

# **FREMONT ENVIRONMENTAL INC.**

March 13, 2019

Mr. Jacob Evans  
Noble Energy Inc.  
2115 117<sup>th</sup> Ave,  
Greeley, CO 80634

Subject:       **Ground Water Data Submittal**  
UPRC Federal 27-3F, 6F  
API # 05-123-15369  
SENW Sec 27, T4N, R66W  
Weld County, Colorado  
Fremont Project No. C018-169  
Location # 327961, Remediation # 12102

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Ground Water Data Submittal for the UPRC Federal 27-3F, 6F site in Weld County, Colorado. The enclosed data describes the ground water quality at the site during the recent quarterly sampling and monitoring event.

Please contact me at (303) 956-8714 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,  
**FREMONT ENVIRONMENTAL INC.**



Paul V. Henehan, P.E.  
Senior Consultant

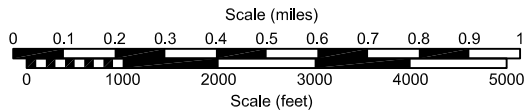
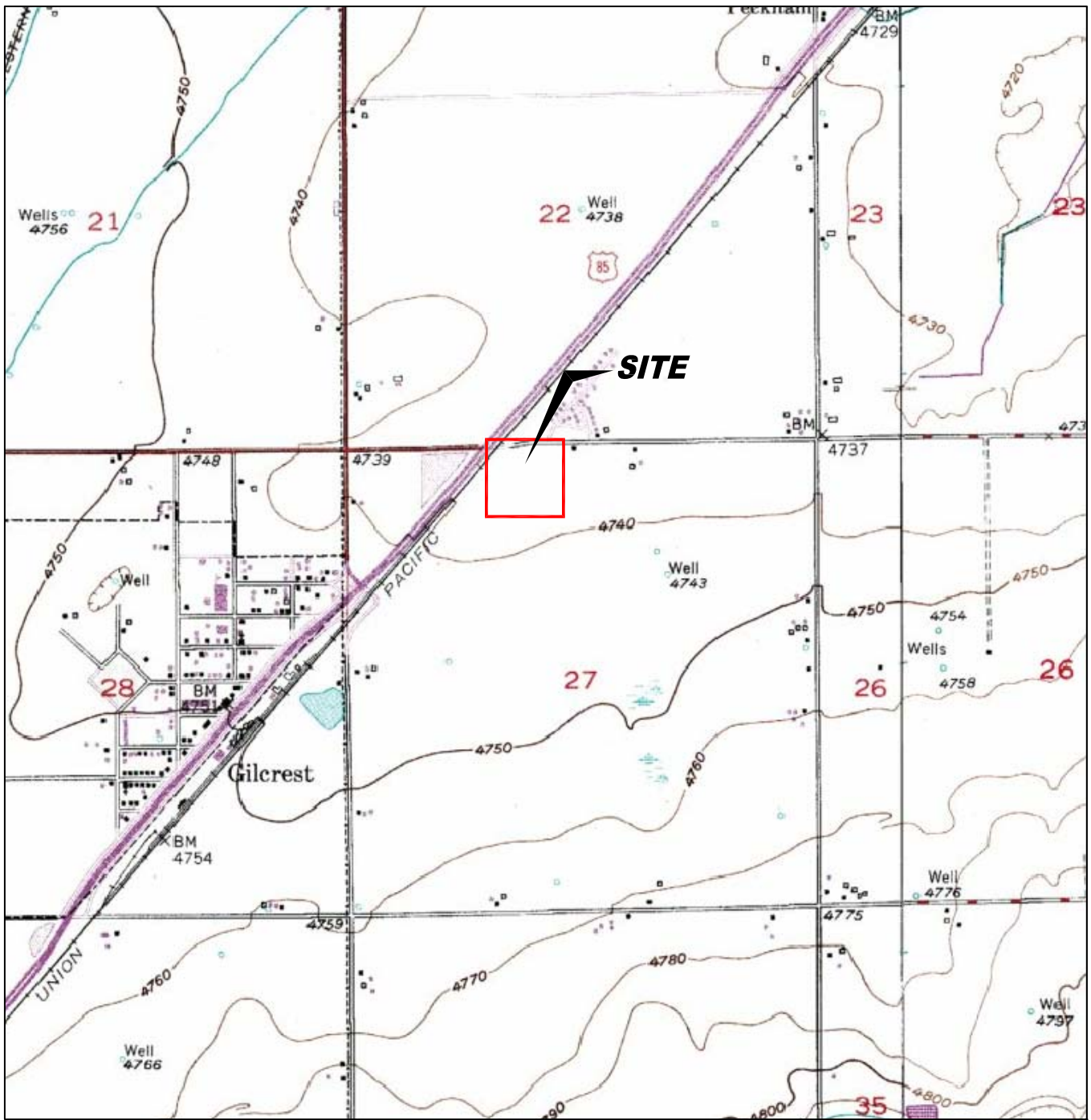
Enclosure

**TABLE 1**  
**SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA**  
**NOBLE ENERGY INC.**  
**UPRC FEDERAL 27-3F, 6F, WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C018-169**

<b>SAMPLE LOCATION</b>	<b>DATE</b>	<b>BENZENE (µg/L)</b>	<b>TOLUENE (µg/L)</b>	<b>ETHYL BENZENE (µg/L)</b>	<b>TOTAL XYLENES (µg/L)</b>	<b>TOC ELEVATION (feet)</b>	<b>DEPTH TO GROUND WATER (ft)</b>	<b>GROUND WATER ELEVATION (ft)</b>	<b>FREE PRODUCT THICKNESS (ft)</b>
MW-1	11/21/18	<1.0	<1.0	<1.0	<1.0	99.68	8.00	91.68	NP
	02/28/19	<1.0	<1.0	<1.0	<2.0		9.64	90.04	NP
MW-2	11/21/18	<1.0	<1.0	<1.0	<1.0	100.00	8.24	91.76	NP
	02/28/19	<1.0	<1.0	<1.0	<2.0		9.84	90.16	NP
MW-3	11/21/18	<b>210</b>	<b>1100</b>	100	<b>1500</b>	99.77	8.10	91.67	NP
	02/28/19	<b>460</b>	290	100	<b>2600</b>		10.21	89.56	NP
MW-4	11/21/18	<1.0	<1.0	<1.0	<1.0	99.68	8.03	91.65	NP
	02/28/19	<1.0	<1.0	<1.0	<2.0		9.63	90.05	NP
MW-5	11/21/18	<1.0	<1.0	<1.0	<1.0	99.75	8.18	91.57	NP
	02/28/19	<1.0	<1.0	<1.0	3.0		9.82	89.93	NP
Table 910-1 Limits		5	560	700	1,400				

Bold face values exceed the COGCC limits

NP - No Free Product



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
SITE LOCATION MAP









**NOBLE UPRC FEDERAL 27-3F, 6F**  
NENW Section 27, T4N R66W  
Weld County, Colorado

Project No. <b>CO18-169</b>	Prepared by	Drawn by <b>TDA</b>
Date <b>3/7/19</b>	Reviewed by <b>EB</b>	Filename <b>18169T</b>





**LEGEND**

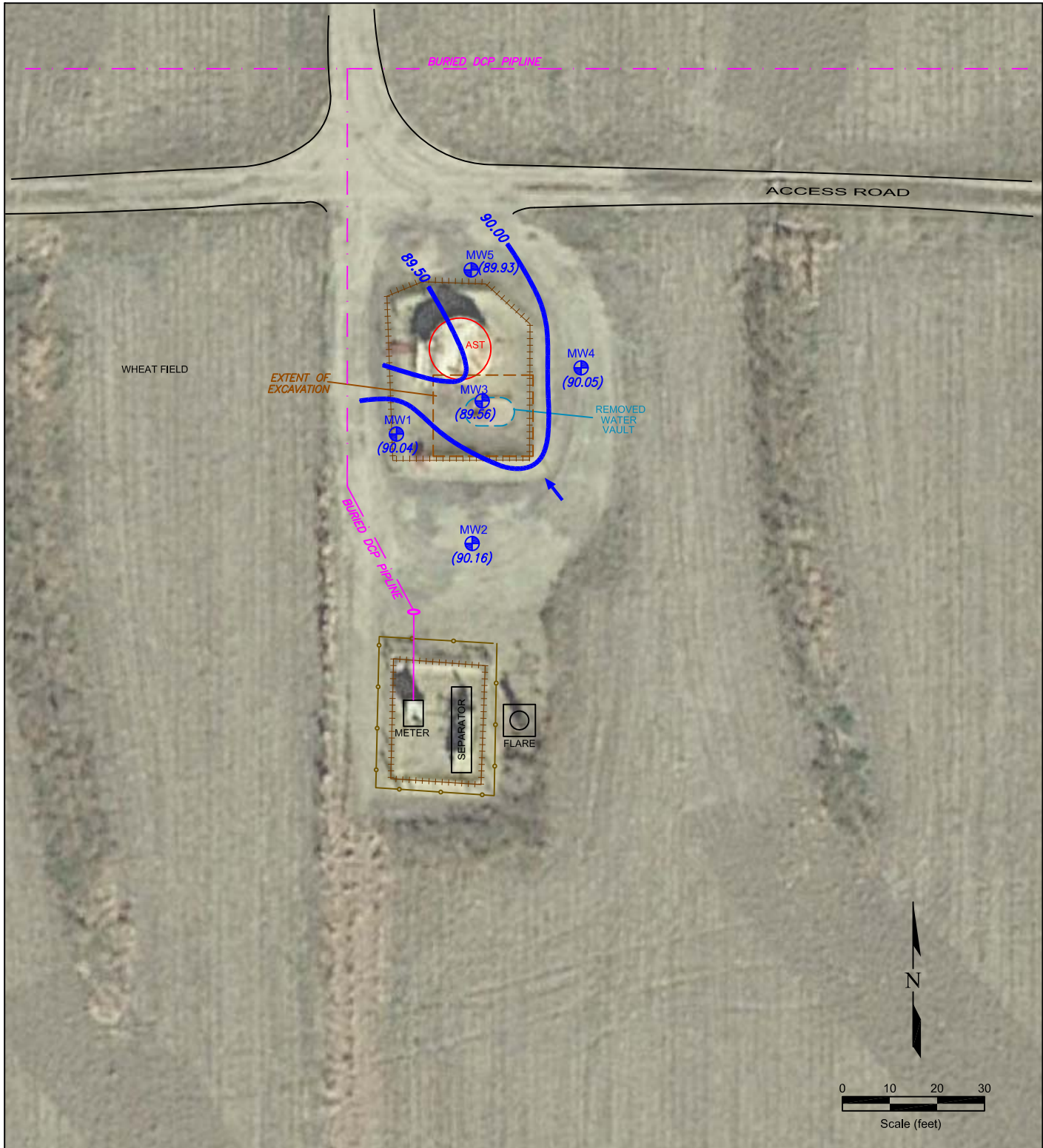
-  MONITORING WELL
-  CONTAINMENT WALL
-  LIMITS OF EXCAVATION
-  CONTAINMENT BERM
-  FENCE LINE
-  DCP PIPELINE
-  ABOVE GROUND STORAGE TANK
-  FORMER FACILITY

**Figure 2  
SITE MAP**

**NOBLE UPRC FEDERAL 27-3F, 6F**  
 NENW Section 27, T4N R66W  
 Weld County, Colorado

Project No. <b>CO18-169</b>	Prepared by <b>TDA</b>	Drawn by <b>TDA</b>
Date <b>3/7/19</b>	Reviewed by <b>EB</b>	Filename <b>18169Q</b>





**LEGEND**













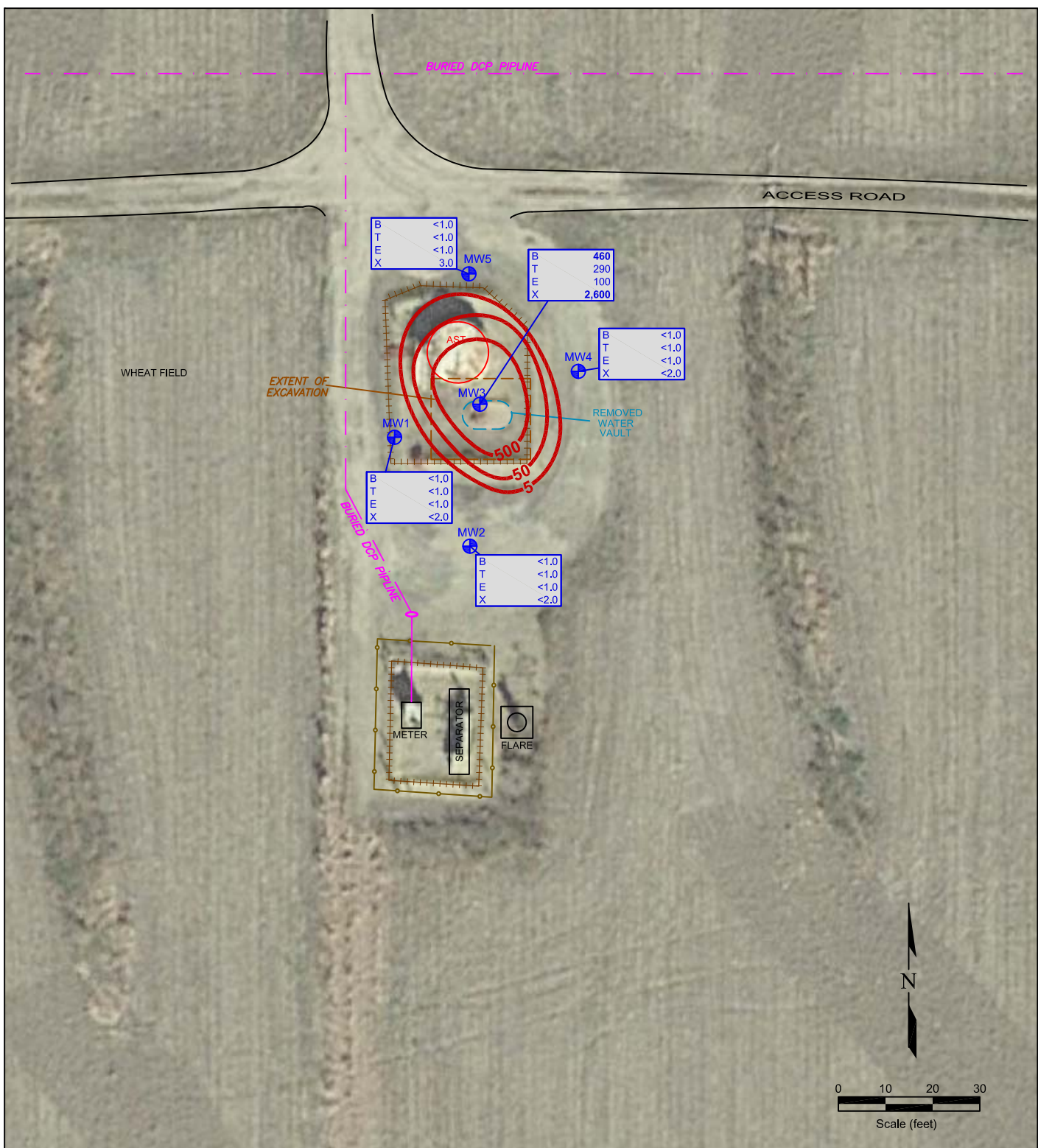
-  MONITORING WELL
-  CONTAINMENT WALL
-  LIMITS OF EXCAVATION
-  CONTAINMENT BERM
-  FENCE LINE
-  DCP PIPELINE
-  ABOVE GROUND STORAGE TANK
-  FORMER FACILITY
-  GROUND WATER ELEVATION 6/2/08  
(feet above mean sea level)
-  WATER TABLE CONTOUR  
(feet above mean sea level)
-  INFERRED GROUND WATER FLOW DIRECTION
-  NOT MEASURED

Figure 3  
**INFERRED GROUNDWATER CONTOUR MAP**  
**FEBRUARY 28, 2019**

**NOBLE UPRC FEDERAL 27-3F, 6F**  
 NENW Section 27, T4N R66W  
 Weld County, Colorado

Project No. <b>CO18-169</b>	Prepared by	Drawn by <b>TDA</b>
Date <b>3/7/19</b>	Reviewed by <b>EB</b>	Filename <b>18169Q</b>





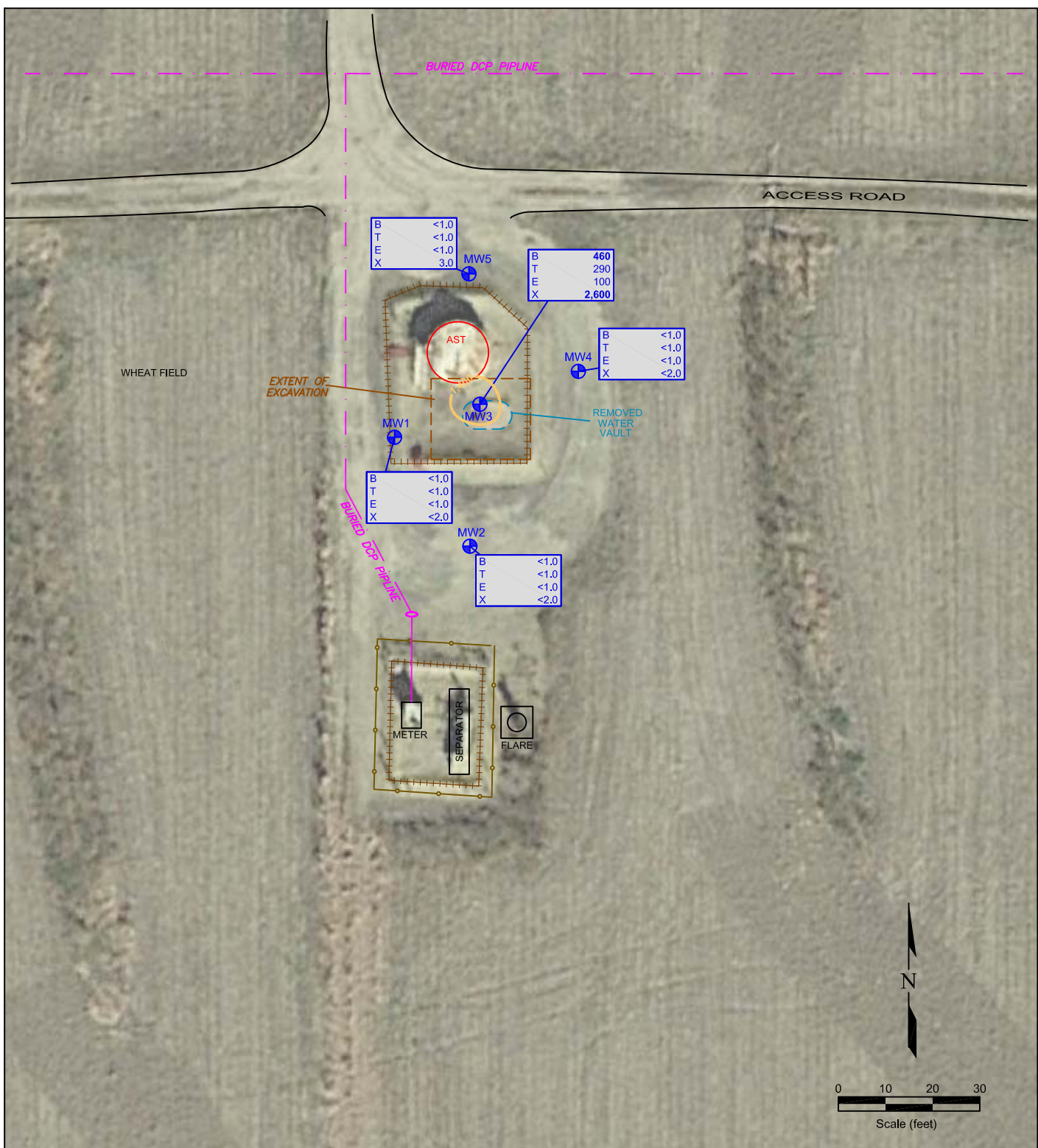
**LEGEND**

- MONITORING WELL
  - CONTAINMENT WALL
  - LIMITS OF EXCAVATION
  - CONTAINMENT BERM
  - FENCE LINE
  - DCP PIPELINE
  - FORMER FACILITY
  - ABOVE GROUND STORAGE TANK
- |   |      |                      |
|---|------|----------------------|
| B | <1.0 | BENZENE (ug/L)       |
| T | <1.0 | TOLUENE (ug/L)       |
| E | <1.0 | ETHYLBENZENE (ug/L)  |
| X | <2.0 | TOTAL XYLENES (ug/L) |

BENZENE ISOCONCENTRATION (ug/L)  
Inferred in part from historical data

**Figure 4**  
**GROUND WATER CHEMISTRY WITH**  
**BENZENE ISO-CONCENTRATION MAP**  
**FEBRUARY 28, 2019**  
**NOBLE UPRC FEDERAL 27-3F, 6F**  
 NENW Section 27, T4N R66W  
 Weld County, Colorado

Project No. <b>CO18-169</b>	Prepared by <b>TDA</b>	Drawn by <b>TDA</b>	
Date <b>3/8/19</b>	Reviewed by <b>EB</b>	Filename <b>18169Q</b>	



**LEGEND**

- MONITORING WELL
- CONTAINMENT WALL
- LIMITS OF EXCAVATION
- CONTAINMENT BERM
- FENCE LINE
- DCP PIPELINE
- FORMER FACILITY
- ABOVE GROUND STORAGE TANK

B	<1.0
T	<1.0
E	<1.0
X	<2.0

BENZENE (ug/L)  
 TOLUENE (ug/L)  
 ETHYLBENZENE (ug/L)  
 TOTAL XYLENES (ug/L)



XYLENES ISOCONCENTRATION (ug/L)  
 (dashed where inferred)

Figure 5  
**GROUND WATER CHEMISTRY WITH XYLENES CONCENTRATION MAP**  
**FEBRUARY 28, 2019**  
**NOBLE UPRC FEDERAL 27-3F, 6F**  
 NENW Section 27, T4N R66W  
 Weld County, Colorado

Project No. <b>CO18-169</b>	Prepared by	Drawn by <b>TDA</b>
Date <b>3/8/19</b>	Reviewed by <b>EB</b>	Filename <b>18169Q</b>



# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 07, 2019

Paul Henehan

Fremont Environmental

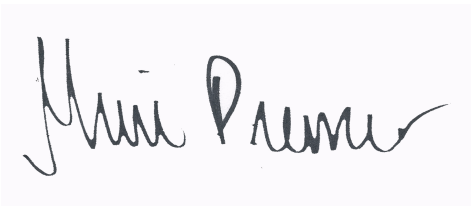
PO Box 1289

Wellington, CO 80549

RE: Noble - UPRC Federal 27-3F, 6F

Enclosed are the results of analyses for samples received by Summit Scientific on 02/28/19 17:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Ben Shrewsbury

Laboratory Manager



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/07/19 09:43

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1902286-01	Water	02/28/19 00:00	02/28/19 17:05
MW-2	1902286-02	Water	02/28/19 00:00	02/28/19 17:05
MW-3	1902286-03	Water	02/28/19 00:00	02/28/19 17:05
MW-4	1902286-04	Water	02/28/19 00:00	02/28/19 17:05
MW-5	1902286-05	Water	02/28/19 00:00	02/28/19 17:05

Summit Scientific

*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.*

# Summit Scientific

S<sub>2</sub>

1902286

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O Box 1289

E-Mail: paulh@fremontenv.com, ethanb@fremontenv.com

City/State/Zip: Wellington, CO 80549

Bill to: Jacob

Phone: 303-956-8714

Project Name: Noble - UPRC Federal 27-3E, 6F

Sampler Name: Black

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Naphthalene	GRO	DRO	SAR	EC		pH
1	MW-1	2/28/19		2																
2	MW-2																			
3	MW-3																			
4	MW-4																			
5	MW-5																			
6																				
7																				
8																				
9																				
10																				

Relinquished by: <u>Ethan Black</u>	Date/Time: <u>2/28/19 1705</u>	Received by: <u>[Signature]</u>	Date/Time: <u>2-28-19 1705</u>	<b>Turn Around Time (Check)</b> Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> <b>Sample Integrity:</b> Temperature Upon Receipt: <u>12.2</u> Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

### Sample Receipt Checklist

S2 Work Order 1902286

Client: Fremont Client Project ID: Noble - UPRC Federal 27-3F, 6F

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other H-D. Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	12.2
-----------	------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	/			
Were all samples received intact <sup>(1)</sup> ?	/			
Was adequate sample volume provided <sup>(1)</sup> ?	/			
If custody seals are present, are they intact <sup>(1)</sup> ?			/	
Are samples with holding times due within 48 hours sample due within 48 hours present?			/	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	/			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	/			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	/			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	/			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>		/		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			/	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			/	
If dissolved metals are requested, were samples field filtered?			/	
Additional Comments (if any):  				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

CP  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

2-28-19 1340  
Date/Time



Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 03/07/19 09:43

**MW-1**  
**1902286-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903022	03/01/19	03/06/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

*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.*



Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 03/07/19 09:43

**MW-2**  
**1902286-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903022	03/01/19	03/06/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		109 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.3 %		21-167		"	"	"	"	

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 03/07/19 09:43

**MW-3**  
**1902286-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>460</b>	100	ug/l	100	1903022	03/01/19	03/05/19	EPA 8260B	
<b>Toluene</b>	<b>290</b>	1.0	"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>100</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>2600</b>	200	"	100	"	"	"	"	

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		153 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		120 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 03/07/19 09:43

**MW-4**  
**1902286-04 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903022	03/01/19	03/06/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		115 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.9 %		21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 03/07/19 09:43

**MW-5**  
**1902286-05 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903022	03/01/19	03/06/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>3.0</b>	2.0		"	"	"	"	"	"	

Date Sampled: **02/28/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		113 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %		21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/07/19 09:43

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

#### Batch 1903022 - EPA 5030 Water MS

##### Blank (1903022-BLK1)

Prepared: 03/01/19 Analyzed: 03/05/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		101	23-173			
Surrogate: Toluene-d8	14.1		"	13.3		106	20-170			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.4	21-167			

##### LCS (1903022-BS1)

Prepared: 03/01/19 Analyzed: 03/05/19

Benzene	34.4	1.0	ug/l	33.3		103	70-130			
Toluene	39.0	1.0	"	33.3		117	70-130			
Ethylbenzene	41.2	1.0	"	33.3		124	70-130			
m,p-Xylene	76.3	2.0	"	66.7		114	70-130			
o-Xylene	38.7	1.0	"	33.3		116	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		101	23-173			
Surrogate: Toluene-d8	14.3		"	13.3		107	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.3	21-167			

##### Matrix Spike (1903022-MS1)

Source: 1902288-01

Prepared: 03/01/19 Analyzed: 03/05/19

Benzene	34.7	1.0	ug/l	33.3	ND	104	70-130			
Toluene	37.9	1.0	"	33.3	ND	114	70-130			
Ethylbenzene	40.0	1.0	"	33.3	ND	120	70-130			
m,p-Xylene	74.2	2.0	"	66.7	ND	111	70-130			
o-Xylene	37.5	1.0	"	33.3	ND	113	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.3		"	13.3		115	23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 03/07/19 09:43

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 1903022 - EPA 5030 Water MS**

**Matrix Spike Dup (1903022-MSD1)**

Source: 1902288-01

Prepared: 03/01/19 Analyzed: 03/05/19

Benzene	35.2	1.0	ug/l	33.3	ND	106	70-130	1.46	30	
Toluene	38.4	1.0	"	33.3	ND	115	70-130	1.26	30	
Ethylbenzene	41.3	1.0	"	33.3	ND	124	70-130	3.20	30	
m,p-Xylene	76.4	2.0	"	66.7	ND	115	70-130	2.87	30	
o-Xylene	37.8	1.0	"	33.3	ND	113	70-130	0.849	30	
Surrogate: 1,2-Dichloroethane-d4	16.2		"	13.3		122	23-173			
Surrogate: Toluene-d8	13.9		"	13.3		104	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.1	21-167			

Summit Scientific

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.



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Project: Noble - UPRC Federal 27-3F, 6F

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/07/19 09:43

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference