



November 7, 2017

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

**Magnuson #21-10B, 21-15B**  
**Water Vault Removal**  
**40.380621 / -104.664511**  
**SW¼ SE¼ SEC.21 T5N R65W 6PM**  
**Weld County, Colorado**  
**Facility ID 447066**

Dear Mr. Evans,

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to present the results from the water vault removal at the Magnuson #21-10B, 21-15B site (site).

On October 5, 2017, EAGLE collected soil samples and a grab groundwater sample following the removal of the water vaults at the site. Per Noble Standard Operation Procedures, a soil sample was collected from each sidewall for field screening. Groundwater was observed at a depth of approximately 4 feet below ground surface (bgs), and therefore a floor soil sample was not collected. The sidewall soil samples with the highest photoionization detector (PID) reading (SS-03@2.5' and SS-06@3') and the grab groundwater sample (GW-01) were submitted for laboratory analysis.

Based on laboratory analytical results, soil samples SS-03@2.5' and SS-06@3' did not contain concentrations of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, or total petroleum hydrocarbons (TPH) exceeding Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 regulatory limits. Grab groundwater sample, GW-01, did not contain concentrations of BTEX exceeding applicable COGCC Table 910-1 regulatory limits. Additionally, the sidewall soil sample's (SS-03@2.5' and SS-06@3') specific conductance, pH, and sodium adsorption ratio (SAR) values were within COGCC Table 910-1 regulatory limits.

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

Sincerely,

**EAGLE ENVIRONMENTAL CONSULTING, INC.**

Andrew Newberry  
Project Geologist

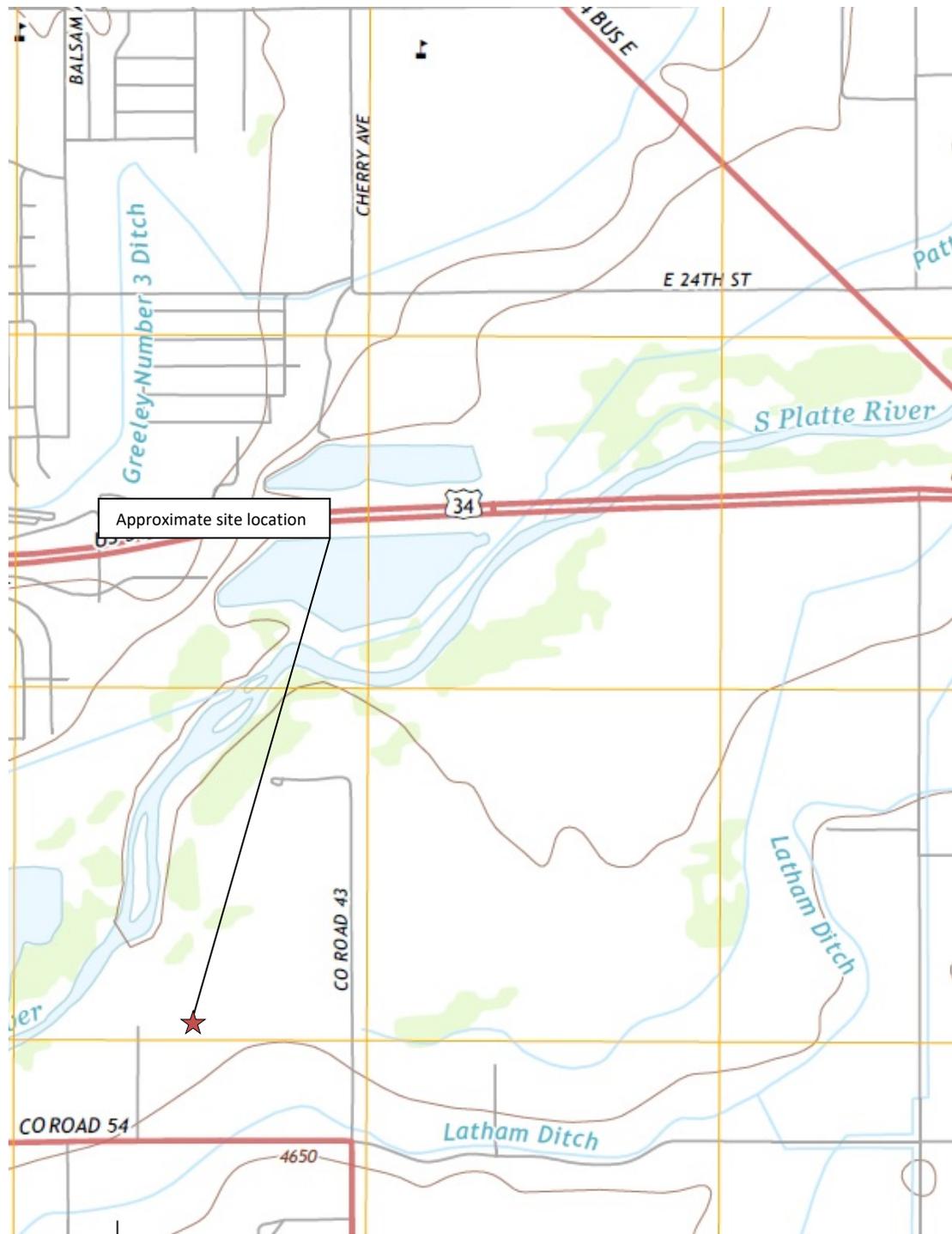


## **FIGURES**

**Figure 1: Topographic Site Location Map**

**Figure 2: Aerial Site Location Map**

**Figure 3: Sample Analytical Map**



**Topographic Site Location Map**

Magnuson #21-10B, 21-15B  
 Water Vault Removal  
 40.380621 / -104.664511  
 SWSE SEC.21 T5N R65W 6 PM  
 Weld County, Colorado  
 Facility ID 447066



**EAGLE**  
 ENVIRONMENTAL  
 CONSULTING, INC.



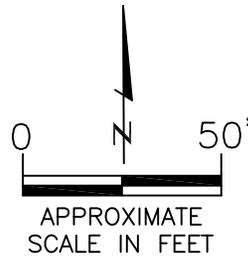
Source: USGS 7.5 Minute Topographic Map, Greeley, CO Quadrangle 2013

**Figure 1**



**LEGEND**

- MAGNUSON #21-10B, 21-15B TANK BATTERY
- MAGNUSON #21-10B WELL HEAD
- MAGNUSON #21-15B WELL HEAD
- APPROXIMATE LOCATION OF WATER VAULT(S) REMOVAL



**AERIAL SITE LOCATION MAP**  
 MAGNUSON #21-10B, 21-15B  
 WATER VAULT REMOVAL  
 40.380621 / -104.664511  
 SW1/4 SE1/4 SEC.21 T5N R65W 6PM  
 WELD COUNTY, COLORADO  
 FACILITY ID 447066

DATE: 10/12/17	
FIG. NO. 2	DRAWN BY: AMN

**EAGLE**  
ENVIRONMENTAL  
CONSULTING, INC.

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



SS-06@3'  
10/05/17  
3'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
N = <0.007  
G = <0.200  
D = <50.0  
EC = 1.02  
SAR = 1.99  
pH = 7.41

GW-01  
10/05/17  
B = 2.84  
T = 24.3  
E = 1.30  
X = 28.7

SS-03@2.5'  
10/05/17  
2.5'  
B = <0.002  
T = <0.002  
E = <0.002  
X = <0.002  
N = <0.007  
G = <0.200  
D = <50.0  
EC = 0.272  
SAR = 2.41  
pH = 7.62

**LEGEND**

- APPROXIMATE EXCAVATION BOUNDARIES
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES FIELD SCREENED
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS

SOIL SAMPLE LOCATION  
DATE  
DEPTH (FEET)  
B = BENZENE (mg/kg)  
T = TOLUENE (mg/kg)  
E = ETHYLBENZENE (mg/kg)  
X = TOTAL XYLENES (mg/kg)  
N = NAPHTHALENE (mg/kg)  
G = TPH-GRO (mg/kg)  
D = TPH-DRO (mg/kg)  
EC = SPECIFIC CONDUCTANCE (mmhos/cm)  
SAR = SODIUM ADSORPTION RATIO  
pH = pH (pH UNITS)

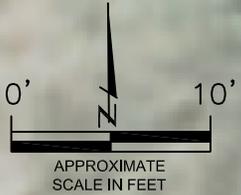
mg/kg = MILLIGRAMS PER KILOGRAM  
mmhos/cm = MILLIMHOS PER CENTIMETER  
TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS  
TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS  
NOTE: VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS

- APPROXIMATE LOCATION OF GROUNDWATER SAMPLE SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS  
GROUNDWATER 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 IN BOLD TYPEFACE CONTAIN CONCENTRATIONS EXCEEDING COGCC TABLE 910-1 REGULATORY LIMITS.  
COGCC - COLORADO OIL AND GAS CONSERVATION COMMISSION

SAMPLE ANALYTICAL MAP  
MAGNUSON #21-10B, 21-15B  
WATER VAULT REMOVAL  
40.380621/-104.664511  
SW1/4 SE1/4 SEC.21 T5N R65W 6PM  
WELD COUNTY, COLORADO  
FACILITY ID 447066



NOTE: SITE UNDER DECOMMISSIONING. FACILITIES NOT OBSERVED ONSITE DURING TIME OF ASSESSMENT.

DATE:	11/02/17
FIG. NO.	3
DRAWN BY:	AMN

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



## **ATTACHMENT A**

### **Laboratory Analytical Report**



October 12, 2017

Eagle Environmental Consulting, Inc.

Martin C Eckert III

4101 Inca Street

Denver

CO 80211

**Project Name - Noble - Magnuson 21-10B, 21-15B Project Number - [none]**

Attached are your analytical results for Noble - Magnuson 21-10B, 21-15B received by Origins Laboratory, Inc. October 05, 2017. This project is associated with Origins project number Y710097-01.

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 - Magnuson 21-10B, 21-15B

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-03@2.5'	Y710097-01	Soil	October 5, 2017 15:45	10/05/2017 18:17
SS-06@3'	Y710097-02	Soil	October 5, 2017 15:47	10/05/2017 18:17
GW-01	Y710097-03	Water	October 5, 2017 15:30	10/05/2017 18:17

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President



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

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4710097

Client: Eagle Env

Client Project ID: Noble - Magnuson

Checklist Completed by: Dan Lu

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

Date/time completed: 11-6-17 1117

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 5.8 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C

Thermometer ID: TC03

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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+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 (Project Manager) [Signature] Date/Time Reviewed 11-6-17 1117

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 - Magnuson 21-10B, 21-15B

**SS-03@2.5'**  
**10/5/2017 3:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y710097-01 (Soil)**

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7J1003	10/10/2017	10/12/2017	U
<i>Surrogate: o-Terphenyl</i>	81.6 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7J0903	10/09/2017	10/09/2017	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>	98.3 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	98.0 %	70-130			"	"	"	

**Metals (Saturated Paste Prep)**

Calcium	12.30		me/L	1	'[none]'	10/09/2017	10/11/2017	
Magnesium	12.05		"	"	"	"	"	
Sodium	8.42		"	"	"	"	"	

**pH in Soil by EPA 9045D**

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 - Magnuson 21-10B, 21-15B

**SS-03@2.5'**

**10/5/2017 3:45:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y710097-01 (Soil)**

**pH in Soil by EPA 9045D**

pH	7.62		pH Units	1	B7J0905	10/09/2017	10/09/2017	
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**SAR by 20B Saturated Paste**

SAR	2.41			1	'[none]'	10/09/2017	10/11/2017	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.272		mmhos/cm	1	B7J0906	10/09/2017	10/09/2017	
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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 - Magnuson 21-10B, 21-15B

SS-06@3'  
 10/5/2017 3:47:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 Y710097-02 (Soil)

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B7J1003	10/10/2017	10/12/2017	U
<i>Surrogate: o-Terphenyl</i>	72.5 %	59-131			"	"	"	

**GBTEX + Napthalene by 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7J0903	10/09/2017	10/09/2017	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>	94.4 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	98.1 %	70-130			"	"	"	

**Metals (Saturated Paste Prep)**

Calcium	24.88		me/L	1	'[none]'	10/09/2017	10/11/2017	
Magnesium	22.26		"	"	"	"	"	
Sodium	9.68		"	"	"	"	"	

**pH in Soil by EPA 9045D**

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 - Magnuson 21-10B, 21-15B

**SS-06@3'**

**10/5/2017 3:47:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y710097-02 (Soil)**

**pH in Soil by EPA 9045D**

pH	7.41		pH Units	1	B7J0905	10/09/2017	10/09/2017	
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**SAR by 20B Saturated Paste**

SAR	1.99			1	'[none]'	10/09/2017	10/11/2017	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	1.02		mmhos/cm	1	B7J0906	10/09/2017	10/09/2017	
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Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**GW-01**  
**10/5/2017 3:30:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y710097-03 (Water)**

**BTEX by EPA 8260C**

Benzene	2.84	1.00	ug/L	1	B7J1102	10/11/2017	10/12/2017	
Toluene	24.3	1.00	"	"	"	"	"	
Ethylbenzene	1.30	1.00	"	"	"	"	"	
Xylenes, total	28.7	1.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	111 %	84-121			"	"	"	
Surrogate: Toluene-d8	102 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J0903 - EPA 5030 (soil)**

**Blank (B7J0903-BLK1)**

Prepared: 10/09/2017 Analyzed: 10/09/2017

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	60		"	62.5		96.8	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	70-130			

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J0903 - EPA 5030 (soil)**

**LCS (B7J0903-BS1)**

Prepared: 10/09/2017 Analyzed: 10/09/2017

Benzene	0.093	0.002	mg/kg	0.100		92.9	70-130			
Toluene	0.094	0.002	"	0.100		94.2	70-130			
Ethylbenzene	0.090	0.002	"	0.100		90.2	70-130			
m,p-Xylene	0.176	0.004	"	0.200		88.2	70-130			
o-Xylene	0.088	0.002	"	0.100		88.2	70-130			
Naphthalene	0.094	0.007	"	0.100		93.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.7	70-130			

Origins Laboratory, Inc.



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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J0903 - EPA 5030 (soil)**

<b>Matrix Spike (B7J0903-MS1)</b>	<b>Source: Y710039-01</b>			<b>Prepared: 10/09/2017 Analyzed: 10/09/2017</b>						
Benzene	2.83	0.050	mg/kg	2.50	ND	113	70-130			
Toluene	2.79	0.050	"	2.50	ND	112	70-130			
Ethylbenzene	2.70	0.050	"	2.50	0.046	106	70-130			
m,p-Xylene	5.20	0.100	"	5.00	0.068	103	70-130			
o-Xylene	2.58	0.050	"	2.50	ND	103	70-130			
Naphthalene	2.68	0.175	"	2.50	0.048	105	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		95.0	70-130			

Origins Laboratory, Inc.



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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J0903 - EPA 5030 (soil)

Matrix Spike Dup (B7J0903-MSD1)	Source: Y710039-01			Prepared: 10/09/2017 Analyzed: 10/09/2017						
Benzene	2.89	0.050	mg/kg	2.50	ND	116	70-130	2.13	20	
Toluene	2.80	0.050	"	2.50	ND	112	70-130	0.322	20	
Ethylbenzene	2.76	0.050	"	2.50	0.046	108	70-130	2.16	20	
m,p-Xylene	5.31	0.100	"	5.00	0.068	105	70-130	2.00	20	
o-Xylene	2.66	0.050	"	2.50	ND	106	70-130	2.94	20	
Naphthalene	2.87	0.175	"	2.50	0.048	113	70-130	6.82	20	
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.8	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 - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

**Blank (B7J1102-BLK1)**

Prepared: 10/11/2017 Analyzed: 10/11/2017

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	60		"	62.5		96.6	84-121			
Surrogate: Toluene-d8	61		"	62.5		96.8	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.3	84-114			

Origins Laboratory, Inc.



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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

**Blank (B7J1102-BLK2)**

Prepared: 10/11/2017 Analyzed: 10/11/2017

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	72		"	62.5	115		84-121			
Surrogate: Toluene-d8	65		"	62.5	104		85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5	104		84-114			

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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

**LCS (B7J1102-BS1)**

Prepared: 10/11/2017 Analyzed: 10/11/2017

Benzene	41.5	1.00	ug/L	50.0		82.9	73.3-129			
Toluene	43.2	1.00	"	50.0		86.4	76.2-123			
Ethylbenzene	43.9	1.00	"	50.0		87.8	73.6-130			
m,p-Xylene	93.5	2.00	"	100		93.5	76.1-126			
o-Xylene	42.1	1.00	"	50.0		84.3	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5		107	84-121			
Surrogate: Toluene-d8	65		"	62.5		104	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		105	84-114			

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 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

**LCS (B7J1102-BS2)**

Prepared: 10/11/2017 Analyzed: 10/11/2017

Benzene	40.8	1.00	ug/L	50.0		81.6	73.3-129			
Toluene	43.1	1.00	"	50.0		86.3	76.2-123			
Ethylbenzene	44.4	1.00	"	50.0		88.7	73.6-130			
m,p-Xylene	94.0	2.00	"	100		94.0	76.1-126			
o-Xylene	42.5	1.00	"	50.0		85.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	74		"	62.5		119	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	84-114			

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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

<b>Matrix Spike (B7J1102-MS1)</b>	<b>Source: Y710110-01</b>			<b>Prepared: 10/11/2017 Analyzed: 10/11/2017</b>						
Benzene	45.9	1.00	ug/L	50.0	ND	91.8	74-130			
Toluene	48.1	1.00	"	50.0	ND	96.2	73-131			
Ethylbenzene	51.0	1.00	"	50.0	ND	102	76-132			
m,p-Xylene	107	2.00	"	100	ND	107	69-139			
o-Xylene	48.5	1.00	"	50.0	ND	97.1	74-131			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	84-114			

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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

<b>Matrix Spike (B7J1102-MS2)</b>	<b>Source: Y710110-04</b>			<b>Prepared: 10/11/2017 Analyzed: 10/11/2017</b>						
Benzene	47.0	1.00	ug/L	50.0	ND	94.0	74-130			
Toluene	49.7	1.00	"	50.0	ND	99.4	73-131			
Ethylbenzene	51.8	1.00	"	50.0	ND	104	76-132			
m,p-Xylene	107	2.00	"	100	ND	107	69-139			
o-Xylene	48.3	1.00	"	50.0	ND	96.5	74-131			
Surrogate: 1,2-Dichloroethane-d4	75		"	62.5		120	84-121			
Surrogate: Toluene-d8	65		"	62.5		104	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

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 4101 Inca Street  
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Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

Matrix Spike Dup (B7J1102-MSD1)	Source: Y710110-01			Prepared: 10/11/2017 Analyzed: 10/11/2017						
Benzene	45.6	1.00	ug/L	50.0	ND	91.3	74-130	0.524	20	
Toluene	47.4	1.00	"	50.0	ND	94.8	73-131	1.47	20	
Ethylbenzene	51.0	1.00	"	50.0	ND	102	76-132	0.0784	20	
m,p-Xylene	105	2.00	"	100	ND	105	69-139	1.44	20	
o-Xylene	48.0	1.00	"	50.0	ND	95.9	74-131	1.18	20	
Surrogate: 1,2-Dichloroethane-d4	74		"	62.5		118	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1102 - EPA 5030B (Water)**

Matrix Spike Dup (B7J1102-MSD2)	Source: Y710110-04			Prepared: 10/11/2017 Analyzed: 10/11/2017						
Benzene	44.9	1.00	ug/L	50.0	ND	89.7	74-130	4.59	20	
Toluene	47.1	1.00	"	50.0	ND	94.2	73-131	5.35	20	
Ethylbenzene	49.0	1.00	"	50.0	ND	98.0	76-132	5.60	20	
m,p-Xylene	101	2.00	"	100	ND	101	69-139	5.89	20	
o-Xylene	45.6	1.00	"	50.0	ND	91.2	74-131	5.71	20	
Surrogate: 1,2-Dichloroethane-d4	75		"	62.5		121	84-121			
Surrogate: Toluene-d8	65		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	84-114			

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 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**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 B7J1003 - EPA 3580**

**Blank (B7J1003-BLK1)**

Prepared: 10/10/2017 Analyzed: 10/11/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	44		"	50.0		87.0	59-131			

**LCS (B7J1003-BS1)**

Prepared: 10/10/2017 Analyzed: 10/11/2017

Diesel (C10-C28)	904	50.0	mg/kg	1000		90.4	64-121			
Surrogate: o-Terphenyl	46		"	50.0		92.2	59-131			

**Matrix Spike (B7J1003-MS1)**

**Source: Y710102-01**

Prepared: 10/10/2017 Analyzed: 10/11/2017

Diesel (C10-C28)	899	50.0	mg/kg	1000	30.0	86.9	53-125			
Surrogate: o-Terphenyl	47		"	50.0		93.3	59-131			

**Matrix Spike Dup (B7J1003-MSD1)**

**Source: Y710102-01**

Prepared: 10/10/2017 Analyzed: 10/11/2017

Diesel (C10-C28)	820	50.0	mg/kg	1000	30.0	79.0	53-125	9.25	20	
Surrogate: o-Terphenyl	48		"	50.0		96.2	59-131			

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 4101 Inca Street  
 Denver CO 80211

Martin C Eckert III  
 Project Number: [none]  
 Project: Noble - Magnuson 21-10B, 21-15B

**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B7J0905 - NO PREP</b>										
<b>Duplicate (B7J0905-DUP1)</b>		<b>Source: Y710041-01</b>			Prepared: 10/09/2017 Analyzed: 10/09/2017					
pH	7.22		pH Units		7.95			9.62	25	
<b>Batch B7J0906 - NO PREP</b>										
<b>Blank (B7J0906-BLK1)</b>					Prepared: 10/09/2017 Analyzed: 10/09/2017					
Specific Conductance (EC)	0.00540		mmhos/cm							
<b>Duplicate (B7J0906-DUP1)</b>		<b>Source: Y710041-01</b>			Prepared: 10/09/2017 Analyzed: 10/09/2017					
Specific Conductance (EC)	0.0590		mmhos/cm		0.0559			5.40	25	

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

Martin C Eckert III  
Project Number: [none]  
Project: Noble - Magnuson 21-10B, 21-15B

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**Notes and Definitions**

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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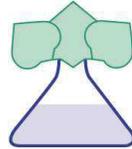
Jen Pellegrini For Noelle Doyle Mathis, President

# American Agricultural Laboratory, Inc.

700 West D Street / PO Box 370 / McCook, Nebraska 69001

Office: 308-345-3670 / FAX: 308-345-7880

www.AmAgLab.com



95029

ORIGINS LABORATORY INC

1725 ELK PLACE

DENVER CO 80211

NAME : ORIGINS

DATE RECEIVED: 10/09/2017

DATE REPORTED: 10/11/2017

## SOIL TEST RESULTS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	Depth Inches	pH		EL	SOLUBLE SALTS mod. SP mmhos/cm	OM LOI %	NITRATE-N (FIA)		PHOSPHORUS						
				1 : 1 Soil	Buffer Woodruff				ppm	lbs/A	P1 ppm	Bicarb ppm	P2 ppm	M2 ppm	M3 ppm		
2493128	Y710097	01	0-8														
2493129	Y710097	02	0-8														

LAB NUMBER	SULFATE-S Ca-P ppm	NH4OAc (Exchangeable)				DTPA				BORON Sorbitol ppm	EST. CATION EXCHANGE CAPACITY (CEC) me/100g	% SATURATION						
		K ppm	Ca ppm	Mg ppm	Na ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm			BASE	H	Ca	Mg	K	Na	
2493128																		
2493129																		

LAB NUMBER	SOLUBLE (SAT. EXT.)			SODIUM ADSORPTION RATIO (SAR)	EXCH. SODIUM PERCENT (ESP)	GYPSUM REQ T/A	PARTICLE SIZE ANALYSIS				CHLORIDE ppm	EXCH. NH4-N ppm	ALUMINUM ppm	TOTAL N %
	Ca me/L	Mg me/L	Na me/L				SAND %	SILT %	CLAY %	SOIL TEXTURE				
2493128	12.30	12.05	8.42	2.41	2	0								
2493129	24.88	22.26	9.68	1.99	2	0								

## SUGGESTED FERTILIZER RECOMMENDATIONS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	CROP TO BE GROWN	YIELD GOAL	N	P2O5	K2O	S	Zn	MgO	Fe	Mn	Cu	B	Cl	LIME REC 60% ECCE T/A
2493128	Y710097	01														
2493129	Y710097	02														

Analysis By: American Agricultural Lab

Recommendations By: American Agricultural Lab



Your Lab's letterhead here...

Address

City, St. Zip

Phone/Fax

# SUBCONTRACT ORDER

### Sending Laboratory:

Origins Laboratory, Inc.  
 1725 West Elk Place  
 Denver, CO 80211  
 Phone: 303.433.1322  
 Fax: 303.265.9645

Project Manager: Noelle Doyle Mathis

### Subcontracted Laboratory:

American Agricultural Laboratory, Inc  
 210 East 1st Street  
 McCook, NE 69001  
 Phone: (308) 345-3670  
 Fax: (308) 345-7880

### Work Order: Y710097

Analysis	Due	Expires	Comments
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*'26* **Sample ID: Y710097-01** Soil *Sampled: 10/05/2017 15:45*

SAR (Saturated Paste Prep) 10/13/2017 10/06/2017 15:45

Containers Supplied:

*127* **Sample ID: Y710097-02** Soil *Sampled: 10/05/2017 15:47*

SAR (Saturated Paste Prep) 10/13/2017 10/06/2017 15:47

Containers Supplied:



  
 Released By \_\_\_\_\_ Date 10-6-17

  
 Received By \_\_\_\_\_ Date 10-9-17