	<1.00	<1.00
	02/20/17	<1.00	<1.00	<1.00	<1.00
	03/17/17	<1.00	<1.00	<1.00	<1.00

**TABLE 2**  
**WATER ANALYTICAL RESULTS SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

Sample Location (Latitude/Longitude)	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Table 910-1 Regulatory Limits ( µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1400</b>
SW-08 (40.448928873/-104.551685603)	02/10/17	<4.00	<4.00	<4.00	<4.00
	02/13/17	<1.00	<1.00	<1.00	<1.00
	02/20/17	<1.00	<1.00	<1.00	<1.00
	03/17/17	<1.00	<1.00	<1.00	<1.00
SW-09 (40.448299817/-104.551680172)	02/10/17	<4.00	<4.00	<4.00	<4.00
	02/13/17	<1.00	<1.00	<1.00	<1.00
	02/20/17	<1.00	<1.00	<1.00	<1.00
	03/17/17	<1.00	<1.00	<1.00	<1.00
GW-01	02/11/17	<b>434</b>	<b>1560</b>	138	<b>1530</b>
MW-01 (40.452393003/-104.550433142)	03/27/17	<b>188</b>	<4.00	12.6	327
MW-02 (40.452504816/-104.550455313)	03/30/17	<1.00	<1.00	6.58	43.4
MW-03 (40.452454447/-104.550546129)	03/30/17	<1.00	<1.00	<1.00	<1.00
MW-04 (40.452342502/-104.550577837)	03/27/17	<4.00	<4.00	<4.00	<4.00
MW-05 (40.452208431/-104.550603406)	03/27/17	<4.00	<4.00	<4.00	<4.00
MW-06 (40.452070696/-104.550630887)	03/27/17	<4.00	<4.00	<4.00	<4.00
MW-07 (40.452002981/-104.55055025)	03/27/17	<4.00	<4.00	<4.00	<4.00
MW-08 (40.451924937/-104.550467803)	03/27/17	<4.00	<4.00	<4.00	<4.00

**TABLE 2**  
**WATER ANALYTICAL RESULTS SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

Sample Location (Latitude/Longitude)	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Table 910-1 Regulatory Limits ( µg/L)</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1400</b>
MW-09 (40.452077465/-104.550441169)	03/27/17	<4.00	<4.00	<4.00	<4.00
MW-10 (40.452207178/-104.55040854)	03/28/17	<4.00	<4.00	<4.00	<4.00
MW-11 (40.452321549/-104.550383609)	03/30/17	<1.00	<1.00	<1.00	<1.00
MW-12 (40.45239442/-104.550368154)	03/30/17	<b>210</b>	480	19.8	424
MW-13 (40.452664489/-104.550339323)	03/30/17	<1.00	<1.00	<1.00	<1.00
MW-14 (40.452664489/-104.550339323)	03/28/17	<4.00	<4.00	<4.00	<4.00
MW-15 (40.452232004/-104.550269649)	03/30/17	<1.00	<1.00	<1.00	<1.00
MW-16 (40.452334255/-104.550243785)	03/30/17	<1.00	<1.00	<1.00	<1.00
MW-17 (40.452418346/-104.55022411)	03/30/17	<1.00	<1.00	<1.00	<1.00
COGCC = Colorado Oil and Gas Conservation Commission µg/L - micrograms per liter Note: Values presented with a less than symbol (<) indicate concentrations were not observed at or above the laboratory reporting limit.  Values presented in <b>bold</b> typeface exceed their respective COGCC - Regulatory Limits (Table 910-1).					

**TABLE 3  
GROUNDWATER ELEVATION SUMMARY  
WARDLAW #20-28  
FLOW LINE RELEASE  
40.452377 / -104.550395  
SE1/4 SE1/4 SEC.28 T6N R64W 6PM  
WELD COUNTY, COLORADO  
API # 05-123-22511  
SPILL ID: 449192**

Sample Location (Latitude/Longitude)	Date	TOC Elevation (feet)	Depth to Groundwater from TOC (feet)	Relative Groundwater Elevation (feet)	Depth to Groundwater (bgs) (feet)	Stickup Height (feet)
MW-01 (40.452393003/-104.550433142)	03/28/17	98.78	7.74	91.04	4.88	2.86
MW-02 (40.452504816/-104.550455313)	03/28/17	99.22	NM	NA	NA	2.92
	03/30/17		9.83	89.39	9.83	
MW-03 (40.452454447/-104.550546129)	03/28/17	99.62	NM	NA	NA	3.10
	03/30/17		12.97	86.65	9.87	
MW-04 (40.452342502/-104.550577837)	03/28/17	99.20	6.78	92.42	3.80	2.98
MW-05 (40.452208431/-104.550603406)	03/28/17	98.64	6.63	92.01	3.63	3.00
MW-06 (40.452070696/-104.550630887)	03/28/17	98.38	6.44	91.94	3.49	2.95
MW-07 (40.452002981/-104.55055025)	03/28/17	98.37	6.57	91.80	3.65	2.92
MW-08 (40.451924937/-104.550467803)	03/28/17	98.32	6.60	91.72	3.89	2.71
MW-09 (40.452077465/-104.550441169)	03/28/17	98.78	7.14	91.64	4.48	2.66
MW-10 (40.452207178/-104.55040854)	03/28/17	98.91	NM	NA	NA	2.83
MW-11 (40.452321549/-104.550383609)	03/28/17	99.27	NM	NA	NA	2.74
MW-12 (40.45239442/-104.550368154)	03/28/17	99.34	NM	NA	NA	2.71
	03/30/17		13.64	85.70	10.93	
MW-13 (40.452664489/-104.550339323)	03/28/17	100.00	NM	NA	NA	2.64
MW-14 (40.452664489/-104.550339323)	03/28/17	98.41	7.32	91.09	4.60	2.72

**TABLE 3**  
**GROUNDWATER ELEVATION SUMMARY**  
**WARDLAW #20-28**  
**FLOW LINE RELEASE**  
**40.452377 / -104.550395**  
**SE1/4 SE1/4 SEC.28 T6N R64W 6PM**  
**WELD COUNTY, COLORADO**  
**API # 05-123-22511**  
**SPILL ID: 449192**

Sample Location (Latitude/Longitude)	Date	TOC Elevation (feet)	Depth to Groundwater from TOC (feet)	Relative Groundwater Elevation (feet)	Depth to Groundwater (bgs) (feet)	Stickup Height (feet)
MW-15 (40.452232004/-104.550269649)	03/28/17	99.54	NM	NA	NA	2.82
MW-16 (40.452334255/-104.550243785)	03/28/17	99.73	NM	NA	NA	2.86
MW-17 (40.452418346/-104.55022411)	03/28/17	99.72	NM	NA	NA	2.75
NOTES: All wells completed as PVC stick ups. TOC = top of casing PVC = polyvinyl chloride NM = not measured bgs= below ground surface NA = not applicable						



## **ATTACHMENT A**

### **Soil Boring Logs/Monitoring Well Completion Diagrams**

# Boring Log/Well Completion Diagram: MW-01

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-5') Structural Fill					17.0	N/A			
4.5	wet @ ~4-4.5'		DP	1	80	2.8				
5	(5-5.5') Pea Gravel									
5.5	(5.5-12') sandy CLAY - brown, wet, stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand N/O N/S	CL	DP	2	100	3.8	N/A			
9.5						3.9				
10			DP	3	60	2.6	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1355/1410			
SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A			

# Boring Log/Well Completion Diagram: MW-02

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	70	1.4	N/A			
5	wet @ ~4-4.5'					1.7				
5	(4-8') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S					DP	2			70
10	(8-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S	DP	3	50	2.7	N/A				
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 945/1010			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1000			

# Boring Log/Well Completion Diagram: MW-03

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	75	2.6	N/A			
5	wet @ ~4-4.5'					2.3				
5	(4-8') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S					2.9				
10	(8-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S	DP	2	75	2.2	N/A				
10		DP	3	50	1.1	N/A				
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017	SAND PACK INTERVAL (FEET): 1.5-12
PROJECT: WARDLAW #20-28	BENTONITE/GROUT INTERVAL (FEET): 0-1.5
LOGGED BY: A. ROMANSKY	WELL SCREEN INTERVAL (FEET): 2-12
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE	WELL DIAMETER (INCHES): 1
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12
PID INSTRUMENT: MiniRAE 3000 - PID #6	
TIME STARTED/COMPLETED: 1015/1035	
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1020	



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# Boring Log/Well Completion Diagram: MW-04

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	80	1.8	N/A			
5	wet @ ~4-4.5'					0.7				
5	(4-8') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 35% fine to medium grained sand N/O N/S					DP	2			100
10	(8-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S	DP	3	50	1.7	N/A				
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.                  4101 INCA STREET, DENVER, CO 80211                  Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1035/1050			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1040			

# Boring Log/Well Completion Diagram: MW-05

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	70	3.1	N/A			
5	wet @ ~4-4.5'					1.7				
5	(4-8') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S					2.1				
10	(8-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S	DP	2	80		1.9	N/A			
10		DP	3	50		1.7	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE 03/27/2017	SAND PACK INTERVAL (FEET): 1.5-12
PROJECT: WARDLAW #20-28	BENTONITE/GROUT INTERVAL (FEET): 0-1.5
LOGGED BY: A. ROMANSKY	WELL SCREEN INTERVAL (FEET): 2-12
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE	WELL DIAMETER (INCHES): 1
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12
PID INSTRUMENT: MiniRAE 3000 - PID #6	
TIME STARTED/COMPLETED: 1050/1105	
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1055	



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# Boring Log/Well Completion Diagram: MW-06

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	75	2.7	N/A			
5	wet @ ~4-4.5'					3.2				
5	(4-8') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S					DP	2			90
10	(8-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S	DP	3	60	2.5			N/A		
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017	SAND PACK INTERVAL (FEET): 1.5-12
PROJECT: WARDLAW #20-28	BENTONITE/GROUT INTERVAL (FEET): 0-1.5
LOGGED BY: A. ROMANSKY	WELL SCREEN INTERVAL (FEET): 2-12
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE	WELL DIAMETER (INCHES): 1
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12
PID INSTRUMENT: MiniRAE 3000 - PID #6	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449
TIME STARTED/COMPLETED: 1105/1130	
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1110	

# Boring Log/Well Completion Diagram: MW-07

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	75	2.7	N/A			
5	wet @ ~4-4.5'					3.1				
5	(4-11') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S					2.9				
10	(11-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S	DP	2	80		2.7	N/A			
10		DP	3	40		2.4	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.                  4101 INCA STREET, DENVER, CO 80211                  Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1140/1155			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1145			

# Boring Log/Well Completion Diagram: MW-08

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S	CL	DP	1	70	1.3	N/A			
5	wet @ ~4-4.5' (4-11') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S					1.1				
10	(11-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S					2.6				
						2.0				
	BoB @ 12'					1.5	N/A			
15										
20										
25										
30										

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1300/1315			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1305			

# Boring Log/Well Completion Diagram: MW-09

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff, moderate plasticity, well graded w/ 10% fine to medium grained sand, 20% silt N/O N/S  wet @ ~4-4.5'	CL	DP	1	75	1.4	N/A			
5	(4-10') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 25% fine to medium grained sand N/O N/S			2	75	1.6				N/A
10	(10-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S			3	50	0.9	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1155/1225			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1200			

# Boring Log/Well Completion Diagram: MW-10

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-12') sandy CLAY - brown, dry-wet, very stiff, low-moderate plasticity, well graded w/ 10% fine to medium grained sand N/O N/S  wet @ ~4-4.5'	CL	DP	1	70	2.0	N/A			
5				2	100	4.2				N/A
10				3	60	2.8	N/A			
12	BoB @ 12'									
15										
20										
25										
30										

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.                  4101 INCA STREET, DENVER, CO 80211                  Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1315/1335			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1320			

# Boring Log/Well Completion Diagram: MW-11

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-12') sandy CLAY - brown, dry-wet, very stiff, low-moderate plasticity, well graded w/ 10% fine to medium grained sand N/O N/S  wet @ ~4-4.5'	CL	DP	1	90	2.8	N/A			
3.4										
5			DP	2	100	2.9	N/A			
2.5										
10			DP	3	60	2.3	N/A			
12			BoB @ 12'							
15										
20										
25										
30										

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b> ENVIRONMENTAL CONSULTING, INC. 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1335/1355			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1340			

# Boring Log/Well Completion Diagram: MW-12

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-3.5') Structural Fill					193.4	N/A			
3.5-12'	sandy CLAY - brown, moist-wet, very stiff, low-moderate plasticity, well graded w/ 10-15% fine to medium grained sand strong odor, N/S @3-6'		DP	1	75	1335	N/A			
4.5	wet @ ~4-4.5'	CL				64.7	N/A			
7.5	N/O N/S @7.5'		DP	2	100	15.0	N/A			
10			DP	3	50	9.6	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/27/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.                  4101 INCA STREET, DENVER, CO 80211                  Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1415/1435			
SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A			

# Boring Log/Well Completion Diagram: MW-13

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff-stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand, 10% silt N/O N/S  wet @ ~4-4.5'	CL	DP	1	90	4.4	N/A			
5	(4-5') sandy CLAY - brown, wet, soft, moderate plasticity, well graded w/ 15-20% fine to medium grained sand N/O N/S					2.3				
10	(5-12') sandy CLAY - brown, wet, very stiff, low-moderate plasticity, well graded w/ 10-15% fine to medium grained sand N/O N/S					0.9	N/A			
		0.7								
	BoB @ 12'		DP	3	75	0.4	N/A			

HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground surface

START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b> ENVIRONMENTAL CONSULTING, INC. 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1150/1215			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1200			

# Boring Log/Well Completion Diagram: MW-14

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-5') Structural Fill					1.3	N/A			
4.5	wet @ ~4-4.5'		DP	1	70	1.5	N/A			
5	(5-5.5') Pea Gravel									
5.5	(5.5-8') sandy CLAY - brown, wet, soft-medium stiff, moderate plasticity, well graded w/ 20% fine to medium grained sand N/O N/S	CL	DP	2	100	1.7	N/A			
8	(8-12') sandy CLAY - brown, dry, very stiff, low-moderate plasticity, well graded w/ 10% fine to medium grained sand N/O N/S					2.4	N/A			
10			DP	3	70	0.5	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1130/1150			
SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A			

# Boring Log/Well Completion Diagram: MW-15

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-3') silty sandy CLAY - brown, moist-wet, medium stiff-stiff, low-moderate plasticity, well graded w/ 15-20% fine to medium grained sand, 10% silt N/O N/S	CL	DP	1	75	1.1	N/A			
3-5	(3-5') sandy CLAY - brown, moist-wet, soft, low plasticity, well graded w/ 25-30% fine to medium grained sand N/O N/S wet @ ~4-4.5'					1.3				
5-12	(5-12') sandy CLAY - brown, wet, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S		DP	2	100	1.5	N/A			
10		1.7								
10-12		DP	3	70	0.8	N/A				
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.                  4101 INCA STREET, DENVER, CO 80211                  Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1035/1100			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1045			

# Boring Log/Well Completion Diagram: MW-16

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-4') silty sandy CLAY - brown, moist-wet, medium stiff-stiff, low-moderate plasticity, well graded w/ 15-20% fine to medium grained sand, 10% silt N/O N/S  wet @ ~4-4.5'	CL	DP	1	75	0.4	N/A			
5				2	100	0.5				N/A
10				3	70	0.3	N/A			
12	BoB @ 12'									

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.</p> 4101 INCA STREET, DENVER, CO 80211 Ph: 303-433-0479 • F: 303-325-5449	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1005/1035			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1010			

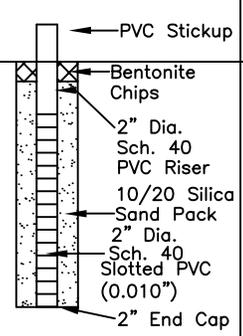
# Boring Log/Well Completion Diagram: MW-17

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0	(0-5') silty sandy CLAY - brown, moist-wet, medium stiff-stiff, low-moderate plasticity, well graded w/ 15-20% fine to medium grained sand, 10% silt N/O N/S  wet @ ~4-4.5'	CL	DP	1	70	1.1	N/A			
5						1.7				
5						(5-12') sandy CLAY - brown, wet, very stiff, low-moderate plasticity, well graded w/ 15% fine to medium grained sand N/O N/S				DP
10			DP	3	60	0.7	N/A			
12	BoB @ 12'									
15										
20										
25										
30										

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

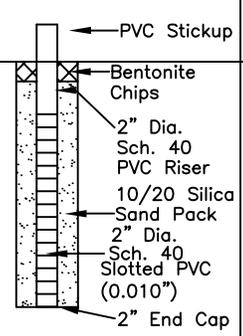
START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 1.5-12	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-1.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 2-12	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 1	
BORING DEPTH (FEET): 12	WELL DEPTH (FEET): 12	<p><b>EAGLE</b>                  ENVIRONMENTAL                  CONSULTING, INC.                  4101 INCA STREET, DENVER, CO 80211                  Ph: 303-433-0479 • F: 303-325-5449</p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 940/1005			
SAMPLE COLLECTION DEPTH (FEET)/TIME: 0-2.5'/1000			

# Boring Log/Well Completion Diagram: SVE-01

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0								 <p>                     PVC Stickup                      Bentonite Chips                      2" Dia. Sch. 40 PVC Riser                      10/20 Silica Sand Pack                      2" Dia. Sch. 40 Slotted PVC (0.010")                      2" End Cap                 </p>	HC - Hydrocarbon BoB - Bottom of Boring N/O - no odor N/S - no staining TOC - top of casing bgs - below ground surface	
5										
6	BoB @ 6'									
10										
15										
20										
25										
30										

START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 0.5-6	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-0.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 1-6	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 2	
BORING DEPTH (FEET): 6	WELL DEPTH (FEET): 6	 <p> <b>EAGLE</b>                      ENVIRONMENTAL                      CONSULTING, INC.                      4101 INCA STREET, DENVER, CO 80211                      Ph: 303-433-0479 • F: 303-325-5449                 </p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1230/1245			
SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A			

# Boring Log/Well Completion Diagram: SVE-02

DEPTH (FT)	LITHOLOGY	SAMPLE				OVM/OVA (PPM)	BLOW COUNT (per 0.5 FT)	DEPTH (FT)	WELL CONSTRUCTION DETAIL	COMMENTS
	DESCRIPTION	GRAPHIC LOG	TYPE	NUMBER	RECOVERY %					
0								 <p>                     PVC Stickup                      Bentonite Chips                      2" Dia. Sch. 40 PVC Riser                      10/20 Silica Sand Pack                      2" Dia. Sch. 40 Slotted PVC (0.010")                      2" End Cap                 </p>		
5										
6	BoB @ 6'									
10										
15										
20										
25										
30										

HC - Hydrocarbon  
 BoB - Bottom of Boring  
 N/O - no odor  
 N/S - no staining  
 TOC - top of casing  
 bgs - below ground surface

START/COMPLETION DATE 03/28/2017		SAND PACK INTERVAL (FEET): 0.5-6	
PROJECT: WARDLAW #20-28		BENTONITE/GROUT INTERVAL (FEET): 0-0.5	
LOGGED BY: A. ROMANSKY		WELL SCREEN INTERVAL (FEET): 1-6	
DRILLING COMPANY/EQUIPMENT: EAGLE/GEOPROBE		WELL DIAMETER (INCHES): 2	
BORING DEPTH (FEET): 6	WELL DEPTH (FEET): 6	 <p> <b>EAGLE</b>                      ENVIRONMENTAL                      CONSULTING, INC.                      4101 INCA STREET, DENVER, CO 80211                      Ph: 303-433-0479 • F: 303-325-5449                 </p>	
PID INSTRUMENT: MiniRAE 3000 - PID #6			
TIME STARTED/COMPLETED: 1245/1300			
SAMPLE COLLECTION DEPTH (FEET)/TIME: N/A			

## **ATTACHMENT B**

### **Laboratory Analytical Reports**

February 10, 2017

Eagle Environmental Consulting, Inc.

Robin Lockwood

4101 Inca Street

Denver CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. February 09, 2017. This project is associated with Origins project number X702195-01.

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



Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Robin Lockwood

Project Number: [none]

Project: Noble - Wardlaw #20-28

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-01@0-0.25'	X702195-01	Soil	February 9, 2017 12:25	02/09/2017 16:27
SS-02@0-0.25'	X702195-02	Soil	February 9, 2017 12:35	02/09/2017 16:27
SS-03@0-0.25'	X702195-03	Soil	February 9, 2017 12:42	02/09/2017 16:27
SS-04@0-0.25'	X702195-04	Soil	February 9, 2017 13:05	02/09/2017 16:27
SS-05@0-0.25'	X702195-05	Soil	February 9, 2017 13:10	02/09/2017 16:27
SS-06@0-0.25'	X702195-06	Soil	February 9, 2017 13:15	02/09/2017 16:27
SS-07@0-0.25'	X702195-07	Soil	February 9, 2017 13:20	02/09/2017 16:27
SW-01	X702195-08	Water	February 9, 2017 11:55	02/09/2017 16:27
SW-02	X702195-09	Water	February 9, 2017 12:05	02/09/2017 16:27
SW-03	X702195-10	Water	February 9, 2017 12:15	02/09/2017 16:27

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X70

Client: Eagle Env. Consulting Inc.

Client Project ID: Wardlaw # 20-28

Checklist Completed by: Dorlee

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

Date/time completed: 2-9-12 1658

Airbill #: \_\_\_\_\_

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

Cooler Number/Temperature: 1 / 3.2 °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"/>		see below
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):	Sample jars ship 55-04... and end at 55-08... COC ends at 55-07... COC is accurate as confirmed by Andrew Newberry and jars will be labeled based off sample times.			

<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 [Signature] (Project Manager)

2-9-12 1724  
 Date/Time Reviewed

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-01@0-0.25'

2/9/2017 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-01 (Soil)

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

Diesel (C10-C28)	60.6	50.0	mg/kg	1	B7B0902	02/09/2017	02/09/2017	
Surrogate: o-Terphenyl	72.1 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B0901	02/09/2017	02/09/2017	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	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	107 %	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-02@0-0.25'

2/9/2017 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-02 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B0902	02/09/2017	02/09/2017	U
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Surrogate: o-Terphenyl	65.6 %	59-131			"	"	"	
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**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B0901	02/09/2017	02/10/2017	U
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Benzene	ND	0.050	"	"	"	"	"	U
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Toluene	ND	0.050	"	"	"	"	"	U
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Ethylbenzene	ND	0.050	"	"	"	"	"	U
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Xylenes, total	ND	0.050	"	"	"	"	"	U
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Naphthalene	ND	0.175	"	"	"	"	"	U
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Surrogate: 1,2-Dichloroethane-d4	87.3 %	70-130			"	"	"	
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Surrogate: Toluene-d8	101 %	70-130			"	"	"	
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Surrogate: 4-Bromofluorobenzene	106 %	70-130			"	"	"	
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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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-03@0-0.25'

2/9/2017 12:42:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-03 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B0902	02/09/2017	02/09/2017	U
Surrogate: o-Terphenyl	56.1 %	59-131			"	"	"	S-DUP

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B0901	02/09/2017	02/09/2017	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	99.9 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-04@0-0.25'

2/9/2017 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-04 (Soil)

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

Diesel (C10-C28)	10700	500	mg/kg	10	B7B0902	02/09/2017	02/10/2017	
Surrogate: o-Terphenyl	77.8 %	59-131			"	"	02/09/2017	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	2110	50.0	mg/kg	250	B7B0901	02/09/2017	02/09/2017	
Benzene	3.11	0.498	"	"	"	"	"	
Toluene	33.3	0.498	"	"	"	"	"	
Ethylbenzene	10.3	0.498	"	"	"	"	"	
Xylenes, total	116	0.498	"	"	"	"	"	
Naphthalene	7.71	1.75	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	92.5 %	70-130			"	"	"	
Surrogate: Toluene-d8	83.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	114 %	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-05@0-0.25'

2/9/2017 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-05 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B0902	02/09/2017	02/09/2017	U
Surrogate: o-Terphenyl	56.1 %	59-131			"	"	"	S-DUP

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B0901	02/09/2017	02/09/2017	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Naphthalene	ND	0.175	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	96.0 %	70-130			"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-06@0-0.25'

2/9/2017 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-06 (Soil)

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

Diesel (C10-C28)	1610	50.0	mg/kg	1	B7B0902	02/09/2017	02/09/2017	
Surrogate: o-Terphenyl	69.5 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	820	50.0	mg/kg	250	B7B0901	02/09/2017	02/09/2017	
Benzene	0.910	0.050	"	25	"	"	02/10/2017	
Toluene	7.79	0.050	"	"	"	"	"	
Ethylbenzene	5.47	0.050	"	"	"	"	"	
Xylenes, total	53.0	0.498	"	250	"	"	02/09/2017	
Naphthalene	1.21	0.175	"	25	"	"	02/10/2017	
Surrogate: 1,2-Dichloroethane-d4	88.2 %	70-130			"	"	"	
Surrogate: Toluene-d8	93.6 %	70-130			"	"	02/09/2017	
Surrogate: 4-Bromofluorobenzene	105 %	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-07@0-0.25'

2/9/2017 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702195-07 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B0902	02/09/2017	02/09/2017	U
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Surrogate: o-Terphenyl	60.0 %	59-131			"	"	"	
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**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B0901	02/09/2017	02/10/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	<b>0.003</b>	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.005</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.013</b>	0.002	"	"	"	"	"	
Naphthalene	ND	0.007	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.4 %	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-01**

**2/9/2017 11:55:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702195-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B0905	02/09/2017	02/09/2017	U
Toluene	<b>2.54</b>	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	<b>2.58</b>	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	84.9 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	84-114			"	"	"	

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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-02**

**2/9/2017 12:05:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702195-09 (Water)**

**BTEX by EPA 8260C**

Benzene	100	1.00	ug/L	1	B7B0905	02/09/2017	02/09/2017	
Toluene	514	4.00	"	4	"	"	02/09/2017	
Ethylbenzene	54.9	1.00	"	1	"	"	02/09/2017	
Xylenes, total	659	4.00	"	4	"	"	02/09/2017	
Surrogate: 1,2-Dichloroethane-d4	86.4 %	84-121			"	"	02/09/2017	
Surrogate: Toluene-d8	104 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**SW-03**

**2/9/2017 12:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702195-10 (Water)**

**BTEX by EPA 8260C**

Benzene	90.7	1.00	ug/L	1	B7B0905	02/09/2017	02/09/2017	
Toluene	459	4.00	"	4	"	"	02/09/2017	
Ethylbenzene	48.8	1.00	"	1	"	"	02/09/2017	
Xylenes, total	605	4.00	"	4	"	"	02/09/2017	
Surrogate: 1,2-Dichloroethane-d4	92.1 %	84-121			"	"	02/09/2017	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)</b>										
<b>Blank (B7B0901-BLK1)</b>										
Prepared: 02/09/2017 Analyzed: 02/09/2017										
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	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	58		"	62.5		92.0	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.6	70-130			

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**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 B7B0901 - EPA 5030 (soil)</b>										
<b>Blank (B7B0901-BLK2)</b>										
Prepared: 02/09/2017 Analyzed: 02/09/2017										
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	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.9	70-130			

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**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 B7B0901 - EPA 5030 (soil)</b>										
<b>Blank (B7B0901-BLK3)</b>										
Prepared: 02/09/2017 Analyzed: 02/09/2017										
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	59		ug/kg	62.5		94.2	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.1	70-130			

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**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 B7B0901 - EPA 5030 (soil)</b>										
<b>Blank (B7B0901-BLK4)</b>										
Prepared: 02/09/2017 Analyzed: 02/09/2017										
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	62		ug/kg	62.5		98.5	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.8	70-130			

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**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 B7B0901 - EPA 5030 (soil)

**LCS (B7B0901-BS1)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Benzene	0.102	0.002	mg/kg	0.100		102	70-130			
Toluene	0.101	0.002	"	0.100		101	70-130			
Ethylbenzene	0.104	0.002	"	0.100		104	70-130			
m,p-Xylene	0.209	0.004	"	0.200		104	70-130			
o-Xylene	0.105	0.002	"	0.100		105	70-130			
Naphthalene	0.088	0.007	"	0.100		87.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.1	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)</b>										
<b>LCS (B7B0901-BS2)</b>										
Prepared: 02/09/2017 Analyzed: 02/09/2017										
Benzene	0.084	0.002	mg/kg	0.100		84.2	70-130			
Toluene	0.088	0.002	"	0.100		87.9	70-130			
Ethylbenzene	0.091	0.002	"	0.100		90.8	70-130			
m,p-Xylene	0.184	0.004	"	0.200		91.9	70-130			
o-Xylene	0.090	0.002	"	0.100		89.7	70-130			
Naphthalene	0.081	0.007	"	0.100		80.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	66		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.9	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

**LCS (B7B0901-BS3)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Benzene	0.091	0.002	mg/kg	0.100		91.2	70-130			
Toluene	0.117	0.002	"	0.100		117	70-130			
Ethylbenzene	0.107	0.002	"	0.100		107	70-130			
m,p-Xylene	0.220	0.004	"	0.200		110	70-130			
o-Xylene	0.107	0.002	"	0.100		107	70-130			
Naphthalene	0.096	0.007	"	0.100		95.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	47		ug/kg	62.5		75.8	70-130			
Surrogate: Toluene-d8	72		"	62.5		114	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		95.0	70-130			

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**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 B7B0901 - EPA 5030 (soil)

**LCS (B7B0901-BS4)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Benzene	0.098	0.002	mg/kg	0.100		98.4	70-130			
Toluene	0.104	0.002	"	0.100		104	70-130			
Ethylbenzene	0.103	0.002	"	0.100		103	70-130			
m,p-Xylene	0.213	0.004	"	0.200		107	70-130			
o-Xylene	0.107	0.002	"	0.100		107	70-130			
Naphthalene	0.099	0.007	"	0.100		98.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	51		ug/kg	62.5		82.2	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.1	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

Matrix Spike (B7B0901-MS1)	Source: X702183-01			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.084	0.002	mg/kg	0.100	ND	84.4	70-130			
Toluene	0.094	0.002	"	0.100	ND	93.7	70-130			
Ethylbenzene	0.088	0.002	"	0.100	ND	87.7	70-130			
m,p-Xylene	0.179	0.004	"	0.200	0.001	88.8	70-130			
o-Xylene	0.112	0.002	"	0.100	0.010	102	70-130			
Naphthalene	0.083	0.007	"	0.100	ND	83.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	50		ug/kg	62.5		80.4	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	73		"	62.5		117	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

Matrix Spike (B7B0901-MS2)	Source: X702183-02			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.094	0.002	mg/kg	0.100	ND	93.9	70-130			
Toluene	0.088	0.002	"	0.100	ND	88.5	70-130			
Ethylbenzene	0.081	0.002	"	0.100	0.002	79.1	70-130			
m,p-Xylene	0.152	0.004	"	0.200	0.007	72.5	70-130			
o-Xylene	0.164	0.002	"	0.100	0.060	104	70-130			
Naphthalene	0.076	0.007	"	0.100	0.001	75.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	53		ug/kg	62.5		85.2	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.1	70-130			
Surrogate: 4-Bromofluorobenzene	72		"	62.5		115	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

Matrix Spike (B7B0901-MS3)	Source: X702183-03			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.099	0.002	mg/kg	0.100	ND	99.3	70-130			
Toluene	0.107	0.002	"	0.100	ND	107	70-130			
Ethylbenzene	0.089	0.002	"	0.100	ND	88.8	70-130			
m,p-Xylene	0.182	0.004	"	0.200	ND	91.2	70-130			
o-Xylene	0.095	0.002	"	0.100	0.006	88.8	70-130			
Naphthalene	0.096	0.007	"	0.100	ND	95.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	57		ug/kg	62.5		91.9	70-130			
Surrogate: Toluene-d8	70		"	62.5		113	70-130			
Surrogate: 4-Bromofluorobenzene	54		"	62.5		86.6	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

Matrix Spike (B7B0901-MS4)	Source: X702183-04			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.102	0.002	mg/kg	0.100	ND	102	70-130			
Toluene	0.113	0.002	"	0.100	ND	113	70-130			
Ethylbenzene	0.094	0.002	"	0.100	ND	93.9	70-130			
m,p-Xylene	0.182	0.004	"	0.200	ND	91.2	70-130			
o-Xylene	0.096	0.002	"	0.100	ND	96.1	70-130			
Naphthalene	0.088	0.007	"	0.100	ND	88.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.1	70-130			
Surrogate: Toluene-d8	72		"	62.5		116	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.0	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

Matrix Spike Dup (B7B0901-MSD1)	Source: X702183-01			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.098	0.002	mg/kg	0.100	ND	97.7	70-130	14.6	20	
Toluene	0.102	0.002	"	0.100	ND	102	70-130	8.46	20	
Ethylbenzene	0.093	0.002	"	0.100	ND	93.4	70-130	6.29	20	
m,p-Xylene	0.206	0.004	"	0.200	0.001	102	70-130	14.3	20	
o-Xylene	0.122	0.002	"	0.100	0.010	112	70-130	8.90	20	
Naphthalene	0.088	0.007	"	0.100	ND	88.5	70-130	6.05	20	
Surrogate: 1,2-Dichloroethane-d4	52		ug/kg	62.5		83.8	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	71		"	62.5		113	70-130			

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**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 B7B0901 - EPA 5030 (soil)

Matrix Spike Dup (B7B0901-MSD2)	Source: X702183-02			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.097	0.002	mg/kg	0.100	ND	96.9	70-130	3.15	20	
Toluene	0.089	0.002	"	0.100	ND	89.4	70-130	1.03	20	
Ethylbenzene	0.074	0.002	"	0.100	0.002	71.8	70-130	9.40	20	
m,p-Xylene	0.158	0.004	"	0.200	0.007	75.8	70-130	4.18	20	
o-Xylene	0.183	0.002	"	0.100	0.060	123	70-130	11.1	20	
Naphthalene	0.079	0.007	"	0.100	0.001	78.1	70-130	3.99	20	
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.1	70-130			
Surrogate: 4-Bromofluorobenzene	79		"	62.5		126	70-130			

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**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 B7B0901 - EPA 5030 (soil)

Matrix Spike Dup (B7B0901-MSD3)	Source: X702183-03			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.086	0.002	mg/kg	0.100	ND	86.5	70-130	13.8	20	
Toluene	0.098	0.002	"	0.100	ND	97.6	70-130	8.74	20	
Ethylbenzene	0.086	0.002	"	0.100	ND	85.9	70-130	3.39	20	
m,p-Xylene	0.170	0.004	"	0.200	ND	85.2	70-130	6.78	20	
o-Xylene	0.092	0.002	"	0.100	0.006	86.6	70-130	2.35	20	
Naphthalene	0.084	0.007	"	0.100	ND	84.3	70-130	12.7	20	
Surrogate: 1,2-Dichloroethane-d4	46		ug/kg	62.5		73.2	70-130			
Surrogate: Toluene-d8	61		"	62.5		96.9	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		90.6	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0901 - EPA 5030 (soil)

Matrix Spike Dup (B7B0901-MSD4)	Source: X702183-04			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	0.100	0.002	mg/kg	0.100	ND	100	70-130	1.76	20	
Toluene	0.105	0.002	"	0.100	ND	105	70-130	7.26	20	
Ethylbenzene	0.098	0.002	"	0.100	ND	98.3	70-130	4.60	20	
m,p-Xylene	0.189	0.004	"	0.200	ND	94.7	70-130	3.73	20	
o-Xylene	0.102	0.002	"	0.100	ND	102	70-130	6.25	20	
Naphthalene	0.079	0.007	"	0.100	ND	79.3	70-130	10.4	20	
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		111	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.7	70-130			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0905 - EPA 5030B (Water)**

**Blank (B7B0905-BLK1)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.7	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	84-114			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Robin Lockwood

Project Number: [none]

Project: Noble - Wardlaw #20-28

**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 B7B0905 - EPA 5030B (Water)

LCS (B7B0905-BS1)

Prepared: 02/09/2017 Analyzed: 02/09/2017

Benzene	50.2	1.00	ug/L	50.0		100	73.3-129			
Toluene	50.4	1.00	"	50.0		101	76.2-123			
Ethylbenzene	49.0	1.00	"	50.0		98.0	73.6-130			
m,p-Xylene	97.7	2.00	"	100		97.7	76.1-126			
o-Xylene	48.7	1.00	"	50.0		97.5	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5		86.9	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		110	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0905 - EPA 5030B (Water)

Matrix Spike (B7B0905-MS1)	Source: X702141-01			Prepared: 02/09/2017 Analyzed: 02/09/2017						
Benzene	59.7	1.00	ug/L	50.0	ND	119	74-130			
Toluene	62.2	1.00	"	50.0	ND	124	73-131			
Ethylbenzene	58.1	1.00	"	50.0	ND	116	76-132			
m,p-Xylene	115	2.00	"	100	ND	115	69-139			
o-Xylene	57.0	1.00	"	50.0	ND	114	74-131			
Surrogate: 1,2-Dichloroethane-d4	51		"	62.5		81.7	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		108	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0905 - EPA 5030B (Water)

Matrix Spike Dup (B7B0905-MSD1)	Source: X702141-01				Prepared: 02/09/2017 Analyzed: 02/09/2017					
Benzene	54.6	1.00	ug/L	50.0	ND	109	74-130	8.86	20	
Toluene	56.9	1.00	"	50.0	ND	114	73-131	8.97	20	
Ethylbenzene	55.1	1.00	"	50.0	ND	110	76-132	5.25	20	
m,p-Xylene	109	2.00	"	100	ND	109	69-139	5.29	20	
o-Xylene	52.8	1.00	"	50.0	ND	106	74-131	7.66	20	
Surrogate: 1,2-Dichloroethane-d4	52		"	62.5		83.4	84-121			
Surrogate: Toluene-d8	65		"	62.5		104	85-115			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0902 - EPA 3580**

**Blank (B7B0902-BLK1)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 47 " 50.0 94.4 59-131

**Blank (B7B0902-BLK2)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 61 " 50.0 121 59-131

**Blank (B7B0902-BLK3)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 49 " 50.0 97.1 59-131

**Blank (B7B0902-BLK4)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 35 " 50.0 70.3 59-131

**LCS (B7B0902-BS1)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Diesel (C10-C28) 963 50.0 mg/kg 1000 96.3 64-121

Surrogate: o-Terphenyl 43 " 50.0 86.1 59-131

**LCS (B7B0902-BS2)**

Prepared: 02/09/2017 Analyzed: 02/09/2017

Diesel (C10-C28) 799 50.0 mg/kg 1000 79.9 64-121

Surrogate: o-Terphenyl 35 " 50.0 70.6 59-131

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0902 - EPA 3580</b>										
<b>LCS (B7B0902-BS3)</b>					Prepared: 02/09/2017 Analyzed: 02/09/2017					
Diesel (C10-C28)	813	50.0	mg/kg	1000		81.3	64-121			
Surrogate: o-Terphenyl	35		"	50.0		69.8	59-131			
<b>LCS (B7B0902-BS4)</b>					Prepared: 02/09/2017 Analyzed: 02/09/2017					
Diesel (C10-C28)	1010	50.0	mg/kg	1000		101	64-121			
Surrogate: o-Terphenyl	45		"	50.0		90.7	59-131			
<b>Matrix Spike (B7B0902-MS1)</b>					<b>Source: X702183-01</b>		Prepared: 02/09/2017 Analyzed: 02/09/2017			
Diesel (C10-C28)	1030	50.0	mg/kg	1000	ND	103	53-125			
Surrogate: o-Terphenyl	46		"	50.0		91.5	59-131			
<b>Matrix Spike (B7B0902-MS2)</b>					<b>Source: X702183-02</b>		Prepared: 02/09/2017 Analyzed: 02/09/2017			
Diesel (C10-C28)	830	50.0	mg/kg	1000	ND	83.0	53-125			
Surrogate: o-Terphenyl	41		"	50.0		82.5	59-131			
<b>Matrix Spike (B7B0902-MS3)</b>					<b>Source: X702183-03</b>		Prepared: 02/09/2017 Analyzed: 02/09/2017			
Diesel (C10-C28)	1040	50.0	mg/kg	1000	ND	104	53-125			
Surrogate: o-Terphenyl	47		"	50.0		94.0	59-131			
<b>Matrix Spike (B7B0902-MS4)</b>					<b>Source: X702183-04</b>		Prepared: 02/09/2017 Analyzed: 02/09/2017			
Diesel (C10-C28)	931	50.0	mg/kg	1000	ND	93.1	53-125			
Surrogate: o-Terphenyl	45		"	50.0		89.2	59-131			
<b>Matrix Spike Dup (B7B0902-MSD1)</b>					<b>Source: X702183-01</b>		Prepared: 02/09/2017 Analyzed: 02/09/2017			
Diesel (C10-C28)	842	50.0	mg/kg	1000	ND	84.2	53-125	20.3	20	QR-02
Surrogate: o-Terphenyl	36		"	50.0		72.3	59-131			
<b>Matrix Spike Dup (B7B0902-MSD2)</b>					<b>Source: X702183-02</b>		Prepared: 02/09/2017 Analyzed: 02/09/2017			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B0902 - EPA 3580</b>										
<b>Matrix Spike Dup (B7B0902-MSD2)</b>			<b>Source: X702183-02</b>			Prepared: 02/09/2017 Analyzed: 02/09/2017				
Diesel (C10-C28)	1030	50.0	mg/kg	1000	ND	103	53-125	21.9	20	QR-02
Surrogate: o-Terphenyl	44		"	50.0		88.5	59-131			
<b>Matrix Spike Dup (B7B0902-MSD3)</b>			<b>Source: X702183-03</b>			Prepared: 02/09/2017 Analyzed: 02/09/2017				
Diesel (C10-C28)	856	50.0	mg/kg	1000	ND	85.6	53-125	19.0	20	
Surrogate: o-Terphenyl	45		"	50.0		89.8	59-131			
<b>Matrix Spike Dup (B7B0902-MSD4)</b>			<b>Source: X702183-04</b>			Prepared: 02/09/2017 Analyzed: 02/09/2017				
Diesel (C10-C28)	1070	50.0	mg/kg	1000	ND	107	53-125	14.3	20	
Surrogate: o-Terphenyl	48		"	50.0		96.4	59-131			

Origins Laboratory, Inc.



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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

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

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.

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.*

February 11, 2017

Eagle Environmental Consulting, Inc.

Robin Lockwood

4101 Inca Street

Denver CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. February 10, 2017. This project is associated with Origins project number X702213-01.

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



Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Robin Lockwood

Project Number: [none]

Project: Noble - Wardlaw #20-28

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-08@2.5'	X702213-01	Soil	February 10, 2017 13:00	02/10/2017 16:10
SS-09@2.5'	X702213-02	Soil	February 10, 2017 13:05	02/10/2017 16:10
SS-10@2.5'	X702213-03	Soil	February 10, 2017 13:10	02/10/2017 16:10
SW-03	X702213-04	Water	February 10, 2017 12:00	02/10/2017 16:10
SW-04	X702213-05	Water	February 10, 2017 12:07	02/10/2017 16:10
SW-05	X702213-06	Water	February 10, 2017 12:15	02/10/2017 16:10
SW-06	X702213-07	Water	February 10, 2017 12:23	02/10/2017 16:10
SW-07	X702213-08	Water	February 10, 2017 12:30	02/10/2017 16:10
SW-08	X702213-09	Water	February 10, 2017 12:38	02/10/2017 16:10
SW-09	X702213-10	Water	February 10, 2017 12:45	02/10/2017 16:10

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28



www.originslaboratory.com

X702213

page 1 of 1

Client: EAGLE ENV CONSULTING  
 Address: 4101 Inca St  
Denver, CO  
 Telephone Number: 303 435 6479  
 Email Address: rlockwood@eagle-env.com

Project Manager: ROBIN LOCKWOOD - REFER TO ONLY  
 Project Name: WARDLAW #20-28  
 Project Number: AC/A  
 Samples Collected By: AC/A

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	As Summ #	Other	Gr 20	DRC	Zn/Flt/Black		
SS-08 @ 2.5'	2/10/14	1300	2	X					X				X	X	X	* CAPTED
SS-09 @ 2.5'		1305	1													* CAPTED
SS-10 @ 2.5'		1310	1													* CAPTED
SW-03		1200	3		X				X							
SW-04		1207	1													
SW-05		1215	1													
SW-06		1225	1													
SW-07		1230	1													
SW-08		1258	1													
SW-09		1245	1													
Relinquished By: <u>[Signature]</u>	Date: 2/10/12	Time: 1610	Time: 1610	Received By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: 2-10-17	Date: 2-10-17	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"/>								

Temp Received: 57  
 Date Results Needed: 2/20/16  
 BELL TO MCOB

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X702213

Client: Eagle

Client Project ID: Wardlaw #20-28

Checklist Completed by: J. Henderson

Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/16/17 1652

Airbill #: NA

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

Cooler Number/Temperature: 1 15.7 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe)

Thermometer ID: T603

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>	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)?</sup>	X			
Was adequate sample volume provided <sup>(1)?</sup>	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)?</sup>		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)?</sup>	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)?</sup>	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)?</sup>	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)?</sup>	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>		X		
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)	X			HCl
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 [Signature] (Project Manager)

2-10-17 1737  
 Date/Time Reviewed

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-08@2.5'

2/10/2017 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702213-01 (Soil)

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

Diesel (C10-C28)	1730	50.0	mg/kg	1	B7B1007	02/10/2017	02/10/2017	
Surrogate: o-Terphenyl	115 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	1310	50.0	mg/kg	250	B7B1006	02/10/2017	02/10/2017	
Benzene	0.540	0.050	"	25	"	"	02/10/2017	
Toluene	12.4	0.498	"	250	"	"	02/10/2017	
Ethylbenzene	2.14	0.050	"	25	"	"	02/10/2017	
Xylenes, total	37.4	0.498	"	250	"	"	02/10/2017	
Napthalene	0.590	0.175	"	25	"	"	02/10/2017	
Surrogate: 1,2-Dichloroethane-d4	88.9 %	70-130			"	"	02/10/2017	
Surrogate: Toluene-d8	105 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-09@2.5'

2/10/2017 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X702213-02 (Soil)

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

Diesel (C10-C28)	4000	50.0	mg/kg	1	B7B1007	02/10/2017	02/10/2017	
Surrogate: <i>o</i> -Terphenyl	107 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	2690	50.0	mg/kg	250	B7B1006	02/10/2017	02/10/2017	
Benzene	0.982	0.050	"	25	"	"	02/10/2017	
Toluene	22.5	0.498	"	250	"	"	02/10/2017	
Ethylbenzene	5.59	0.050	"	25	"	"	02/10/2017	
Xylenes, total	72.1	0.498	"	250	"	"	02/10/2017	
Napthalene	1.37	0.175	"	25	"	"	02/10/2017	
Surrogate: 1,2-Dichloroethane-d4	87.0 %	70-130			"	"	02/10/2017	
Surrogate: Toluene-d8	105 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	107 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-10@2.5'**

**2/10/2017 1:10:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-03 (Soil)**

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

Diesel (C10-C28)	1220	50.0	mg/kg	1	B7B1007	02/10/2017	02/10/2017	
Surrogate: <i>o</i> -Terphenyl	96.1 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	432	5.00	mg/kg	25	B7B1006	02/10/2017	02/10/2017	
Benzene	0.228	0.050	"	"	"	"	"	
Toluene	2.59	0.050	"	"	"	"	"	
Ethylbenzene	0.826	0.050	"	"	"	"	"	
Xylenes, total	10.8	0.050	"	"	"	"	"	
Naphthalene	0.504	0.175	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	87.1 %	70-130			"	"	02/10/2017	
Surrogate: Toluene-d8	99.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	108 %	70-130			"	"	"	

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 Project: Noble - Wardlaw #20-28

**SW-03**

**2/10/2017 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-04 (Water)**

**BTEX by EPA 8260C**

Benzene	6.24	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	
Toluene	40.2	4.00	"	"	"	"	"	
Ethylbenzene	4.92	4.00	"	"	"	"	"	
Xylenes, total	109	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	85.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	103 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	108 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**SW-04**

**2/10/2017 12:07:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-05 (Water)**

**BTEX by EPA 8260C**

Benzene	4.92	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	
Toluene	28.4	4.00	"	"	"	"	"	
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	90.9	4.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	88.8 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-05**

**2/10/2017 12:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-06 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	U
Toluene	<b>8.20</b>	4.00	"	"	"	"	"	
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	<b>73.8</b>	4.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	89.5 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	107 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**SW-06**

**2/10/2017 12:23:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-07 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	<b>16.5</b>	4.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	89.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	111 %	84-114			"	"	"	

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**SW-07**

**2/10/2017 12:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	93.2 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	84-114			"	"	"	

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**SW-08**

**2/10/2017 12:38:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-09 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	91.1 %	84-121			"	"	"	
Surrogate: Toluene-d8	103 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	111 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**SW-09**

**2/10/2017 12:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702213-10 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7B1005	02/10/2017	02/10/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	93.0 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.2 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1005 - EPA 5030B (Water)**

**Blank (B7B1005-BLK1)**

Prepared: 02/10/2017 Analyzed: 02/10/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5	90.5		84-121			
Surrogate: Toluene-d8	64		"	62.5	103		85-115			
Surrogate: 4-Bromofluorobenzene	68		"	62.5	109		84-114			

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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1005 - EPA 5030B (Water)

**LCS (B7B1005-BS1)**

Prepared: 02/10/2017 Analyzed: 02/10/2017

Benzene	48.3	1.00	ug/L	50.0		96.5	73.3-129			
Toluene	50.0	1.00	"	50.0		100	76.2-123			
Ethylbenzene	46.5	1.00	"	50.0		92.9	73.6-130			
m,p-Xylene	93.0	2.00	"	100		93.0	76.1-126			
o-Xylene	46.7	1.00	"	50.0		93.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	52		"	62.5		83.6	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	84-114			

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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1005 - EPA 5030B (Water)

Matrix Spike (B7B1005-MS1)	Source: X702166-01			Prepared: 02/10/2017 Analyzed: 02/10/2017						
Benzene	44.6	1.00	ug/L	50.0	ND	89.2	74-130			
Toluene	44.9	1.00	"	50.0	ND	89.8	73-131			
Ethylbenzene	41.0	1.00	"	50.0	ND	82.1	76-132			
m,p-Xylene	82.4	2.00	"	100	ND	82.4	69-139			
o-Xylene	41.0	1.00	"	50.0	ND	82.1	74-131			
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5		86.0	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	84-114			

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 Project: Noble - Wardlaw #20-28

**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 B7B1005 - EPA 5030B (Water)

Matrix Spike Dup (B7B1005-MSD1)	Source: X702166-01				Prepared: 02/10/2017 Analyzed: 02/10/2017					
Benzene	42.1	1.00	ug/L	50.0	ND	84.2	74-130	5.70	20	
Toluene	42.6	1.00	"	50.0	ND	85.1	73-131	5.31	20	
Ethylbenzene	39.4	1.00	"	50.0	ND	78.7	76-132	4.15	20	
m,p-Xylene	76.8	2.00	"	100	ND	76.8	69-139	7.06	20	
o-Xylene	39.7	1.00	"	50.0	ND	79.4	74-131	3.27	20	
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.4	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	84-114			

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1006 - EPA 5030 (soil)**

**Blank (B7B1006-BLK1)**

Prepared: 02/10/2017 Analyzed: 02/10/2017

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	58		ug/kg	62.5		92.8	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		111	70-130			

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1006 - EPA 5030 (soil)

LCS (B7B1006-BS1)

Prepared: 02/10/2017 Analyzed: 02/10/2017

Benzene	0.106	0.002	mg/kg	0.100		106	70-130			
Toluene	0.107	0.002	"	0.100		107	70-130			
Ethylbenzene	0.101	0.002	"	0.100		101	70-130			
m,p-Xylene	0.200	0.004	"	0.200		100	70-130			
o-Xylene	0.101	0.002	"	0.100		101	70-130			
Naphthalene	0.111	0.007	"	0.100		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	52		ug/kg	62.5		83.7	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		108	70-130			

Origins Laboratory, Inc.



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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1006 - EPA 5030 (soil)

Matrix Spike (B7B1006-MS1)	Source: X702209-01			Prepared: 02/10/2017 Analyzed: 02/10/2017						
Benzene	0.098	0.002	mg/kg	0.100	ND	98.3	70-130			
Toluene	0.098	0.002	"	0.100	ND	97.6	70-130			
Ethylbenzene	0.091	0.002	"	0.100	ND	90.9	70-130			
m,p-Xylene	0.183	0.004	"	0.200	ND	91.4	70-130			
o-Xylene	0.095	0.002	"	0.100	ND	95.0	70-130			
Naphthalene	0.089	0.007	"	0.100	ND	89.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	54		ug/kg	62.5		86.8	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	70-130			

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1006 - EPA 5030 (soil)

Matrix Spike Dup (B7B1006-MSD1)	Source: X702209-01			Prepared: 02/10/2017 Analyzed: 02/10/2017						
Benzene	0.088	0.002	mg/kg	0.100	ND	87.6	70-130	11.4	20	
Toluene	0.091	0.002	"	0.100	ND	90.7	70-130	7.27	20	
Ethylbenzene	0.085	0.002	"	0.100	ND	84.9	70-130	6.80	20	
m,p-Xylene	0.174	0.004	"	0.200	ND	87.2	70-130	4.69	20	
o-Xylene	0.088	0.002	"	0.100	ND	88.4	70-130	7.13	20	
Naphthalene	0.088	0.007	"	0.100	ND	87.9	70-130	1.38	20	
Surrogate: 1,2-Dichloroethane-d4	53		ug/kg	62.5		84.1	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.7	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	70-130			

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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1007 - EPA 3580**

**Blank (B7B1007-BLK1)**

Prepared: 02/10/2017 Analyzed: 02/10/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

48			"	50.0		96.1	59-131			
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**LCS (B7B1007-BS1)**

Prepared: 02/10/2017 Analyzed: 02/10/2017

Diesel (C10-C28)	977	50.0	mg/kg	1000		97.7	64-121			
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Surrogate: o-Terphenyl

46			"	50.0		91.9	59-131			
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**Matrix Spike (B7B1007-MS1)**

**Source: X702209-01**

Prepared: 02/10/2017 Analyzed: 02/10/2017

Diesel (C10-C28)	1060	50.0	mg/kg	1000	ND	106	53-125			
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Surrogate: o-Terphenyl

49			"	50.0		97.3	59-131			
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**Matrix Spike Dup (B7B1007-MSD1)**

**Source: X702209-01**

Prepared: 02/10/2017 Analyzed: 02/10/2017

Diesel (C10-C28)	1100	50.0	mg/kg	1000	ND	110	53-125	3.48	20	
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Surrogate: o-Terphenyl

53			"	50.0		105	59-131			
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

4101 Inca Street

Denver CO 80211

Robin Lockwood

Project Number: [none]

Project: Noble - Wardlaw #20-28

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### Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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---

Noelle Doyle Mathis, President



February 13, 2017

Eagle Environmental Consulting, Inc.

Robin Lockwood

4101 Inca Street

Denver

CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. February 11, 2017. This project is associated with Origins project number X702227-01.

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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-11@2.5'	X702227-01	Soil	February 11, 2017 11:15	02/11/2017 15:15
SS-12@2.5'	X702227-02	Soil	February 11, 2017 11:25	02/11/2017 15:15
SS-13@2.5'	X702227-03	Soil	February 11, 2017 12:05	02/11/2017 15:15
SS-14@2.5'	X702227-04	Soil	February 11, 2017 12:15	02/11/2017 15:15
SS-15@2.5'	X702227-05	Soil	February 11, 2017 13:25	02/11/2017 15:15
GW-01	X702227-06	Water	February 11, 2017 13:30	02/11/2017 15:15

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X702227

Client: Eagle Environmental  
 Client Project ID: Noble - Wardlaw #20-28

Checklist Completed by: Joe Henderson

Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/11/17 1533

Airbill #: 0A

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

Cooler Number/Temperature: 1 / 2.1 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °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> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>		X		
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)	X			HCL
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)

2/11/17  
 Date/Time Reviewed

Origins Laboratory, Inc.



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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-11@2.5'**  
**2/11/2017 11:15:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702227-01 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1103	02/11/2017	02/11/2017	U
Surrogate: <i>o</i> -Terphenyl	103 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B1102	02/11/2017	02/11/2017	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U
Napthalene	<b>0.218</b>	0.175	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	100 %	70-130			"	"	"	
Surrogate: Toluene-d8	94.8 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	70-130			"	"	"	

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-12@2.5'**  
**2/11/2017 11:25:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702227-02 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1103	02/11/2017	02/11/2017	U
<i>Surrogate: o-Terphenyl</i>	88.8 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B1102	02/11/2017	02/11/2017	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
<i>Surrogate: 1,2-Dichloroethane-d4</i>	97.2 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	102 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	98.7 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-13@2.5'**  
**2/11/2017 12:05:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702227-03 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1103	02/11/2017	02/11/2017	U
<i>Surrogate: o-Terphenyl</i>	103 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B1102	02/11/2017	02/11/2017	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
<i>Surrogate: 1,2-Dichloroethane-d4</i>	99.2 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	100 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	99.4 %	70-130			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-14@2.5'**  
**2/11/2017 12:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702227-04 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1103	02/11/2017	02/11/2017	U
<i>Surrogate: o-Terphenyl</i>	100 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B1102	02/11/2017	02/11/2017	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
<i>Surrogate: 1,2-Dichloroethane-d4</i>	105 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	96.2 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	95.0 %	70-130			"	"	"	

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 Denver CO 80211

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-15@2.5'**  
**2/11/2017 1:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702227-05 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1103	02/11/2017	02/11/2017	U
<i>Surrogate: o-Terphenyl</i>	108 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B1102	02/11/2017	02/11/2017	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	<b>0.144</b>	0.050	"	"	"	"	"	
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	<b>0.108</b>	0.050	"	"	"	"	"	
Naphthalene	ND	0.175	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	101 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	101 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**GW-01**  
**2/11/2017 1:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702227-06 (Water)**

**BTEX by EPA 8260C**

Benzene	434	4.00	ug/L	4	B7B1101	02/11/2017	02/11/2017	
Toluene	1560	50.0	"	50	"	"	02/11/2017	
Ethylbenzene	138	4.00	"	4	"	"	02/11/2017	
Xylenes, total	1530	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	103 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	84-114			"	"	"	

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1101 - EPA 5030B (Water)**

**Blank (B7B1101-BLK1)**

Prepared: 02/11/2017 Analyzed: 02/11/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5	99.8		84-121			
Surrogate: Toluene-d8	71		"	62.5	113		85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	98.4		84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1101 - EPA 5030B (Water)**

**LCS (B7B1101-BS1)**

Prepared: 02/11/2017 Analyzed: 02/11/2017

Benzene	42.5	1.00	ug/L	50.0		85.0	73.3-129			
Toluene	44.7	1.00	"	50.0		89.4	76.2-123			
Ethylbenzene	45.4	1.00	"	50.0		90.8	73.6-130			
m,p-Xylene	90.2	2.00	"	100		90.2	76.1-126			
o-Xylene	44.8	1.00	"	50.0		89.6	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.9	84-121			
Surrogate: Toluene-d8	66		"	62.5		106	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1101 - EPA 5030B (Water)**

<b>Matrix Spike (B7B1101-MS1)</b>	<b>Source: X702169-01</b>			<b>Prepared: 02/11/2017 Analyzed: 02/11/2017</b>						
Benzene	46.5	1.00	ug/L	50.0	ND	93.0	74-130			
Toluene	44.9	1.00	"	50.0	ND	89.8	73-131			
Ethylbenzene	46.2	1.00	"	50.0	ND	92.4	76-132			
m,p-Xylene	91.6	2.00	"	100	ND	91.6	69-139			
o-Xylene	45.2	1.00	"	50.0	ND	90.4	74-131			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1101 - EPA 5030B (Water)**

Matrix Spike Dup (B7B1101-MSD1)	Source: X702169-01			Prepared: 02/11/2017 Analyzed: 02/11/2017						
Benzene	48.1	1.00	ug/L	50.0	ND	96.3	74-130	3.40	20	
Toluene	46.6	1.00	"	50.0	ND	93.3	73-131	3.85	20	
Ethylbenzene	47.6	1.00	"	50.0	ND	95.3	76-132	3.03	20	
m,p-Xylene	94.5	2.00	"	100	ND	94.5	69-139	3.16	20	
o-Xylene	47.0	1.00	"	50.0	ND	94.1	74-131	3.99	20	
Surrogate: 1,2-Dichloroethane-d4	55		"	62.5		88.7	84-121			
Surrogate: Toluene-d8	62		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1102 - EPA 5030 (soil)**

**Blank (B7B1102-BLK1)**

Prepared: 02/11/2017 Analyzed: 02/11/2017

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	62		"	62.5		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.6	70-130			

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1102 - EPA 5030 (soil)**

**LCS (B7B1102-BS1)**

Prepared: 02/11/2017 Analyzed: 02/11/2017

Benzene	0.102	0.002	mg/kg	0.100		102	70-130			
Toluene	0.099	0.002	"	0.100		98.6	70-130			
Ethylbenzene	0.097	0.002	"	0.100		96.8	70-130			
m,p-Xylene	0.191	0.004	"	0.200		95.5	70-130			
o-Xylene	0.095	0.002	"	0.100		94.9	70-130			
Naphthalene	0.101	0.007	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		96.4	70-130			
Surrogate: Toluene-d8	62		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.5	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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1102 - EPA 5030 (soil)

Matrix Spike (B7B1102-MS1)	Source: X702227-02			Prepared: 02/11/2017 Analyzed: 02/11/2017						
Benzene	0.113	0.002	mg/kg	0.100	ND	113	70-130			
Toluene	0.111	0.002	"	0.100	ND	111	70-130			
Ethylbenzene	0.115	0.002	"	0.100	ND	115	70-130			
m,p-Xylene	0.225	0.004	"	0.200	ND	112	70-130			
o-Xylene	0.108	0.002	"	0.100	ND	108	70-130			
Naphthalene	0.098	0.007	"	0.100	ND	97.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	70-130			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1102 - EPA 5030 (soil)

Matrix Spike Dup (B7B1102-MSD1)	Source: X702227-02			Prepared: 02/11/2017 Analyzed: 02/11/2017						
Benzene	0.111	0.002	mg/kg	0.100	ND	111	70-130	1.88	20	
Toluene	0.111	0.002	"	0.100	ND	111	70-130	0.721	20	
Ethylbenzene	0.108	0.002	"	0.100	ND	108	70-130	6.46	20	
m,p-Xylene	0.217	0.004	"	0.200	ND	108	70-130	3.57	20	
o-Xylene	0.105	0.002	"	0.100	ND	105	70-130	2.81	20	
Naphthalene	0.104	0.007	"	0.100	ND	104	70-130	6.45	20	
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.7	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	70-130			

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1103 - EPA 3580**

**Blank (B7B1103-BLK1)**

Prepared: 02/11/2017 Analyzed: 02/11/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
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Surrogate: o-Terphenyl

51	"	50.0	102	59-131
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**LCS (B7B1103-BS1)**

Prepared: 02/11/2017 Analyzed: 02/11/2017

Diesel (C10-C28)	1110	50.0	mg/kg	1000	ND	111	64-121			
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Surrogate: o-Terphenyl

55	"	50.0	110	59-131
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**Matrix Spike (B7B1103-MS1)**

Source: X702227-01

Prepared: 02/11/2017 Analyzed: 02/11/2017

Diesel (C10-C28)	1060	50.0	mg/kg	1000	ND	106	53-125			
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Surrogate: o-Terphenyl

53	"	50.0	106	59-131
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**Matrix Spike Dup (B7B1103-MSD1)**

Source: X702227-01

Prepared: 02/11/2017 Analyzed: 02/11/2017

Diesel (C10-C28)	967	50.0	mg/kg	1000	ND	96.7	53-125	9.61	20	
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Surrogate: o-Terphenyl

45	"	50.0	89.5	59-131
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4101 Inca Street  
Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

---

Jen Pellegrini For Noelle Doyle Mathis, President



February 14, 2017

Eagle Environmental Consulting, Inc.

Robin Lockwood

4101 Inca Street

Denver

CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. February 13, 2017. This project is associated with Origins project number X702237-01.

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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW-01	X702237-01	Water	February 13, 2017 10:20	02/13/2017 14:50
SW-02	X702237-02	Water	February 13, 2017 10:25	02/13/2017 14:50
SW-03	X702237-03	Water	February 13, 2017 10:31	02/13/2017 14:50
SW-04	X702237-04	Water	February 13, 2017 10:36	02/13/2017 14:50
SW-05	X702237-05	Water	February 13, 2017 10:41	02/13/2017 14:50
SW-06	X702237-06	Water	February 13, 2017 10:47	02/13/2017 14:50
SW-07	X702237-07	Water	February 13, 2017 10:52	02/13/2017 14:50
SW-08	X702237-08	Water	February 13, 2017 10:57	02/13/2017 14:50
SW-09	X702237-09	Water	February 13, 2017 11:01	02/13/2017 14:50
SS-16@2.5'	X702237-10	Soil	February 13, 2017 9:05	02/13/2017 14:50
SS-17@2.5'	X702237-11	Soil	February 13, 2017 9:30	02/13/2017 14:50
SS-18@2.5'	X702237-12	Soil	February 13, 2017 9:40	02/13/2017 14:50
SS-19@2.5'	X702237-13	Soil	February 13, 2017 9:50	02/13/2017 14:50
SS-20@2.5'	X702237-14	Soil	February 13, 2017 10:35	02/13/2017 14:50

Origins Laboratory, Inc.



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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-21@2.5'	X702237-15	Soil	February 13, 2017 10:40	02/13/2017 14:50
SS-22@2.5'	X702237-16	Soil	February 13, 2017 10:45	02/13/2017 14:50
SS-23@2.5'	X702237-17	Soil	February 13, 2017 10:50	02/13/2017 14:50
SS-24@2.5'	X702237-18	Soil	February 13, 2017 11:50	02/13/2017 14:50
SS-25@2.5'	X702237-19	Soil	February 13, 2017 11:55	02/13/2017 14:50
SS-26@2.5'	X702237-20	Soil	February 13, 2017 12:00	02/13/2017 14:50

Collection times for samples SW-02 through SW-09 added per the email from Robin on 02/14/17.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

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7202231

page 1 of 2

**ORIGINS**  
 LABORATORY, INC

Client: Eagle Env. Consulting, Inc.  
 Address: 4101 Inca Street  
 Telephone Number: 303-433-0479  
 Email Address: rlk@eagle-enviro.com

Project Manager: Robin Lockwood - Report to only  
 Project Name: Wardlaw #20-28  
 Project Number: -  
 Samples Collected By: AN/AR

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 #	Other	GPO	DPO		Metals/trace		
SW-01	2/13/17	1020	3	X				X					X				
SW-02																	
SW-03																	
SW-04																	
SW-05																	
SW-06																	
SW-07																	
SW-08																	
SW-09																	
SS-16 @ 2.5'		905	2	X						X			X				
Relinquished By:	Date: 2/13/17	Time: 1450															
Relinquished By:	Date: 2/13/17	Time: 1450															

Temp Received: 20  
 Date Results Needed: Noble

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

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X702237

page 2 of 2

**ORIGINS**  
 LABORATORY, INC

Client: ROBIN LOCKWOOD CONSULTING  
 Address: 4101 INCA ST DENVER CO  
 Telephone Number: 303 433 0479  
 Email Address: rlockwood@eagle-environment.com  
 Project Manager: ROBIN LOCKWOOD - REFER TO CDR  
 Project Name: WARDLAW #20-28  
 Project Number: ---  
 Samples Collected By: RLW

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 #	Other	GC/MS	DRC		LAB/INSTR
55-17 @ 2.5'	2/13/17	930	2	X				X				X	X		
55-18 @ 2.5'		940													
55-19 @ 2.5'		950													
55-20 @ 2.5'		1035													
55-21 @ 2.5'		1040													
55-22 @ 2.5'		1045													
55-23 @ 2.5'		1050													
55-24 @ 2.5'		1150													
55-25 @ 2.5'		1155													
55-26 @ 2.5'		1200													
Relinquished By: <u>[Signature]</u>	Date: 2/13/17	Time: 1450		Received By: <u>[Signature]</u>	Date: 2/13/17	Time: 1450		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"/>							

Temp Received: 2.0 Date Results Needed: NONE  
 BRU TO JACOB

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

Origins Laboratory, Inc.

*Jefe Pellegrini*

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X702237

Client: Eagle Environmental

Client Project ID: Wardlaw #20-28

Checklist Completed by: Joe Henderson

Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/13/17 1458

Airbill #: NA

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

Cooler Number/Temperature: 1 / 7.0 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe)

Thermometer ID: T603

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> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			No sample times for Sed-2 through Sed-9
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	Y			
For volatiles in water — is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
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)	Y			HCL
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) [Signature]

2-13-17 1526  
 Date/Time Reviewed

Origins Laboratory, Inc.

Joe Pellegrini

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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-01**  
**2/13/2017 10:20:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-01 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B1306	02/13/2017	02/14/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	100 %	84-121			"	"	"	
Surrogate: Toluene-d8	94.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.7 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-02**  
**2/13/2017 10:25:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-02 (Water)**

**BTEX by EPA 8260C**

Benzene	11.3	4.00	ug/L	4	B7B1306	02/13/2017	02/14/2017	
Toluene	83.8	4.00	"	"	"	"	"	
Ethylbenzene	9.64	4.00	"	"	"	"	"	
Xylenes, total	240	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.8 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-03**

**2/13/2017 10:31:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-03 (Water)**

**BTEX by EPA 8260C**

Benzene	8.52	4.00	ug/L	4	B7B1306	02/13/2017	02/14/2017	
Toluene	42.8	4.00	"	"	"	"	"	
Ethylbenzene	4.36	4.00	"	"	"	"	"	
Xylenes, total	152	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"	
Surrogate: Toluene-d8	96.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.2 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-04**

**2/13/2017 10:36:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-04 (Water)**

**BTEX by EPA 8260C**

Benzene	6.80	4.00	ug/L	4	B7B1306	02/13/2017	02/14/2017	
Toluene	32.0	4.00	"	"	"	"	"	
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	147	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	"	
Surrogate: Toluene-d8	96.2 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-05**

**2/13/2017 10:41:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-05 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B1306	02/13/2017	02/14/2017	U
Toluene	<b>1.06</b>	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	<b>22.8</b>	1.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.1 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-06**  
**2/13/2017 10:47:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-06 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B1306	02/13/2017	02/14/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	"	
Surrogate: Toluene-d8	94.4 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-07**

**2/13/2017 10:52:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-07 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B1306	02/13/2017	02/14/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

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4101 Inca Street  
Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-08**  
**2/13/2017 10:57:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B1306	02/13/2017	02/14/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.9 %	84-114			"	"	"	

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-09**  
**2/13/2017 11:01:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-09 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B1306	02/13/2017	02/14/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.5 %	84-114			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-16@2.5'

2/13/2017 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X702237-10 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
Surrogate: o-Terphenyl	90.7 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B1301	02/13/2017	02/13/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	114 %	70-130			"	"	"	
Surrogate: Toluene-d8	105 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	86.1 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-17@2.5'**  
**2/13/2017 9:30:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-11 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
<i>Surrogate: o-Terphenyl</i>	100 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B1301	02/13/2017	02/13/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	121 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	83.6 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	97.4 %	70-130			"	"	"	

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

SS-18@2.5'

2/13/2017 9:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X702237-12 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
Surrogate: o-Terphenyl	82.3 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B1301	02/13/2017	02/13/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	122 %	70-130			"	"	"	
Surrogate: Toluene-d8	117 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-19@2.5'**  
**2/13/2017 9:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-13 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
<i>Surrogate: o-Terphenyl</i>	98.6 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B1301	02/13/2017	02/13/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	124 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	109 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	80.7 %	70-130			"	"	"	

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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-20@2.5'**  
**2/13/2017 10:35:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-14 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
<i>Surrogate: o-Terphenyl</i>	92.7 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B7B1301	02/13/2017	02/13/2017	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
<i>Surrogate: 1,2-Dichloroethane-d4</i>	71.8 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	91.7 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	90.5 %	70-130			"	"	"	

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-21@2.5'**  
**2/13/2017 10:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-15 (Soil)**

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

Diesel (C10-C28)	1010	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	
Surrogate: <i>o</i> -Terphenyl	108 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	152	5.00	mg/kg	25	B7B1301	02/13/2017	02/14/2017	
Benzene	0.058	0.050	"	"	"	"	"	
Toluene	0.670	0.050	"	"	"	"	"	
Ethylbenzene	0.660	0.050	"	"	"	"	"	
Xylenes, total	8.19	0.050	"	"	"	"	"	
Naphthalene	0.349	0.175	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	58.8 %	70-130			"	"	"	S-04
Surrogate: 4-Bromofluorobenzene	154 %	70-130			"	"	"	S-04

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-22@2.5'**  
**2/13/2017 10:45:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-16 (Soil)**

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

Diesel (C10-C28)	1160	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	
Surrogate: <i>o</i> -Terphenyl	111 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	477	5.00	mg/kg	25	B7B1301	02/13/2017	02/14/2017	
Benzene	0.308	0.050	"	"	"	"	"	
Toluene	4.24	0.050	"	"	"	"	"	
Ethylbenzene	1.93	0.050	"	"	"	"	"	
Xylenes, total	18.5	0.050	"	"	"	"	"	
Naphthalene	0.458	0.175	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	83.8 %	70-130			"	"	"	
Surrogate: Toluene-d8	69.8 %	70-130			"	"	"	S-04
Surrogate: 4-Bromofluorobenzene	128 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-23@2.5'**  
**2/13/2017 10:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-17 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
Surrogate: <i>o</i> -Terphenyl	105 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	<b>0.334</b>	0.200	mg/kg	1	B7B1301	02/13/2017	02/14/2017	
Benzene	ND	0.002	"	"	"	"	"	U
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	99.2 %	70-130			"	"	"	
Surrogate: Toluene-d8	109 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	74.3 %	70-130			"	"	"	

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-24@2.5'**  
**2/13/2017 11:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-18 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
Surrogate: o-Terphenyl	89.2 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	<b>0.211</b>	0.200	mg/kg	1	B7B1301	02/13/2017	02/14/2017	
Benzene	<b>0.002</b>	0.002	"	"	"	"	"	
Toluene	<b>0.013</b>	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.010</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.027</b>	0.002	"	"	"	"	"	
Napthalene	ND	0.007	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.2 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	108 %	70-130			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-25@2.5'**  
**2/13/2017 11:55:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-19 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
<i>Surrogate: o-Terphenyl</i>	105 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B1301	02/13/2017	02/14/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	105 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	128 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	93.3 %	70-130			"	"	"	

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 4101 Inca Street  
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Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SS-26@2.5'**  
**2/13/2017 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702237-20 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7B1304	02/13/2017	02/13/2017	U
Surrogate: <i>o</i> -Terphenyl	89.8 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7B1301	02/13/2017	02/14/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	149 %	70-130			"	"	"	S-04
Surrogate: Toluene-d8	90.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.5 %	70-130			"	"	"	

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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1301 - EPA 5030 (soil)</b>										
<b>Blank (B7B1301-BLK1)</b>										
					Prepared: 02/13/2017 Analyzed: 02/13/2017					
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	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	48		"	62.5		76.4	70-130			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1301 - EPA 5030 (soil)**

**Blank (B7B1301-BLK2)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

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	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	65		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	70-130			

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1301 - EPA 5030 (soil)**

**LCS (B7B1301-BS1)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Benzene	0.111	0.002	mg/kg	0.100		111	70-130			
Toluene	0.085	0.002	"	0.100		84.9	70-130			
Ethylbenzene	0.110	0.002	"	0.100		110	70-130			
m,p-Xylene	0.224	0.004	"	0.200		112	70-130			
o-Xylene	0.109	0.002	"	0.100		109	70-130			
Naphthalene	0.099	0.007	"	0.100		99.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.2	70-130			
Surrogate: Toluene-d8	48		"	62.5		76.6	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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**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 B7B1301 - EPA 5030 (soil)**

**LCS (B7B1301-BS2)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Benzene	0.102	0.002	mg/kg	0.100		102	70-130			
Toluene	0.098	0.002	"	0.100		98.1	70-130			
Ethylbenzene	0.119	0.002	"	0.100		119	70-130			
m,p-Xylene	0.232	0.004	"	0.200		116	70-130			
o-Xylene	0.116	0.002	"	0.100		116	70-130			
Naphthalene	0.108	0.007	"	0.100		108	70-130			
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.9	70-130			
Surrogate: Toluene-d8	57		"	62.5		91.1	70-130			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.4	70-130			

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**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 B7B1301 - EPA 5030 (soil)

Matrix Spike (B7B1301-MS1)	Source: X702192-01			Prepared: 02/13/2017 Analyzed: 02/13/2017						
Benzene	0.116	0.002	mg/kg	0.100	ND	116	70-130			
Toluene	0.116	0.002	"	0.100	ND	116	70-130			
Ethylbenzene	0.101	0.002	"	0.100	ND	101	70-130			
m,p-Xylene	0.202	0.004	"	0.200	ND	101	70-130			
o-Xylene	0.104	0.002	"	0.100	ND	104	70-130			
Naphthalene	0.101	0.007	"	0.100	ND	101	70-130			
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	66		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	48		"	62.5		76.5	70-130			

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**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 B7B1301 - EPA 5030 (soil)

Matrix Spike (B7B1301-MS2)	Source: X702192-02			Prepared: 02/13/2017 Analyzed: 02/13/2017						
Benzene	0.104	0.002	mg/kg	0.100	ND	104	70-130			
Toluene	0.105	0.002	"	0.100	ND	105	70-130			
Ethylbenzene	0.101	0.002	"	0.100	ND	101	70-130			
m,p-Xylene	0.205	0.004	"	0.200	ND	102	70-130			
o-Xylene	0.102	0.002	"	0.100	ND	102	70-130			
Naphthalene	0.069	0.007	"	0.100	ND	68.6	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		99.7	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.6	70-130			

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**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 B7B1301 - EPA 5030 (soil)**

<b>Matrix Spike Dup (B7B1301-MSD1)</b>	<b>Source: X702192-01</b>			<b>Prepared: 02/13/2017 Analyzed: 02/13/2017</b>						
Benzene	0.095	0.002	mg/kg	0.100	ND	94.9	70-130	19.9	20	
Toluene	0.107	0.002	"	0.100	ND	107	70-130	7.78	20	
Ethylbenzene	0.106	0.002	"	0.100	ND	106	70-130	4.67	20	
m,p-Xylene	0.209	0.004	"	0.200	ND	104	70-130	3.36	20	
o-Xylene	0.107	0.002	"	0.100	ND	107	70-130	2.70	20	
Naphthalene	0.080	0.007	"	0.100	ND	80.1	70-130	23.1	20	QR-02
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.7	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	70-130			

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 Project: Noble - Wardlaw #20-28

**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 B7B1301 - EPA 5030 (soil)

Matrix Spike Dup (B7B1301-MSD2)	Source: X702192-02			Prepared: 02/13/2017 Analyzed: 02/13/2017						
Benzene	0.105	0.002	mg/kg	0.100	ND	105	70-130	1.18	20	
Toluene	0.082	0.002	"	0.100	ND	81.9	70-130	24.3	20	QR-02
Ethylbenzene	0.098	0.002	"	0.100	ND	98.3	70-130	2.83	20	
m,p-Xylene	0.190	0.004	"	0.200	ND	94.8	70-130	7.66	20	
o-Xylene	0.096	0.002	"	0.100	ND	96.3	70-130	5.44	20	
Naphthalene	0.074	0.007	"	0.100	ND	74.0	70-130	7.63	20	
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	50		"	62.5		80.1	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	70-130			

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**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 B7B1306 - EPA 5030B (Water)**

**Blank (B7B1306-BLK1)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		103	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.9	84-114			

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**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 B7B1306 - EPA 5030B (Water)**

**Blank (B7B1306-BLK2)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5	103		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.8		84-114			

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**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 B7B1306 - EPA 5030B (Water)**

**LCS (B7B1306-BS1)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Benzene	45.2	1.00	ug/L	50.0		90.4	73.3-129			
Toluene	46.1	1.00	"	50.0		92.1	76.2-123			
Ethylbenzene	47.3	1.00	"	50.0		94.7	73.6-130			
m,p-Xylene	93.8	2.00	"	100		93.8	76.1-126			
o-Xylene	46.6	1.00	"	50.0		93.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.1	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	84-114			

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**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 B7B1306 - EPA 5030B (Water)**

**LCS (B7B1306-BS2)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Benzene	44.0	1.00	ug/L	50.0		87.9	73.3-129			
Toluene	44.7	1.00	"	50.0		89.3	76.2-123			
Ethylbenzene	46.9	1.00	"	50.0		93.9	73.6-130			
m,p-Xylene	92.9	2.00	"	100		92.9	76.1-126			
o-Xylene	46.5	1.00	"	50.0		93.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.9	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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**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 B7B1306 - EPA 5030B (Water)**

<b>Matrix Spike (B7B1306-MS1)</b>	<b>Source: X702177-06</b>			<b>Prepared: 02/13/2017 Analyzed: 02/13/2017</b>						
Benzene	52.1	1.00	ug/L	50.0	ND	104	74-130			
Toluene	52.1	1.00	"	50.0	ND	104	73-131			
Ethylbenzene	53.1	1.00	"	50.0	ND	106	76-132			
m,p-Xylene	106	2.00	"	100	0.230	106	69-139			
o-Xylene	51.3	1.00	"	50.0	ND	103	74-131			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.1	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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**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 B7B1306 - EPA 5030B (Water)**

<b>Matrix Spike (B7B1306-MS2)</b>	<b>Source: X702177-07</b>			<b>Prepared: 02/13/2017 Analyzed: 02/13/2017</b>						
Benzene	50.4	1.00	ug/L	50.0	ND	101	74-130			
Toluene	49.8	1.00	"	50.0	ND	99.7	73-131			
Ethylbenzene	51.1	1.00	"	50.0	ND	102	76-132			
m,p-Xylene	100	2.00	"	100	ND	100	69-139			
o-Xylene	49.3	1.00	"	50.0	ND	98.6	74-131			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		90.4	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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 Project: Noble - Wardlaw #20-28

**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 B7B1306 - EPA 5030B (Water)**

Matrix Spike Dup (B7B1306-MSD1)	Source: X702177-06			Prepared: 02/13/2017 Analyzed: 02/13/2017						
Benzene	49.3	1.00	ug/L	50.0	ND	98.6	74-130	5.62	20	
Toluene	49.0	1.00	"	50.0	ND	97.9	73-131	6.14	20	
Ethylbenzene	50.7	1.00	"	50.0	ND	101	76-132	4.60	20	
m,p-Xylene	100	2.00	"	100	0.230	100	69-139	5.49	20	
o-Xylene	49.2	1.00	"	50.0	ND	98.4	74-131	4.26	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.5	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	84-114			

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**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 B7B1306 - EPA 5030B (Water)**

Matrix Spike Dup (B7B1306-MSD2)	Source: X702177-07			Prepared: 02/13/2017 Analyzed: 02/13/2017						
Benzene	48.0	1.00	ug/L	50.0	ND	95.9	74-130	4.92	20	
Toluene	46.6	1.00	"	50.0	ND	93.2	73-131	6.72	20	
Ethylbenzene	47.7	1.00	"	50.0	ND	95.4	76-132	6.94	20	
m,p-Xylene	94.2	2.00	"	100	ND	94.2	69-139	6.42	20	
o-Xylene	46.7	1.00	"	50.0	ND	93.3	74-131	5.48	20	
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		93.2	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B1304 - EPA 3580**

**Blank (B7B1304-BLK1)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 55 " 50.0 109 59-131

**Blank (B7B1304-BLK2)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 51 " 50.0 102 59-131

**LCS (B7B1304-BS1)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Diesel (C10-C28) 1040 50.0 mg/kg 1000 104 64-121

Surrogate: o-Terphenyl 51 " 50.0 101 59-131

**LCS (B7B1304-BS2)**

Prepared: 02/13/2017 Analyzed: 02/13/2017

Diesel (C10-C28) 1120 50.0 mg/kg 1000 112 64-121

Surrogate: o-Terphenyl 54 " 50.0 108 59-131

**Matrix Spike (B7B1304-MS1)**

Source: X702192-01

Prepared: 02/13/2017 Analyzed: 02/13/2017

Diesel (C10-C28) 1050 50.0 mg/kg 1000 25.1 102 53-125

Surrogate: o-Terphenyl 48 " 50.0 96.2 59-131

**Matrix Spike (B7B1304-MS2)**

Source: X702237-10

Prepared: 02/13/2017 Analyzed: 02/13/2017

Diesel (C10-C28) 1120 50.0 mg/kg 1000 ND 112 53-125

Surrogate: o-Terphenyl 52 " 50.0 105 59-131

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 Project: Noble - Wardlaw #20-28

**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 B7B1304 - EPA 3580**

<b>Matrix Spike Dup (B7B1304-MSD1)</b>		<b>Source: X702192-01</b>			Prepared: 02/13/2017 Analyzed: 02/13/2017					
Diesel (C10-C28)	1050	50.0	mg/kg	1000	25.1	103	53-125	0.354	20	
Surrogate: o-Terphenyl	51		"	50.0		102	59-131			
<b>Matrix Spike Dup (B7B1304-MSD2)</b>		<b>Source: X702237-10</b>			Prepared: 02/13/2017 Analyzed: 02/13/2017					
Diesel (C10-C28)	1100	50.0	mg/kg	1000	ND	110	53-125	1.79	20	
Surrogate: o-Terphenyl	54		"	50.0		109	59-131			

Origins Laboratory, Inc.



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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

---

### Notes and Definitions

- U Sample is Non-Detect.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- 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.
- 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.



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February 21, 2017

Eagle Environmental Consulting, Inc.

Robin Lockwood

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - Wardlaw #20-28**

**Project Number - [none]**

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. February 20, 2017. This project is associated with Origins project number X702334-01.

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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW-01	X702334-01	Water	February 20, 2017 11:20	02/20/2017 13:22
SW-02	X702334-02	Water	February 20, 2017 11:32	02/20/2017 13:22
SW-03	X702334-03	Water	February 20, 2017 11:35	02/20/2017 13:22
SW-04	X702334-04	Water	February 20, 2017 11:40	02/20/2017 13:22
SW-05	X702334-05	Water	February 20, 2017 11:48	02/20/2017 13:22
SW-06	X702334-06	Water	February 20, 2017 11:50	02/20/2017 13:22
SW-07	X702334-07	Water	February 20, 2017 11:56	02/20/2017 13:22
SW-08	X702334-08	Water	February 20, 2017 12:03	02/20/2017 13:22
SW-09	X702334-09	Water	February 20, 2017 12:10	02/20/2017 13:22

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

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page / of /

x702334

**ORIGINS**  
 LABORATORY, INC

Client: Eagle Env. Consulting, Inc.  
 Address: 4101 Inca Street  
Denver, CO, 80211  
 Telephone Number: 303-733-0779  
 Email Address: lockwood@eagle-env.com

Project Manager: Robin Lockwood - Report to City  
 Project Name: Wardlaw #20-28  
 Project Number: \_\_\_\_\_  
 Samples Collected By: AN/JS

1725 Elk Place | Phone: 303.433.1322 | Fax: 303.265.9645

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 #			Other
SW-01	2/20/17	1120	3	X				X					
SW-02		1132											
SW-03		1135											
SW-04		1140											
SW-05		1148											
SW-06		1150											
SW-07		1156											
SW-08		1203											
SW-09		1210											
Relinquished By: <u>[Signature]</u>	Date: <u>2/20/17</u>	Time: <u>132</u>	Time: <u>132</u>	Received By: <u>[Signature]</u>	Date: <u>2-20-17</u>	Time: <u>132L</u>	Turnaround Time: <input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard						

Temp Received: 34°C  
 Date Results Needed: Noble  
 Relinquished By: Bill to Jacob

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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 8702334

Client: Eagle Env.

Client Project ID: Wardlaw # 20-28

Checklist Completed by: [Signature]

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

Date/time completed: 2-20-17 1349

Airbill #: NA

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

Cooler Number/Temperature: 1 / 34 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C

Thermometer ID: 7003

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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input checked="" 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 Na <sub>2</sub> SO <sub>2</sub> +NaOH, ZnAc <sup>+</sup> +NaOH)	<input type="checkbox"/>	<input checked="" 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.

[Signature]  
 Reviewed by (Project Manager)

2-20-17 1349  
 Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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4101 Inca Street  
Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-01**  
**2/20/2017 11:20:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-01 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	102 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.5 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.7 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-02**  
**2/20/2017 11:32:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-02 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	<b>3.18</b>	1.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.2 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-03**  
**2/20/2017 11:35:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-03 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	<b>2.45</b>	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-04**

**2/20/2017 11:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-04 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	<b>1.49</b>	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	99.6 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.4 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-05**  
**2/20/2017 11:48:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-05 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.2 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-06**  
**2/20/2017 11:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-06 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %	84-114			"	"	"	

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 Denver CO 80211

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**SW-07**

**2/20/2017 11:56:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-07 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.3 %	84-114			"	"	"	

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Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-08**

**2/20/2017 12:03:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.6 %	84-114			"	"	"	

Origins Laboratory, Inc.



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4101 Inca Street  
Denver CO 80211

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

**SW-09**

**2/20/2017 12:10:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X702334-09 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7B2004	02/20/2017	02/20/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	104 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.2 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B2004 - EPA 5030B (Water)

Blank (B7B2004-BLK1)

Prepared: 02/20/2017 Analyzed: 02/20/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.0	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B2004 - EPA 5030B (Water)**

**LCS (B7B2004-BS1)**

Prepared: 02/20/2017 Analyzed: 02/20/2017

Benzene	57.9	1.00	ug/L	50.0		116	73.3-129			
Toluene	57.5	1.00	"	50.0		115	76.2-123			
Ethylbenzene	60.3	1.00	"	50.0		121	73.6-130			
m,p-Xylene	118	2.00	"	100		118	76.1-126			
o-Xylene	59.2	1.00	"	50.0		118	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.1	84-121			
Surrogate: Toluene-d8	66		"	62.5		106	85-115			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B2004 - EPA 5030B (Water)**

<b>Matrix Spike (B7B2004-MS1)</b>	<b>Source: X702334-01</b>			<b>Prepared: 02/20/2017 Analyzed: 02/20/2017</b>						
Benzene	49.4	1.00	ug/L	50.0	ND	98.8	74-130			
Toluene	49.7	1.00	"	50.0	ND	99.4	73-131			
Ethylbenzene	52.9	1.00	"	50.0	ND	106	76-132			
m,p-Xylene	103	2.00	"	100	ND	103	69-139			
o-Xylene	50.1	1.00	"	50.0	ND	100	74-131			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.0	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7B2004 - EPA 5030B (Water)

Matrix Spike Dup (B7B2004-MSD1)	Source: X702334-01			Prepared: 02/20/2017 Analyzed: 02/20/2017						
Benzene	53.0	1.00	ug/L	50.0	ND	106	74-130	6.98	20	
Toluene	52.4	1.00	"	50.0	ND	105	73-131	5.23	20	
Ethylbenzene	55.3	1.00	"	50.0	ND	111	76-132	4.31	20	
m,p-Xylene	106	2.00	"	100	ND	106	69-139	2.42	20	
o-Xylene	50.8	1.00	"	50.0	ND	102	74-131	1.39	20	
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

Origins Laboratory, Inc.



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

Robin Lockwood  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

---

Jen Pellegrini For Noelle Doyle Mathis, President

March 20, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - Wardlaw #20-28**

**Project Number - [none]**

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. March 17, 2017. This project is associated with Origins project number Y703257-01.

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



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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW-01	Y703257-01	Water	March 17, 2017 13:35	03/17/2017 15:56
SW-02	Y703257-02	Water	March 17, 2017 13:43	03/17/2017 15:56
SW-03	Y703257-03	Water	March 17, 2017 13:47	03/17/2017 15:56
SW-04	Y703257-04	Water	March 17, 2017 13:51	03/17/2017 15:56
SW-05	Y703257-05	Water	March 17, 2017 14:00	03/17/2017 15:56
SW-06	Y703257-06	Water	March 17, 2017 14:13	03/17/2017 15:56
SW-07	Y703257-07	Water	March 17, 2017 14:17	03/17/2017 15:56
SW-08	Y703257-08	Water	March 17, 2017 14:22	03/17/2017 15:56
SW-09	Y703257-09	Water	March 17, 2017 14:25	03/17/2017 15:56

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 - Wardlaw #20-28

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 763251 page 1 of 1

**ORIGINS**  
 LABORATORY, INC

Client: EAGLE ENV. CONSULTING  
 Address: 4101 INCA ST  
DENVER, CO 80211  
 Telephone Number: (303) 433-0479  
 Email Address: MCE3@EAGLE-ENVR.COM

Project Manager: MARTIN ECKERT III  
 Project Name: WARDLAW #20-28  
 Project Number: SV  
 Samples Collected By: SV

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 #			Other
SW-01	3/17/17	1335	3	X				X					
SW-02		1343											
SW-03		1347											
SW-04		1351											
SW-05		1400											
SW-06		1413											
SW-07		1419											
SW-08		1422											
SW-09		1425											
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:							
<i>[Signature]</i>	3/17/17	1556	<i>[Signature]</i>	3/17/17	1554	Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/>							
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/>							

Temp Received: 40° Date Results Needed: NOBLE

Relinquished By: BILL TO JACOBS

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

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 - Wardlaw #20-28

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

**Sample Receipt Checklist**

Origins Work Order: y103251 Client: Eagle Environmental  
 Client Project ID: Wardlaw #20-28  
 Checklist Completed by: Joe Henderson Shipped Via: H/D  
 Date/time completed: 3/17/17 1600 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 / 4.0 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe)  
 Thermometer ID: 1003

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

<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 [Signature] Project Manager Date/Time Reviewed 3/17/17 1600

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 - Wardlaw #20-28

**SW-01**  
**3/17/2017 1:35:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-01 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	109 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-02**  
**3/17/2017 1:43:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-02 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	110 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-03**  
**3/17/2017 1:47:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-03 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	112 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-04**  
**3/17/2017 1:51:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-04 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	111 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-05**  
**3/17/2017 2:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-05 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	112 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.1 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-06**  
**3/17/2017 2:13:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-06 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	109 %	84-121			"	"	"	
<i>Surrogate: Toluene-d8</i>	100 %	85-115			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	103 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-07**  
**3/17/2017 2:17:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-07 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	110 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.5 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-08**  
**3/17/2017 2:22:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	110 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.2 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

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 - Wardlaw #20-28

**SW-09**  
**3/17/2017 2:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703257-09 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7C1706	03/17/2017	03/17/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	111 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

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 - Wardlaw #20-28

**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 B7C1706 - EPA 5030B (Water)**

**Blank (B7C1706-BLK1)**

Prepared: 03/17/2017 Analyzed: 03/17/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	69		"	62.5	110		84-121			
Surrogate: Toluene-d8	62		"	62.5	99.0		85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5	103		84-114			

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 - Wardlaw #20-28

**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 B7C1706 - EPA 5030B (Water)

**LCS (B7C1706-BS1)**

Prepared: 03/17/2017 Analyzed: 03/17/2017

Benzene	54.7	1.00	ug/L	50.0		109	73.3-129			
Toluene	53.9	1.00	"	50.0		108	76.2-123			
Ethylbenzene	55.8	1.00	"	50.0		112	73.6-130			
m,p-Xylene	110	2.00	"	100		110	76.1-126			
o-Xylene	53.6	1.00	"	50.0		107	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.0	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

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 - Wardlaw #20-28

**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 B7C1706 - EPA 5030B (Water)

Matrix Spike (B7C1706-MS1)	Source: Y703257-01			Prepared: 03/17/2017 Analyzed: 03/19/2017						
Benzene	53.1	1.00	ug/L	50.0	ND	106	74-130			
Toluene	51.9	1.00	"	50.0	ND	104	73-131			
Ethylbenzene	53.6	1.00	"	50.0	0.110	107	76-132			
m,p-Xylene	105	2.00	"	100	0.290	105	69-139			
o-Xylene	51.7	1.00	"	50.0	ND	103	74-131			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.1	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		103	84-114			

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 - Wardlaw #20-28

**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 B7C1706 - EPA 5030B (Water)**

<b>Matrix Spike Dup (B7C1706-MSD1)</b>	<b>Source: Y703257-01</b>			<b>Prepared: 03/17/2017 Analyzed: 03/19/2017</b>						
Benzene	51.9	1.00	ug/L	50.0	ND	104	74-130	2.34	20	
Toluene	50.7	1.00	"	50.0	ND	101	73-131	2.26	20	
Ethylbenzene	52.3	1.00	"	50.0	0.110	104	76-132	2.57	20	
m,p-Xylene	103	2.00	"	100	0.290	103	69-139	1.78	20	
o-Xylene	51.1	1.00	"	50.0	ND	102	74-131	1.19	20	
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		106	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.6	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		105	84-114			

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 - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

---

Jen Pellegrini For Noelle Doyle Mathis, President



March 28, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. March 27, 2017. This project is associated with Origins project number Y703370-01.

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 - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-02@0-2.5	Y703370-01	Soil	March 27, 2017 10:00	03/27/2017 16:55
MW-03@0-2.5	Y703370-02	Soil	March 27, 2017 10:20	03/27/2017 16:55
MW-04@0-2.5	Y703370-03	Soil	March 27, 2017 10:40	03/27/2017 16:55
MW-05@0-2.5	Y703370-04	Soil	March 27, 2017 10:55	03/27/2017 16:55
MW-06@0-2.5	Y703370-05	Soil	March 27, 2017 11:00	03/27/2017 16:55
MW-07@0-2.5	Y703370-06	Soil	March 27, 2017 11:45	03/27/2017 16:55
MW-08@0-2.5	Y703370-07	Soil	March 27, 2017 13:05	03/27/2017 16:55
MW-09@0-2.5	Y703370-08	Soil	March 27, 2017 12:00	03/27/2017 16:55
MW-10@0-2.5	Y703370-09	Soil	March 27, 2017 13:20	03/27/2017 16:55
MW-11@0-2.5	Y703370-10	Soil	March 27, 2017 13:40	03/27/2017 16:55
MW-01	Y703370-11	Water	March 27, 2017 14:40	03/27/2017 16:55
MW-04	Y703370-12	Water	March 27, 2017 14:45	03/27/2017 16:55
MW-05	Y703370-13	Water	March 27, 2017 14:50	03/27/2017 16:55
MW-06	Y703370-14	Water	March 27, 2017 14:55	03/27/2017 16:55

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 - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-07	Y703370-15	Water	March 27, 2017 15:00	03/27/2017 16:55
MW-08	Y703370-16	Water	March 27, 2017 15:05	03/27/2017 16:55
MW-09	Y703370-17	Water	March 27, 2017 15:10	03/27/2017 16:55

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 - Wardlaw #20-28

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Y703370

page 1 of 2

Client: EAGLE ENV CONSULTING Project Manager: MARTIN ECKERT III  
 Address: 4101 INCA ST Project Name: WARDLAW #20-28  
DENVER, CO Project Number: \_\_\_\_\_  
 Telephone Number: 303 433 0479 Samples Collected By: ME  
 Email Address: MCE3@eagle-env.com

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

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 #	Other	GSTEX	Dz		Met/Trace				
MW-02 @ 0-2.5	3/27/17	1000	2	X					X										
MW-03 @ 0-2.5		1020																	
MW-04 @ 0-2.5		1040																	
MW-05 @ 0-2.5		1055																	
MW-06 @ 0-2.5		1100																	
MW-07 @ 0-2.5		1145																	
MW-08 @ 0-2.5		1305																	
MW-09 @ 0-2.5		1200																	
MW-10 @ 0-2.5		1320																	
MW-11 @ 0-2.5		1340																	
Relinquished By: <u>[Signature]</u>	Date: <u>3/27/17</u>	Time: <u>1655</u>	Time: <u>1655</u>	Received By: <u>[Signature]</u>	Date: <u>3-27-17</u>	Time: <u>1655</u>	Received By: <u>[Signature]</u>	Date: <u>3-27-17</u>	Time: <u>1655</u>	Turnaround Time: <input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard									
Relinquished By:	Date:	Time:	Time:	Received By:	Date:	Time:	Received By:	Date:	Time:										

Temp Received: 17 Date Results Needed: Noble

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 - Wardlaw #20-28

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 page 2 of 2

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

**ORIGINS** LABORATORY, INC

1703310

Client: EAGLE ENV CONSULTING  
 Address: 4101 Inca St  
Denver CO  
 Telephone Number: 303 433 0479  
 Email Address: mc3@eagle-env.co

Project Manager: MARTIN ECKERT III  
 Project Name: WARDLAW #20-28  
 Project Number: \_\_\_\_\_  
 Samples Collected By: AR

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	
MU-01	3/27/17	1440	3	X				X						
MU-04		1445												
MU-05		1450												
MU-06		1455												
MU-07		1500												
MU-08		1505												
MU-09		1510												
Relinquished By: <i>[Signature]</i>	Date: 3/27/17	Time: 1655	Time: 1655	Received By: <i>[Signature]</i>	Date: 3/27/17	Time: 1655	Received By: <i>[Signature]</i>	Date: 3/27/17	Time: 1655	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"/>				

Temp Received: 1.7 Date Results Needed: ~~Noble~~

Origins Laboratory, Inc.

*Jefe Pellegrini*

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

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

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

**Sample Receipt Checklist**

Origins Work Order: Y703370 Client: Eagle Env.  
 Client Project ID: Noble - Wardlaw # 20-28  
 Checklist Completed by: [Signature] Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Date/time completed: 3-27-12 Airbill #: WA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)  
 Cooler Number/Temperature: 1 / 1 1.7 °C 1 °C 1 °C 1 °C  
 Thermometer ID: 1003

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

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

Reviewed by (Project Manager) [Signature] Date/Time Reviewed 3-27-12

Origins Laboratory, Inc.

*Jefe Pellegrini*

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

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-02@0-2.5**  
**3/27/2017 10:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-01 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
<i>Surrogate: o-Terphenyl</i>	84.3 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	111 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.1 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	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 - Wardlaw #20-28

MW-03@0-2.5  
 3/27/2017 10:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 Y703370-02 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
Surrogate: o-Terphenyl	87.0 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	117 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.7 %	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 - Wardlaw #20-28

MW-04@0-2.5  
 3/27/2017 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 Y703370-03 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
Surrogate: o-Terphenyl	81.5 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	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 - Wardlaw #20-28

MW-05@0-2.5  
 3/27/2017 10:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 Y703370-04 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
Surrogate: o-Terphenyl	82.6 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	110 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.2 %	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 - Wardlaw #20-28

**MW-06@0-2.5**  
**3/27/2017 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-05 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
<i>Surrogate: o-Terphenyl</i>	84.6 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	110 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.3 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	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 - Wardlaw #20-28

**MW-07@0-2.5**  
**3/27/2017 11:45:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-06 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
<i>Surrogate: o-Terphenyl</i>	81.9 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	111 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.6 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	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 - Wardlaw #20-28

MW-08@0-2.5  
 3/27/2017 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 Y703370-07 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
Surrogate: o-Terphenyl	83.2 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	109 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	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 - Wardlaw #20-28

MW-09@0-2.5  
 3/27/2017 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 Y703370-08 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
Surrogate: <i>o</i> -Terphenyl	87.7 %	59-131			"	"	"	

### GBTEX + Napthalene by 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
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	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.5 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-10@0-2.5**  
**3/27/2017 1:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-09 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
<i>Surrogate: o-Terphenyl</i>	86.5 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	88.8 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	79.5 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	80.4 %	70-130			"	"	"	

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-11@0-2.5**  
**3/27/2017 1:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-10 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2704	03/27/2017	03/27/2017	U
<i>Surrogate: o-Terphenyl</i>	89.4 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2703	03/27/2017	03/27/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	88.0 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	79.4 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	79.7 %	70-130			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-01**  
**3/27/2017 2:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-11 (Water)**

**BTEX by EPA 8260C**

Benzene	188	4.00	ug/L	4	B7C2705	03/27/2017	03/27/2017	
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	12.6	4.00	"	"	"	"	"	
Xylenes, total	327	4.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	94.7 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.8 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.4 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-04**  
**3/27/2017 2:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-12 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2705	03/27/2017	03/27/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	96.8 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	93.9 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-05**  
**3/27/2017 2:50:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-13 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2705	03/27/2017	03/27/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	97.9 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	93.0 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-06**  
**3/27/2017 2:55:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-14 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2705	03/27/2017	03/28/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %	84-114			"	"	"	

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Project Number: [none]  
Project: Noble - Wardlaw #20-28

**MW-07**  
**3/27/2017 3:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-15 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2705	03/27/2017	03/28/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	99.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	95.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.3 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-08**  
**3/27/2017 3:05:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-16 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2705	03/27/2017	03/28/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-09**  
**3/27/2017 3:10:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703370-17 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2705	03/27/2017	03/28/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	94.4 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.6 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2703 - EPA 5030 (soil)**

**Blank (B7C2703-BLK1)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

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	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	59		"	62.5		95.1	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	70-130			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2703 - EPA 5030 (soil)

**LCS (B7C2703-BS1)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Benzene	0.112	0.002	mg/kg	0.100		112	70-130			
Toluene	0.109	0.002	"	0.100		109	70-130			
Ethylbenzene	0.111	0.002	"	0.100		111	70-130			
m,p-Xylene	0.221	0.004	"	0.200		110	70-130			
o-Xylene	0.105	0.002	"	0.100		105	70-130			
Naphthalene	0.099	0.007	"	0.100		99.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.3	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	70-130			

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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2703 - EPA 5030 (soil)

Matrix Spike (B7C2703-MS1)	Source: Y703354-01			Prepared: 03/27/2017 Analyzed: 03/27/2017						
Benzene	0.106	0.002	mg/kg	0.100	ND	106	70-130			
Toluene	0.110	0.002	"	0.100	ND	110	70-130			
Ethylbenzene	0.118	0.002	"	0.100	0.002	117	70-130			
m,p-Xylene	0.243	0.004	"	0.200	0.0009	121	70-130			
o-Xylene	0.113	0.002	"	0.100	ND	113	70-130			
Naphthalene	0.085	0.007	"	0.100	0.003	82.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.9	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2703 - EPA 5030 (soil)

Matrix Spike Dup (B7C2703-MSD1)	Source: Y703354-01			Prepared: 03/27/2017 Analyzed: 03/27/2017						
Benzene	0.102	0.002	mg/kg	0.100	ND	102	70-130	3.25	20	
Toluene	0.107	0.002	"	0.100	ND	107	70-130	3.54	20	
Ethylbenzene	0.112	0.002	"	0.100	0.002	110	70-130	5.22	20	
m,p-Xylene	0.227	0.004	"	0.200	0.0009	113	70-130	6.59	20	
o-Xylene	0.107	0.002	"	0.100	ND	107	70-130	5.52	20	
Naphthalene	0.087	0.007	"	0.100	0.003	83.8	70-130	2.01	20	
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.0	70-130			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2705 - EPA 5030B (Water)**

**Blank (B7C2705-BLK1)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5	95.3		84-121			
Surrogate: Toluene-d8	62		"	62.5	99.3		85-115			
Surrogate: 4-Bromofluorobenzene	59		"	62.5	94.5		84-114			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2705 - EPA 5030B (Water)**

**LCS (B7C2705-BS1)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Benzene	45.5	1.00	ug/L	50.0		91.1	73.3-129			
Toluene	44.4	1.00	"	50.0		88.8	76.2-123			
Ethylbenzene	43.6	1.00	"	50.0		87.1	73.6-130			
m,p-Xylene	86.0	2.00	"	100		86.0	76.1-126			
o-Xylene	42.6	1.00	"	50.0		85.2	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		93.8	84-121			
Surrogate: Toluene-d8	62		"	62.5		98.6	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.9	84-114			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2705 - EPA 5030B (Water)**

<b>Matrix Spike (B7C2705-MS1)</b>	<b>Source: Y703329-01</b>			<b>Prepared: 03/27/2017 Analyzed: 03/28/2017</b>						
Benzene	48.5	1.00	ug/L	50.0	ND	97.0	74-130			
Toluene	47.0	1.00	"	50.0	ND	94.0	73-131			
Ethylbenzene	47.7	1.00	"	50.0	ND	95.5	76-132			
m,p-Xylene	92.5	2.00	"	100	ND	92.5	69-139			
o-Xylene	46.0	1.00	"	50.0	ND	92.0	74-131			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.9	84-121			
Surrogate: Toluene-d8	61		"	62.5		98.0	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.7	84-114			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2705 - EPA 5030B (Water)**

Matrix Spike Dup (B7C2705-MSD1)	Source: Y703329-01			Prepared: 03/27/2017 Analyzed: 03/27/2017						
Benzene	45.9	1.00	ug/L	50.0	ND	91.9	74-130	5.44	20	
Toluene	45.2	1.00	"	50.0	ND	90.3	73-131	3.95	20	
Ethylbenzene	46.3	1.00	"	50.0	ND	92.7	76-132	2.96	20	
m,p-Xylene	90.8	2.00	"	100	ND	90.8	69-139	1.92	20	
o-Xylene	44.4	1.00	"	50.0	ND	88.8	74-131	3.50	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.0	84-121			
Surrogate: Toluene-d8	61		"	62.5		98.1	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.5	84-114			

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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2704 - EPA 3580**

**Blank (B7C2704-BLK1)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 46 " 50.0 91.8 59-131

**Blank (B7C2704-BLK2)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Diesel (C10-C28) ND 50.0 mg/kg U

Surrogate: o-Terphenyl 47 " 50.0 93.7 59-131

**LCS (B7C2704-BS1)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Diesel (C10-C28) 1040 50.0 mg/kg 1000 104 64-121

Surrogate: o-Terphenyl 50 " 50.0 99.6 59-131

**LCS (B7C2704-BS2)**

Prepared: 03/27/2017 Analyzed: 03/27/2017

Diesel (C10-C28) 920 50.0 mg/kg 1000 92.0 64-121

Surrogate: o-Terphenyl 44 " 50.0 88.9 59-131

**Matrix Spike (B7C2704-MS1)**

Source: Y703354-01

Prepared: 03/27/2017 Analyzed: 03/27/2017

Diesel (C10-C28) 900 50.0 mg/kg 1000 24.4 87.6 53-125

Surrogate: o-Terphenyl 40 " 50.0 80.7 59-131

**Matrix Spike (B7C2704-MS2)**

Source: Y703354-02

Prepared: 03/27/2017 Analyzed: 03/27/2017

Diesel (C10-C28) 918 50.0 mg/kg 1000 33.2 88.5 53-125

Surrogate: o-Terphenyl 43 " 50.0 86.0 59-131

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 - Wardlaw #20-28

**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 B7C2704 - EPA 3580**

<b>Matrix Spike Dup (B7C2704-MSD1)</b>		<b>Source: Y703354-01</b>			<b>Prepared: 03/27/2017 Analyzed: 03/27/2017</b>					
Diesel (C10-C28)	870	50.0	mg/kg	1000	24.4	84.5	53-125	3.43	20	
Surrogate: o-Terphenyl	41		"	50.0		82.4	59-131			
<b>Matrix Spike Dup (B7C2704-MSD2)</b>		<b>Source: Y703354-02</b>			<b>Prepared: 03/27/2017 Analyzed: 03/27/2017</b>					
Diesel (C10-C28)	935	50.0	mg/kg	1000	33.2	90.2	53-125	1.85	20	
Surrogate: o-Terphenyl	46		"	50.0		91.2	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 - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

---

Jen Pellegrini For Noelle Doyle Mathis, President



March 29, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - Wardlaw #20-28**

**Project Number - [none]**

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. March 28, 2017. This project is associated with Origins project number Y703382-01.

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 - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-10	Y703382-01	Water	March 28, 2017 9:00	03/28/2017 15:15
MW-14	Y703382-02	Water	March 28, 2017 13:50	03/28/2017 15:15

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 - Wardlaw #20-28

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 703582

Client: Eagle Env

Client Project ID: Noble - Wardlaw #20-28

Checklist Completed by: Don Lee

Shipped Via: MD

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

Date/time completed: 3-28-17 15Z

Airbill #: WA

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

Cooler Number/Temperature:    /    / 2.1 °C    /    °C    /    °C (Describe)

Thermometer ID: 1003

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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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.

Don Lee  
 Reviewed by (Project Manager)

3-28-17 15Z  
 Date/Time Reviewed

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 - Wardlaw #20-28

**MW-10**  
**3/28/2017 9:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703382-01 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2808	03/28/2017	03/28/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	91.9 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.1 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.5 %	84-114			"	"	"	

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 - Wardlaw #20-28

**MW-14**  
**3/28/2017 1:50:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703382-02 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	4.00	ug/L	4	B7C2808	03/28/2017	03/28/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	92.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	92.6 %	84-114			"	"	"	

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 - Wardlaw #20-28

**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 B7C2808 - EPA 5030B (Water)**

**Blank (B7C2808-BLK1)**

Prepared: 03/28/2017 Analyzed: 03/28/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5	90.8		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	96.9		84-114			

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 - Wardlaw #20-28

**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 B7C2808 - EPA 5030B (Water)

**LCS (B7C2808-BS1)**

Prepared: 03/28/2017 Analyzed: 03/28/2017

Benzene	49.4	1.00	ug/L	50.0		98.7	73.3-129			
Toluene	47.5	1.00	"	50.0		94.9	76.2-123			
Ethylbenzene	46.8	1.00	"	50.0		93.5	73.6-130			
m,p-Xylene	93.9	2.00	"	100		93.9	76.1-126			
o-Xylene	45.4	1.00	"	50.0		90.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		90.1	84-121			
Surrogate: Toluene-d8	62		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.8	84-114			

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 - Wardlaw #20-28

**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 B7C2808 - EPA 5030B (Water)**

<b>Matrix Spike (B7C2808-MS1)</b>	<b>Source: Y703357-04</b>			<b>Prepared: 03/28/2017 Analyzed: 03/28/2017</b>						
Benzene	53.8	1.00	ug/L	50.0	ND	108	74-130			
Toluene	52.6	1.00	"	50.0	ND	105	73-131			
Ethylbenzene	53.3	1.00	"	50.0	ND	107	76-132			
m,p-Xylene	104	2.00	"	100	ND	104	69-139			
o-Xylene	50.7	1.00	"	50.0	ND	101	74-131			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		93.0	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.2	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.0	84-114			

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 - Wardlaw #20-28

**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 B7C2808 - EPA 5030B (Water)**

Matrix Spike Dup (B7C2808-MSD1)	Source: Y703357-04			Prepared: 03/28/2017 Analyzed: 03/28/2017						
Benzene	51.2	1.00	ug/L	50.0	ND	102	74-130	4.76	20	
Toluene	49.7	1.00	"	50.0	ND	99.4	73-131	5.76	20	
Ethylbenzene	50.0	1.00	"	50.0	ND	100	76-132	6.45	20	
m,p-Xylene	99.6	2.00	"	100	ND	99.6	69-139	4.57	20	
o-Xylene	48.1	1.00	"	50.0	ND	96.1	74-131	5.29	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.5	84-121			
Surrogate: Toluene-d8	61		"	62.5		97.1	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	84-114			

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 - Wardlaw #20-28

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

---

Jen Pellegrini For Noelle Doyle Mathis, President



March 30, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. March 28, 2017. This project is associated with Origins project number Y703383-01.

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 - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-13@0-2.5	Y703383-01	Soil	March 28, 2017 12:00	03/28/2017 15:15
MW-15@0-2.5	Y703383-02	Soil	March 28, 2017 10:45	03/28/2017 15:15
MW-16@0-2.5	Y703383-03	Soil	March 28, 2017 10:10	03/28/2017 15:15
MW-17@0-2.5	Y703383-04	Soil	March 28, 2017 10:00	03/28/2017 15:15

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 - Wardlaw #20-28

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: y703383

Client: Eagle Env.

Client Project ID: Noble - Wardlaw # 20-28

Checklist Completed by: Dan Lee

Shipped Via: 117  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 3-29-17 15:31

Airbill #: NA

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

Cooler Number/Temperature: 1121 °C  °C  °C  °C

Thermometer ID: 1003

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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<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 Na <sub>2</sub> SO <sub>2</sub> +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" 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.

JP  
 Reviewed by (Project Manager)

3/29/17  
 Date/Time Reviewed

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 - Wardlaw #20-28

**MW-13@0-2.5**  
**3/28/2017 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703383-01 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2906	03/29/2017	03/29/2017	U
<i>Surrogate: o-Terphenyl</i>	77.1 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2904	03/29/2017	03/29/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	107 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.5 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	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 - Wardlaw #20-28

**MW-15@0-2.5**  
**3/28/2017 10:45:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703383-02 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2906	03/29/2017	03/29/2017	U
<i>Surrogate: o-Terphenyl</i>	75.2 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2904	03/29/2017	03/29/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	105 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.9 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	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 - Wardlaw #20-28

**MW-16@0-2.5**  
**3/28/2017 10:10:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703383-03 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2906	03/29/2017	03/29/2017	U
<i>Surrogate: o-Terphenyl</i>	72.4 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2904	03/29/2017	03/29/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	110 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	99.1 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	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 - Wardlaw #20-28

**MW-17@0-2.5**  
**3/28/2017 10:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703383-04 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7C2906	03/29/2017	03/29/2017	U
<i>Surrogate: o-Terphenyl</i>	75.9 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7C2904	03/29/2017	03/29/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
Napthalene	ND	0.007	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	109 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	98.8 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	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 - Wardlaw #20-28

**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 B7C2904 - EPA 5030 (soil)**

**Blank (B7C2904-BLK1)**

Prepared: 03/29/2017 Analyzed: 03/29/2017

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	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.6	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		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 - Wardlaw #20-28

**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 B7C2904 - EPA 5030 (soil)

**LCS (B7C2904-BS1)**

Prepared: 03/29/2017 Analyzed: 03/29/2017

Benzene	0.109	0.002	mg/kg	0.100		109	70-130			
Toluene	0.112	0.002	"	0.100		112	70-130			
Ethylbenzene	0.113	0.002	"	0.100		113	70-130			
m,p-Xylene	0.226	0.004	"	0.200		113	70-130			
o-Xylene	0.108	0.002	"	0.100		108	70-130			
Naphthalene	0.102	0.007	"	0.100		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.8	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.5	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 - Wardlaw #20-28

**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 B7C2904 - EPA 5030 (soil)

Matrix Spike (B7C2904-MS1)	Source: Y703353-01			Prepared: 03/29/2017 Analyzed: 03/29/2017						
Benzene	0.108	0.002	mg/kg	0.100	ND	108	70-130			
Toluene	0.106	0.002	"	0.100	ND	106	70-130			
Ethylbenzene	0.109	0.002	"	0.100	ND	109	70-130			
m,p-Xylene	0.216	0.004	"	0.200	ND	108	70-130			
o-Xylene	0.105	0.002	"	0.100	ND	105	70-130			
Naphthalene	0.086	0.007	"	0.100	ND	86.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		99.0	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.6	70-130			

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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7C2904 - EPA 5030 (soil)

Matrix Spike Dup (B7C2904-MSD1)	Source: Y703353-01			Prepared: 03/29/2017 Analyzed: 03/29/2017						
Benzene	0.104	0.002	mg/kg	0.100	ND	104	70-130	3.57	20	
Toluene	0.102	0.002	"	0.100	ND	102	70-130	3.94	20	
Ethylbenzene	0.106	0.002	"	0.100	ND	106	70-130	2.25	20	
m,p-Xylene	0.210	0.004	"	0.200	ND	105	70-130	2.81	20	
o-Xylene	0.103	0.002	"	0.100	ND	103	70-130	2.16	20	
Naphthalene	0.079	0.007	"	0.100	ND	79.0	70-130	9.01	20	
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	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 - Wardlaw #20-28

**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 B7C2906 - EPA 3580**

**Blank (B7C2906-BLK1)**

Prepared: 03/29/2017 Analyzed: 03/29/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	43		"	50.0		86.4	59-131			

**LCS (B7C2906-BS1)**

Prepared: 03/29/2017 Analyzed: 03/29/2017

Diesel (C10-C28)	869	50.0	mg/kg	1000		86.9	64-121			
Surrogate: o-Terphenyl	45		"	50.0		89.5	59-131			

**Matrix Spike (B7C2906-MS1)**

**Source: Y703383-01**

Prepared: 03/29/2017 Analyzed: 03/29/2017

Diesel (C10-C28)	744	50.0	mg/kg	1000	31.9	71.2	53-125			
Surrogate: o-Terphenyl	36		"	50.0		71.6	59-131			

**Matrix Spike Dup (B7C2906-MSD1)**

**Source: Y703383-01**

Prepared: 03/29/2017 Analyzed: 03/29/2017

Diesel (C10-C28)	750	50.0	mg/kg	1000	31.9	71.8	53-125	0.891	20	
Surrogate: o-Terphenyl	39		"	50.0		78.2	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 - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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---

Jen Pellegrini For Noelle Doyle Mathis, President



April 06, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

Project Name - Noble - Wardlaw #20-28

Project Number - [none]

Attached are your analytical results for Noble - Wardlaw #20-28 received by Origins Laboratory, Inc. March 30, 2017. This project is associated with Origins project number Y703419-01.

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 - Wardlaw #20-28

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-02	Y703419-01	Water	March 30, 2017 11:00	03/30/2017 15:10
MW-03	Y703419-02	Water	March 30, 2017 11:15	03/30/2017 15:10
MW-11	Y703419-03	Water	March 30, 2017 13:10	03/30/2017 15:10
MW-12	Y703419-04	Water	March 30, 2017 12:45	03/30/2017 15:10
MW-13	Y703419-05	Water	March 30, 2017 13:15	03/30/2017 15:10
MW-15	Y703419-06	Water	March 30, 2017 13:20	03/30/2017 15:10
MW-16	Y703419-07	Water	March 30, 2017 13:25	03/30/2017 15:10
MW-17	Y703419-08	Water	March 30, 2017 13:30	03/30/2017 15:10

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 - Wardlaw #20-28

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705419

page | of |

Client: EAGLE ENV CONSULTING  
 Project Manager: MARTIN ECKERT III  
 Address: 4101 INCA ST  
 Project Name: WARDLAW #20-28  
 DENVER, CO  
 Project Number: 1  
 Telephone Number: 303 433 6479  
 Samples Collected By: AR  
 Email Address: MCC3@eagle-env.com

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

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	Date		Time			
MU-02	3/30/17	1100	3	X				X									
MU-03		1115															
MU-11		1310															
MU-12		1245															
MU-13		1315															
MU-15		1320															
MU-16		1325															
MU-17		1330															
Relinquished By:		Date: 3/30/17	Time: 1510	Received By:		Date: 4/20/17	Time: 1610	Turnaround Time:		Same Day <input type="checkbox"/>	24 Hr <input type="checkbox"/>						
Relinquished By:		Date:	Time:	Received By:		Date:	Time:	48 Hr <input type="checkbox"/>	72 Hr <input type="checkbox"/>	Standard <input checked="" type="checkbox"/>							

Date Results Needed: NOBLE

Temp Received: 2.8°C

BOB TO JACOB

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 - Wardlaw #20-28

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: Y703419

Client: Eagle Env.

Client Project ID: Wardlaw #20-28

Checklist Completed by: DM

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

Date/time completed: 3-30-13 1551

Airbill #: NA

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

Cooler Number/Temperature: 1 / 28 °C 1 / 1 °C 1 / 1 °C (Describe)

Thermometer ID: 7053

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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input checked="" 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 Na <sub>2</sub> SO <sub>2</sub> +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" 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 [Signature] (Project Manager)

Date/Time Reviewed 3/31/17

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 - Wardlaw #20-28

**MW-02**  
**3/30/2017 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703419-01 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	<b>6.58</b>	1.00	"	"	"	"	"	
Xylenes, total	<b>43.4</b>	1.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	99.2 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.9 %	84-114			"	"	"	

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 - Wardlaw #20-28

**MW-03**  
**3/30/2017 11:15:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703419-02 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	98.1 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.1 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-11**  
**3/30/2017 1:10:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703419-03 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	99.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.7 %	84-114			"	"	"	

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-12**  
**3/30/2017 12:45:00PM**

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

**Origins Laboratory, Inc.**  
**Y703419-04 (Water)**

**BTEX by EPA 8260C**

Benzene	210	10.0	ug/L	10	B7D0308	04/03/2017	04/04/2017	
Toluene	480	10.0	"	"	"	"	"	
Ethylbenzene	19.8	1.00	"	1	"	"	04/04/2017	
Xylenes, total	424	10.0	"	10	"	"	04/04/2017	
Surrogate: 1,2-Dichloroethane-d4	100 %	84-121			"	"	04/04/2017	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.3 %	84-114			"	"	"	

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Project: Noble - Wardlaw #20-28

**MW-13**  
**3/30/2017 1:15:00PM**

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

**Origins Laboratory, Inc.**  
**Y703419-05 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/04/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	99.7 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.2 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**MW-15**  
**3/30/2017 1:20:00PM**

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

**Origins Laboratory, Inc.**  
**Y703419-06 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/04/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	98.4 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %	84-114			"	"	"	

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 Project: Noble - Wardlaw #20-28

**MW-16**  
**3/30/2017 1:25:00PM**

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

**Origins Laboratory, Inc.**  
**Y703419-07 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/04/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	99.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	99.1 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.8 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**MW-17**  
**3/30/2017 1:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y703419-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	B7D0308	04/03/2017	04/04/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	99.3 %	84-121			"	"	"	
Surrogate: Toluene-d8	101 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	84-114			"	"	"	

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7D0308 - EPA 5030B (Water)**

**Blank (B7D0308-BLK1)**

Prepared: 04/03/2017 Analyzed: 04/03/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5	94.8		84-121			
Surrogate: Toluene-d8	60		"	62.5	96.0		85-115			
Surrogate: 4-Bromofluorobenzene	58		"	62.5	92.7		84-114			

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 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7D0308 - EPA 5030B (Water)**

**LCS (B7D0308-BS1)**

Prepared: 04/03/2017 Analyzed: 04/03/2017

Benzene	48.1	1.00	ug/L	50.0		96.3	73.3-129			
Toluene	50.2	1.00	"	50.0		100	76.2-123			
Ethylbenzene	52.1	1.00	"	50.0		104	73.6-130			
m,p-Xylene	103	2.00	"	100		103	76.1-126			
o-Xylene	49.4	1.00	"	50.0		98.7	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5		86.3	84-121			
Surrogate: Toluene-d8	61		"	62.5		97.5	85-115			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.8	84-114			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7D0308 - EPA 5030B (Water)

Matrix Spike (B7D0308-MS1)	Source: Y703437-01			Prepared: 04/03/2017 Analyzed: 04/03/2017						
Benzene	48.4	1.00	ug/L	50.0	ND	96.7	74-130			
Toluene	50.8	1.00	"	50.0	ND	102	73-131			
Ethylbenzene	52.0	1.00	"	50.0	ND	104	76-132			
m,p-Xylene	102	2.00	"	100	ND	102	69-139			
o-Xylene	49.1	1.00	"	50.0	ND	98.1	74-131			
Surrogate: 1,2-Dichloroethane-d4	55		"	62.5		87.2	84-121			
Surrogate: Toluene-d8	61		"	62.5		98.2	85-115			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		90.9	84-114			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Wardlaw #20-28

**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 B7D0308 - EPA 5030B (Water)**

Matrix Spike Dup (B7D0308-MSD1)	Source: Y703437-01			Prepared: 04/03/2017 Analyzed: 04/03/2017						
Benzene	47.8	1.00	ug/L	50.0	ND	95.7	74-130	1.06	20	
Toluene	49.9	1.00	"	50.0	ND	99.8	73-131	1.77	20	
Ethylbenzene	51.0	1.00	"	50.0	ND	102	76-132	1.84	20	
m,p-Xylene	102	2.00	"	100	ND	102	69-139	0.676	20	
o-Xylene	48.4	1.00	"	50.0	ND	96.9	74-131	1.27	20	
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.5	84-121			
Surrogate: Toluene-d8	61		"	62.5		97.2	85-115			
Surrogate: 4-Bromofluorobenzene	57		"	62.5		91.9	84-114			

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4101 Inca Street  
Denver CO 80211

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Wardlaw #20-28

---

**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



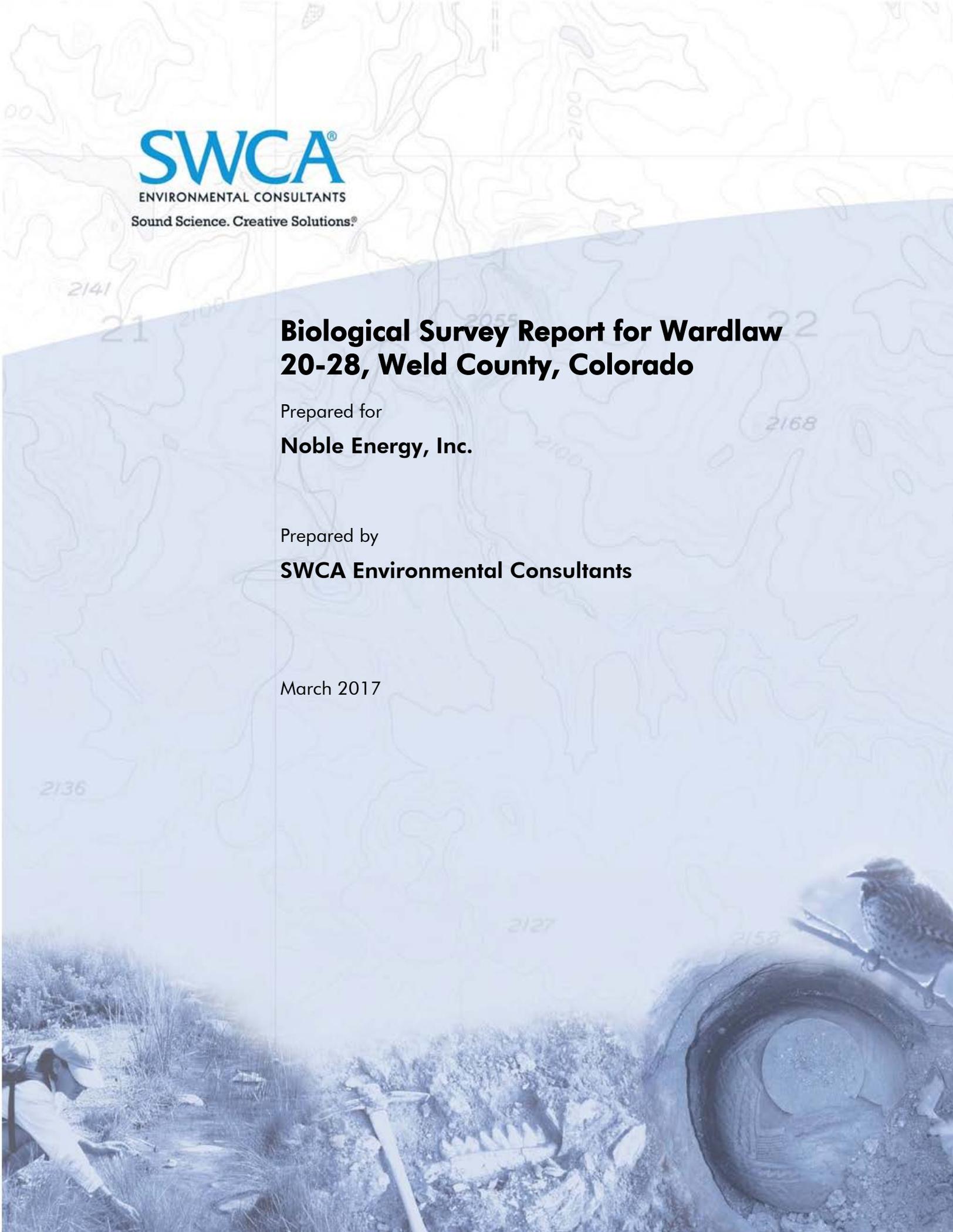
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---

Jen Pellegrini For Noelle Doyle Mathis, President

**ATTACHMENT C**

**SWCA Biological Survey Report**



**SWCA**<sup>®</sup>

ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.<sup>®</sup>

## **Biological Survey Report for Wardlaw 20-28, Weld County, Colorado**

Prepared for

**Noble Energy, Inc.**

Prepared by

**SWCA Environmental Consultants**

March 2017



**Biological Survey Report for Wardlaw 20-28,  
Weld County, Colorado**

Prepared for

**Noble Energy, Inc.  
2155 117<sup>th</sup> Avenue  
Greeley, Colorado 80631  
970.330.3100**

Prepared by

**SWCA Environmental Consultants  
295 Interlocken Boulevard, Suite 300  
Broomfield, Colorado 80021  
303.487.1183**

**March 2017**

## TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION .....	1
VEGETATION COMMUNITIES .....	2
SPECIAL STATUS SPECIES HABITAT .....	2
POTENTIAL WATERS OF THE U.S. ....	4
SUMMARY AND RECOMMENDATIONS.....	4

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Special Status Species for Weld County and Their Potential to Occur.....	3

## LIST OF APPENDICES

### Appendix

- A Project Location Map
- B Site Photographs
- C Wetland Determination Data Forms

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## INTRODUCTION

SWCA Environmental Consultants (SWCA) was contracted by Noble Energy, Inc. (Noble) to conduct a biological survey in Section 28 of Township 6 North, Range 64W at the Wardlaw 20-28 well in Weld County, Colorado. The survey area is located approximately 0.5 mile west of the town of Gill and is immediately adjacent to Owl Creek (HUC 1019007), which historically was a south trending intermittent drainage which originated approximately 3 miles to the north at Howard's Lake, but has since been altered and channelized and now serves as an earthen irrigation ditch which serving the adjacent fields. (Appendix A). A condensate flowline located near the well was compromised, resulting in an unintentional release of condensate liquids. The cause of the flowline release is unknown at this time. The biological survey was conducted to determine if any regulated natural resources are present and if so whether there were impacts from the condensate or by remediation activities. The unintentional release occurred approximately 3 feet from Owl Creek and spread approximately 600 feet downstream in the irrigation ditch over mostly frozen water. In addition, condensate spread approximately 110 feet southwest across an unnamed two-track road and into a ploughed agricultural field (see Appendix A). These figures are preliminary and based on a visual assessment of the site without results from soil and water samples collected for analysis.

An SWCA biologist conducted the field investigations on February 9, 2017. Prior to field survey, SWCA reviewed baseline spatial data for the study area, including historic and current aerial photographs of the site and datasets published by the National Wetlands Inventory and National Hydrography Dataset. The wetland delineation was determined in the field using routine on-site delineation methods outlined in the *Corps of Engineers Wetlands Delineation Manual*<sup>1</sup> and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*.<sup>2</sup> Wetland boundaries were delineated where all three fundamental characteristics of hydrophytic vegetation, hydric soils, and hydrology were present.

The biological survey included an assessment of general vegetative communities, special status species habitat, and delineation of potential waters of the U.S. (including wetlands) based on field observation of an ordinary high water mark (OHWM). Presence of an OHWM indicates the waterbody conveys water for some regularity. Because the feature likely has downstream connectivity, it is potentially considered a water of the U.S. and subject to compliance with Section 404 of the Clean Water Act. SWCA biologists documented site conditions utilizing a global positioning system (GPS) unit with submeter accuracy to determine the spatial extent of features, record geographic reference data points, and demarcate impacted boundaries during the field survey. Geographic information system (GIS) software was used to analyze recorded features, calculate areas, and generate the project area map provided in Appendix A.

---

<sup>1</sup> U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station.

<sup>2</sup> U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Determination Manual: Great Plains Region Version 2.0*. Edited by J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-12. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

## VEGETATION COMMUNITIES

During the field investigations, the SWCA biologist confirmed that the survey area contains three main vegetation communities. The three vegetation communities consist of: (1) a cultivated area which includes the largest vegetation community within the site and completely surrounds Owl Creek and the unnamed two-track road (see Appendix A); (2) a narrow upland grassland band that spans the banks of Owl Creek at this site; and (3) wetland community found along the banks of Owl Creek.

The cultivated vegetation community was dormant and ploughed at the time of survey, but is dominated by cultivated corn or wheat (*Triticum aestivum*) during the growing season (Appendix B – Photograph 1).

The narrow upland grassland vegetation community is dominated by smooth brome (*Bromus inermis*), green foxtail (*Setaria viridis*), saltgrass (*Distichlis spicata*), switchgrass (*Panicum virgatum*), foxtail barley (*Hordeum jubatum*), and kochia (*Bassia scoparia*). This vegetation community was present at the source of the condensate release.

The wetland community found along the lower banks of Owl Creek is dominated by hydrophytic species commonly found in palustrine emergent wetlands. This vegetation community includes reed canarygrass (*Phalaris arundinacea*), softstem bulrush (*Schoenoplectus tabernaemontani*), saltgrass, and green foxtail.

## SPECIAL STATUS SPECIES HABITAT

The special-status species evaluated in this report are summarized in Table 1 and consist of 1) all federally protected (i.e., endangered and threatened) species; 2) additional species listed by the U.S. Fish and Wildlife Service as candidate and proposed species, and species under review; 3) state protected species; and 4) migratory birds and raptor nests. No suitable habitat for any federally listed threatened and endangered species was found to occur at the site. Based on the habitats present in the survey area, it is unlikely that federally or state listed special status species would occur at the site. Additionally, no impacts are anticipated to nesting migratory passerine birds, as nesting typically begins in late March for most species and ground disturbing clean-up activities were completed by February 14th. Additionally, no raptor nests were observed in or near the survey area.

**Table 1. Special Status Species for Weld County and Their Potential to Occur**

<b>Common Name (Scientific Name)</b>	<b>Status*</b>	<b>Potential to Occur in Project Area</b>
<b>Mammals</b>		
Preble's meadow jumping mouse ( <i>Zapus hudsonius preblei</i> )	FT, ST	None. Lack of suitable riparian habitat.
Black-tailed prairie dog ( <i>Cynomys ludovicianus</i> )	SC	None. Cultivated lands free of prairie dog colonies dominate site.
Swift fox ( <i>Vulpes velox</i> )	SC	Unlikely. Suitable grassland habitat may occur in adjacent fields.
<b>Birds</b>		
Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	FT, ST	None. Lack of suitable forested habitat.
Whooping crane ( <i>Grus americana</i> )	FE, SE	Unlikely. Outside of species expected range.
Piping plover ( <i>Charadrius melodus</i> )	FT, ST	None. Very rare migrant in northern Colorado.
Least tern ( <i>Sterna antillarum</i> )	FE, SE	None. Very rare visitor to northern Colorado.
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	SC	None. No suitable nesting and roosting habitat within >1 mile of project area.
Ferruginous hawk ( <i>Buteo regalis</i> )	SC	May occur. Suitable grassland habitat may occur in adjacent fields.
Burrowing owl ( <i>Athene cunicularia</i> )	ST	None. Suitable prairie dog colonies not present at site.
Mountain plover ( <i>Charadrius montanus</i> )	SC	None. Lack of suitable sparsely vegetated habitat at site.
<b>Fish</b>		
Pallid sturgeon ( <i>Scaphirhynchus albus</i> )	FE	None. Lack of suitable habitat.
<b>Flowering Plants</b>		
Western prairie fringed orchid ( <i>Platanthera praeclara</i> )	FT	None. Lack of suitable habitat. No proposed water depletions in the South Platte River.
Ute ladies'-tresses ( <i>Spiranthes diluvialis</i> )	FT	None. Lack of suitable habitat.
Colorado butterfly plant ( <i>Guara neomexicana</i> spp. <i>coloradensis</i> )	FT	None. Lack of suitable habitat.

\* FE = Federally Endangered; FT = Federally Threatened; SC = State Special Concern; SE = State Endangered; ST = State Threatened

## **POTENTIAL WATERS OF THE U.S.**

Because of presence of hydrophytic species abutting Owl Creek including reed canarygrass and softstem bulrush, a formal on-site wetland delineation was conducted to determine that the community qualifies as a wetland based on the USACE definition. In addition to the wetland vegetation, it was determined that the area contains hydric soils and indicators of wetland hydrology. Indicators observed are documented in detail on the determination forms in Appendix C. The non-wetland portions of Owl Creek contained ice and appeared to contain an unvegetated bottom. This area was documented as a non-wetland waterbody containing an OHWM. Photographs of both aquatic features are included in Appendix B. Both Owl Creek and its abutting wetland are likely considered Waters of the U.S. (WOUS), and potentially USACE jurisdictional features subject to compliance with Section 404 of the Clean Water Act.

## **SUMMARY AND RECOMMENDATIONS**

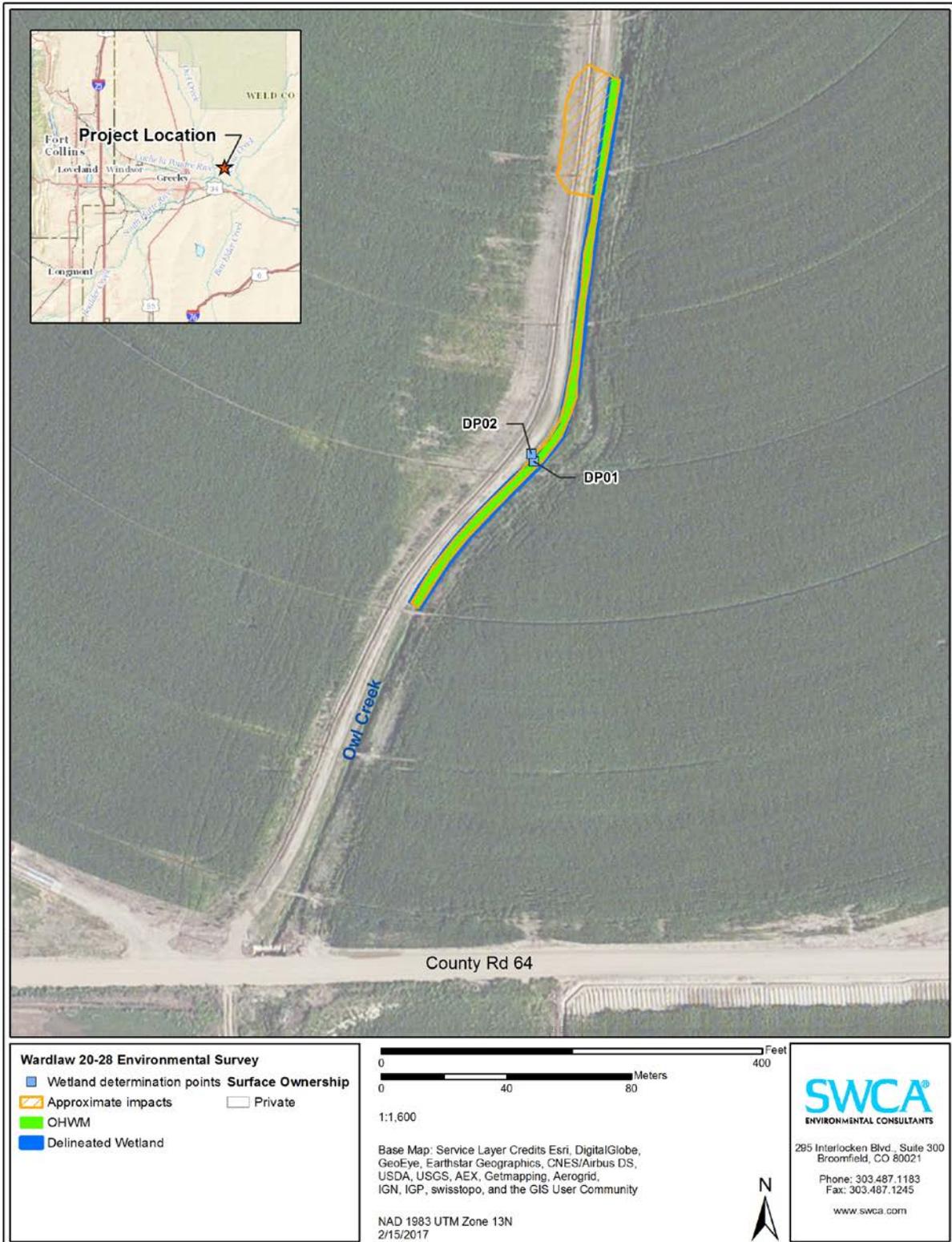
The condensate release impacted approximately 0.056 acre of emergent wetland and approximately 0.097 acre within the OHWM of Owl Creek (0.153 acre total impact to WOUS).

In response to the unintentional release, Noble began remediation activities to remove the condensate from the survey area immediately. Head gates within Owl Creek were shut off to avoid any other potential downstream contamination. Above the bank and in the upland area, Noble removed the affected vegetation and excavated affected soils leaving sufficient earth in place for bank stability. Within the Owl Creek ditch and wetlands, affected ice and ice melt was removed using a hydrovac. Contaminated ice melt as also removed through the use of a containment boom and absorbent pads.

Clean-up activities occurring within potential WOUS are anticipated to be permitted under Nationwide Permit (NWP) 20 provided the general and regional conditions are followed. NWP 20 authorizes activities conducted in response to a discharge or release of oil and hazardous substances subject to the National Oil and Hazardous Substances Pollution Contingency Plan within WOUS boundaries provided activities are conducted under 1) the Spill Control and Countermeasure Plan 2) the direction or oversight of the federal on-scene coordinator designated by 40 CFR part 300 or 3) any approved existing state, regional or local contingency plan provided that the regional response team. Use of this NWP does not require a formal Pre-Construction Notification (PCN) to the U.S. Army Corps of Engineers and there are no temporary disturbance limits or delineation requirements under this permit. Although a formal PCN is not required for conducting clean-up activities, we recommend a courtesy notification to the USACE for project documentation and to confirm the appropriate use of NWP 20.

**APPENDIX A**  
**Project Location Map**

---



**Project location map.**

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**APPENDIX B**  
**Site Photographs**

---



**Photograph 1** – View northeast showing the upland unintentional release.



**Photograph 2** – View north showing location of flowline failure and proximity to Owl Creek.



**Photograph 3** – View southwest showing the upland unintentional release.



**Photograph 4** – View south showing unintentional release into Owl Creek.



**Photograph 5** – View north (upstream) showing fringe wetland surrounding Owl Creek.



**Photograph 6** – View south (downstream) showing fringe wetland surrounding Owl Creek.



**Photograph 7** – Soil pit at DP01 documenting fringe wetland surrounding Owl Creek.



**Photograph 8** – Soil pit at DP02 documenting uplands surrounding Owl Creek.

**APPENDIX C**  
**Wetland Determination Data Forms**

---

## WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Wardlaw 20-28 County: Weld Sampling Date: February 6, 2017  
 Applicant/Owner: Noble State: CO Sampling Point: DP01  
 Investigator(s): PJG and n/a Section, Township, Range: S28 T6N R64W  
 Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 1-5  
 Subregion (LRR): Western GP Range and Irrigated Region/Central High Plains, Southern Part Lat: 40.45132 Long: -104.55065 Datum: NAD83  
 Soil Map Unit Name: Otero Sandy Loam, 1 to 3 percent slopes NWI Classification: PEM  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (if no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: This point was determined to be within a wetland due to the presence of all 3 wetland criteria. Site within a ditch bank amongst hydrophytes. Ditch currently frozen with a very low flow around ice.	

### VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status	
<u>Tree Stratum</u> (Plot size: <u>30 ft.</u> )				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>5</u> x 1 = <u>5</u> FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>10</u> x 5 = <u>50</u> Column Totals: <u>95</u> (A) <u>215</u> (B) Prevalence Index = B/A = <u>2.26</u>
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 ft.</u> )				
1. <u>None Observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: <u>5 ft.</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Explain) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Phalaris arundinacea</u>	60	Yes	FACW	
2. <u>Schoenoplectus tabernaemontani</u>	5	No	OBL	
3. <u>Distichlis spicata</u>	20	Yes	FACW	
4. <u>Setaria viridis</u>	10	No	UPL	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
95 = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: <u>30 ft.</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>None Observed</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5</u>				

Remarks:  
 A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).  
 A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).  
  
 Site dominated by reed canary grass.

**SOIL**

Sampling Point: DP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 4/3	100	None	—	—	—	Clay Loam	
5-12	10YR 5/2	100	10YR 5/8	5	C	M	Clay Loam	
12-18	GLE Y 1 2.5/	100	None	—	—	—	Clay	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:  
 A positive indication of hydric soil was observed.  
 Soils show depleted matrix below 5 inches. Black anoxic clay present below 12 inches.

**HYDROLOGY**

Wetland hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<b>(where not tilled)</b>
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <b>(where tilled)</b>
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input checked="" type="checkbox"/> Geomorphic Position (D2)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

<b>Field Observations:</b> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____      Depth (inches): <u>15</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____      Depth (inches): <u>12</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 A positive indication of wetland hydrology was observed (at least two secondary indicators).  
 A positive indication of wetland hydrology was observed (at least two secondary indicators).  
 Saturated soils below 12 inches. Oxidized rhizospheres noted.

**WETLAND DETERMINATION DATA FORM - Great Plains Region**

Project/Site: Wardlaw 20-28 County: Weld Sampling Date: February 6, 2017  
 Applicant/Owner: Noble State: CO Sampling Point: DP02  
 Investigator(s): PJG and n/a Section, Township, Range: S28 T6N R64W  
 Landform (hillslope, terrace, etc.): Bank Local relief (concave, convex, none): Convex Slope (%): 0-1  
 Subregion (LRR): Western GP Range and Irrigated Region/Central High Plains, Southern Part Lat: 40.45132 Long: -104.55065 Datum: NAD83  
 Soil Map Unit Name: Otero Sandy Loam, 1 to 3 percent slopes NWI Classification: PEM  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (if no, explain in Remarks.)  
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u> Hydric Soil Present? Yes <u>      </u> No <u>X</u> Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Remarks: This point was determined not to be within a wetland due to the lack of hydric soils and wetland hydrology. Site on upper bank of irrigation ditch (Owl Creek)	

**VEGETATION - Use scientific names of plants.**

<table style="width:100%; border-collapse: collapse;"> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Tree Stratum (Plot size: <u>30 ft.</u>)</th> <th style="text-align: center; border-bottom: 1px solid black;">Absolute % cover</th> <th style="text-align: center; border-bottom: 1px solid black;">Dominant Species?</th> <th style="text-align: center; border-bottom: 1px solid black;">Indicator Status</th> </tr> <tr><td>1. <u>None Observed</u></td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)</th> <th style="text-align: center; border-bottom: 1px solid black;">Absolute % cover</th> <th style="text-align: center; border-bottom: 1px solid black;">Dominant Species?</th> <th style="text-align: center; border-bottom: 1px solid black;">Indicator Status</th> </tr> <tr><td>1. <u>None Observed</u></td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td>3. _____</td><td></td><td></td><td></td></tr> <tr><td>4. _____</td><td></td><td></td><td></td></tr> <tr><td>5. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Herb Stratum (Plot size: <u>5 ft.</u>)</th> <th style="text-align: center; border-bottom: 1px solid black;">Absolute % cover</th> <th style="text-align: center; border-bottom: 1px solid black;">Dominant Species?</th> <th style="text-align: center; border-bottom: 1px solid black;">Indicator Status</th> </tr> <tr><td>1. <u>Phalaris arundinacea</u></td><td style="text-align: center;">60</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FACW</td></tr> <tr><td>2. <u>Distichlis spicata</u></td><td style="text-align: center;">10</td><td style="text-align: center;">No</td><td style="text-align: center;">FACW</td></tr> <tr><td>3. <u>Setaria viridis</u></td><td style="text-align: center;">10</td><td style="text-align: center;">No</td><td style="text-align: center;">UPL</td></tr> <tr><td>4. <u>Panicum virgatum</u></td><td style="text-align: center;">10</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>5. <u>Hordeum jubatum</u></td><td style="text-align: center;">5</td><td style="text-align: center;">No</td><td style="text-align: center;">FACW</td></tr> <tr><td>6. <u>Bassia scoparia</u></td><td style="text-align: center;">5</td><td style="text-align: center;">No</td><td style="text-align: center;">FACU</td></tr> <tr><td>7. _____</td><td></td><td></td><td></td></tr> <tr><td>8. _____</td><td></td><td></td><td></td></tr> <tr><td>9. _____</td><td></td><td></td><td></td></tr> <tr><td>10. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">100 = Total Cover</td></tr> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Woody Vine Stratum (Plot size: <u>30 ft.</u>)</th> <th style="text-align: center; border-bottom: 1px solid black;">Absolute % cover</th> <th style="text-align: center; border-bottom: 1px solid black;">Dominant Species?</th> <th style="text-align: center; border-bottom: 1px solid black;">Indicator Status</th> </tr> <tr><td>1. <u>None Observed</u></td><td></td><td></td><td></td></tr> <tr><td>2. _____</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;">_____ = Total Cover</td></tr> <tr><td colspan="4">                     % Bare Ground in Herb Stratum <u>0</u> </td></tr> </table>	Tree Stratum (Plot size: <u>30 ft.</u> )	Absolute % cover	Dominant Species?	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FACU species <u>5</u>	<u>20</u> x 4 = <u>20</u>																																																																																																																																																																		
UPL species <u>10</u>	<u>50</u> x 5 = <u>50</u>																																																																																																																																																																		
Column Totals:	<u>100</u> (A) <u>250</u> (B)																																																																																																																																																																		
Prevalence Index = B/A =	<u>2.50</u>																																																																																																																																																																		
Hydrophytic Vegetation Indicators:																																																																																																																																																																			
<u>      </u> 1 - Rapid Test for Hydrophytic Vegetation																																																																																																																																																																			
<u>X</u> 2 - Dominance Test is >50%																																																																																																																																																																			
<u>X</u> 3 - Prevalence Index is ≤ 3.0 <sup>1</sup>																																																																																																																																																																			
<u>      </u> 4 - Morphological Adaptations <sup>1</sup> (Explain)																																																																																																																																																																			
<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																																																																																																																																																																			
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																																																																																																																																																			
Hydrophytic Vegetation Present?	Yes <u>X</u> No <u>      </u>																																																																																																																																																																		
Remarks: A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC). A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).  Hydric vegetation extends above wetland boundary (notably reed canary grass)																																																																																																																																																																			

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	100	None	—	—	—	Loam	
4-15	10YR 4/3	100	None	—	—	—	Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<b>(LRR H outside of MLRA 72 &amp; 73)</b>
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<b>(MLRA 72 &amp; 73 of LRR H)</b>	

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**      Yes \_\_\_\_\_ No

Remarks:

No positive indication of hydric soils was observed.

No hydric soil indicators noted.

**HYDROLOGY**

**Wetland hydrology Indicators:**

<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<b>(where tilled)</b>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<b>(where not tilled)</b>	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present?    Yes \_\_\_\_\_ No     Depth (inches): N/A

Water Table Present?    Yes \_\_\_\_\_ No     Depth (inches): >20

Saturation Present?    Yes \_\_\_\_\_ No     Depth (inches): >20  
(includes capillary fringe)

**Wetland Hydrology Present?**      Yes \_\_\_\_\_ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No positive indication of wetland hydrology was observed.

No hydrology indicators noted.