

# FREMONT ENVIRONMENTAL INC.

September 6, 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 # 12128

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

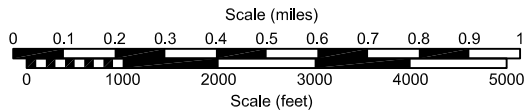
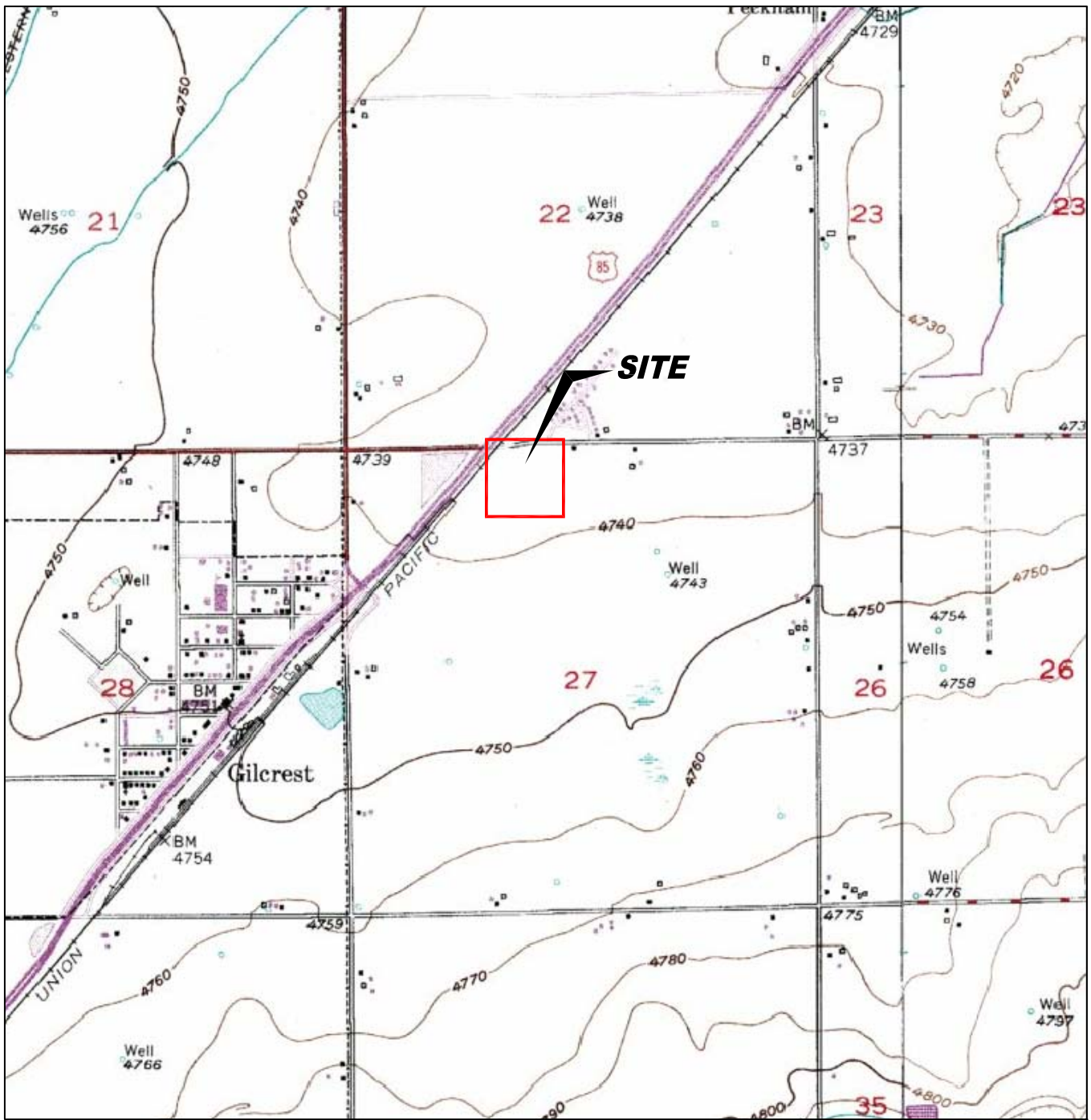
Enclosure

**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**

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
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
	05/15/19	<1.0	<1.0	<1.0	<2.0	99.47	10.73	88.74	NP
	08/12/19	<1.0	<1.0	<1.0	<2.0		8.25	91.22	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
	05/15/19	<1.0	<1.0	<1.0	<2.0	99.80	10.93	88.87	NP
	08/12/19	<1.0	<1.0	<1.0	<2.0		8.53	91.27	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
	05/15/19	<b>360</b>	300	92	<b>1900</b>	100.00	11.30	88.70	NP
	08/12/19	<b>340</b>	41	63	820		10.97	89.03	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
	05/15/19	<1.0	<1.0	<1.0	<2.0	99.50	10.72	88.78	NP
	08/12/19	<1.0	<1.0	<1.0	<2.0		8.24	91.26	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
	05/15/19	<1.0	<1.0	<1.0	<2.0	99.54	10.91	88.63	NP
	08/12/19	<1.0	<1.0	<1.0	<2.0		8.37	91.17	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



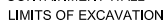





**NOBLE UPRC FEDERAL 27-3F, 6F**  
NENW Section 27, T4N R66W  
Weld County, Colorado

Project No. <b>CO18-169</b>	Prepared by	Drawn by <b>TDA</b>
Date <b>09/05/19</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>09/05/19</b>	Reviewed by <b>EB</b>	Filename <b>18169Q</b>





**LEGEND**

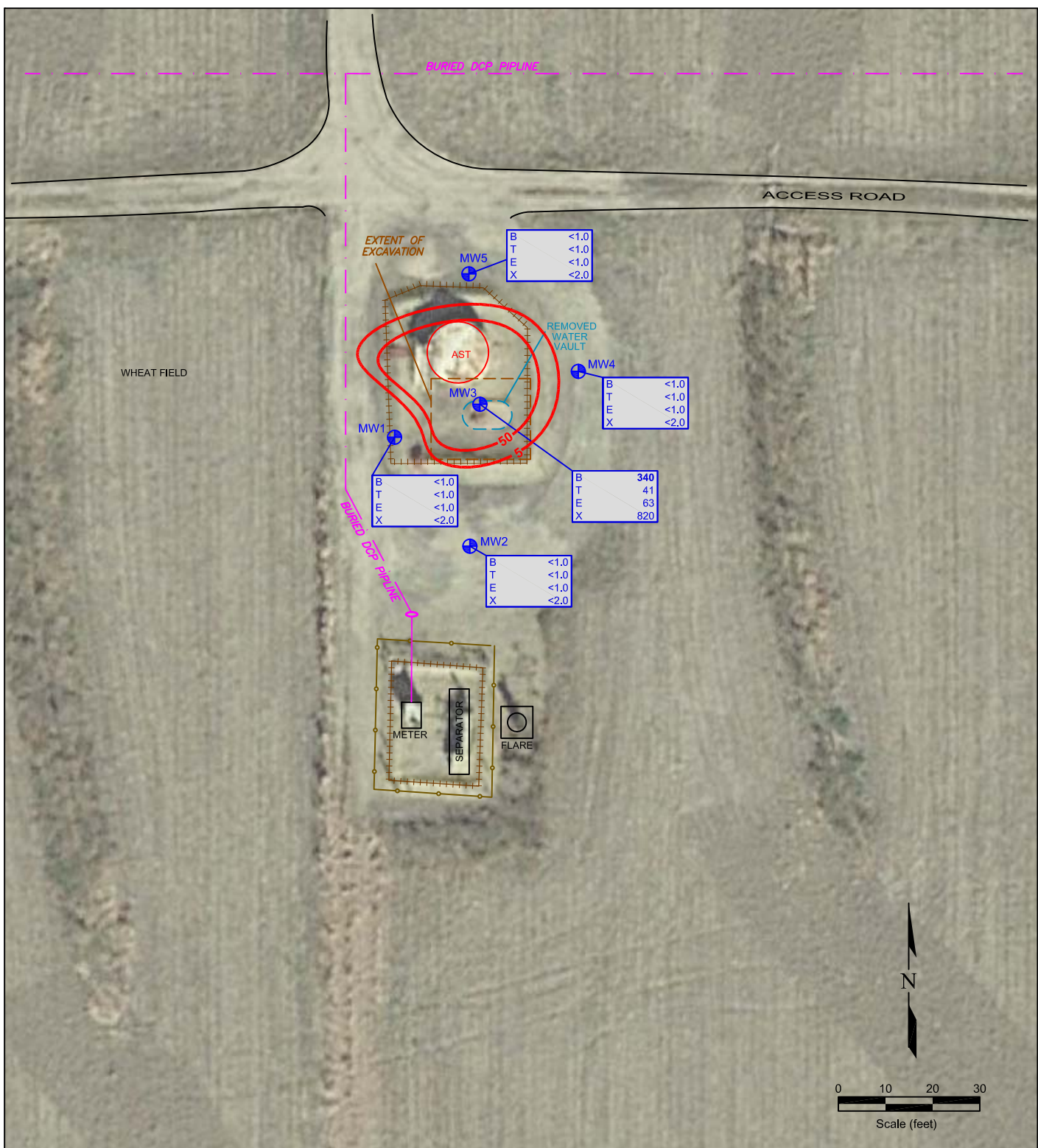
- MONITORING WELL
- CONTAINMENT WALL
- LIMITS OF EXCAVATION
- CONTAINMENT BERM
- FENCE LINE
- DCP PIPELINE
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- GROUND WATER ELEVATION 6/2/08  
(feet above mean sea level)
- WATER TABLE CONTOUR  
(feet above mean sea level)
- INFERRED GROUND WATER FLOW DIRECTION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

**Figure 3**  
**INFERRED GROUNDWATER CONTOUR MAP**  
**August 12, 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>09/05/19</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

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**  
 August 12, 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>09/05/19</b>	Reviewed by <b>EB</b>	Filename <b>18169Q</b>	

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 19, 2019

Paul Henehan

Fremont Environmental

PO Box 1289

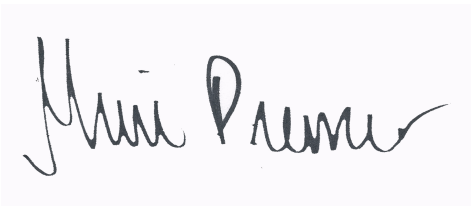
Wellington, CO 80549

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

Work Order # 1908148

Enclosed are the results of analyses for samples received by Summit Scientific on 08/13/19 15:20. 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:**  
08/19/19 14:28

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1908148-01	Water	08/12/19 00:00	08/13/19 15:20
MW-2	1908148-02	Water	08/12/19 00:00	08/13/19 15:20
MW-3	1908148-03	Water	08/12/19 00:00	08/13/19 15:20
MW-4	1908148-04	Water	08/12/19 00:00	08/13/19 15:20
MW-5	1908148-05	Water	08/12/19 00:00	08/13/19 15:20

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>

1908148

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 27-3F, 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	8/12/19		2			X		X					X							
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>8/13/19 1520</u>	Received by: <u>[Signature]</u>	Date/Time: <u>8/13/19 1520</u>	<b>Turn Around Time (Check)</b> Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> <b>Sample Integrity:</b> Temperature Upon Receipt: <u>58</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:		

1908148

Sample Receipt Checklist

S2 Work Order \_\_\_\_\_

Client: FREEMONT ENVIRONMENTAL Client Project ID: Noble - UPRC FEDERAL 27-3F, 6F

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

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

Temp (°C)	<u>5.8</u>
-----------	------------

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.	<u>X</u>			
Were all samples received intact <sup>(1)</sup> ?	<u>X</u>			
Was adequate sample volume provided <sup>(1)</sup> ?	<u>X</u>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<u>X</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<u>X</u>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<u>✓</u>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<u>X</u>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>		<u>✓</u>		
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			<u>✓</u>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<u>X</u>	
If dissolved metals are requested, were samples field filtered?			<u>X</u>	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

TC  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

08/13/19  
Date/Time 1524



Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

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

Project Number: [none]  
 Project Manager: Paul Henehan

**Reported:**  
 08/19/19 14:28

**MW-1**  
**1908148-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1908168	08/14/19	08/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173	"	"	"	"	
Surrogate: Toluene-d8		98.2 %		20-170	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.2 %		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:**  
 08/19/19 14:28

**MW-2**  
**1908148-02 (Water)**

**Summit Scientific**

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

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1908168	08/14/19	08/16/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	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:**  
 08/19/19 14:28

**MW-3**  
**1908148-03 (Water)**

**Summit Scientific**

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

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>340</b>	10	ug/l	10	1908168	08/14/19	08/16/19	EPA 8260B	
<b>Toluene</b>	<b>41</b>	1.0	"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>63</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>820</b>	20	"	10	"	"	"	"	

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		109 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	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:**  
 08/19/19 14:28

**MW-4**  
**1908148-04 (Water)**

**Summit Scientific**

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

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1908168	08/14/19	08/16/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %		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:**  
 08/19/19 14:28

**MW-5**  
**1908148-05 (Water)**

**Summit Scientific**

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

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1908168	08/14/19	08/16/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **08/12/19 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		112 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %		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:**  
 08/19/19 14:28

**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 1908168 - EPA 5030 Water MS**

**Blank (1908168-BLK1)**

Prepared: 08/14/19 Analyzed: 08/16/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.5	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.0	20-170			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.8	21-167			

**LCS (1908168-BS1)**

Prepared: 08/14/19 Analyzed: 08/16/19

Benzene	25.7	1.0	ug/l	33.3		77.2	51-132			
Toluene	29.2	1.0	"	33.3		87.5	51-138			
Ethylbenzene	29.3	1.0	"	33.3		87.9	58-146			
m,p-Xylene	54.5	2.0	"	66.7		81.8	57-144			
o-Xylene	27.7	1.0	"	33.3		83.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		101	23-173			
Surrogate: Toluene-d8	13.8		"	13.3		104	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.7	21-167			

**Matrix Spike (1908168-MS1)**

Source: 1908148-01

Prepared: 08/14/19 Analyzed: 08/16/19

Benzene	23.0	1.0	ug/l	33.3	ND	69.0	34-141			
Toluene	26.4	1.0	"	33.3	ND	79.4	27-151			
Ethylbenzene	26.9	1.0	"	33.3	ND	80.8	29-160			
m,p-Xylene	50.4	2.0	"	66.7	ND	75.6	20-166			
o-Xylene	26.0	1.0	"	33.3	ND	77.9	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.9	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:**  
 08/19/19 14:28

**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 1908168 - EPA 5030 Water MS**

**Matrix Spike Dup (1908168-MSD1)**

Source: 1908148-01

Prepared: 08/14/19 Analyzed: 08/16/19

Benzene	26.3	1.0	ug/l	33.3	ND	78.8	34-141	13.3	30	
Toluene	30.2	1.0	"	33.3	ND	90.5	27-151	13.1	30	
Ethylbenzene	30.4	1.0	"	33.3	ND	91.1	29-160	12.0	30	
m,p-Xylene	56.6	2.0	"	66.7	ND	84.9	20-166	11.5	30	
o-Xylene	29.2	1.0	"	33.3	ND	87.6	33-159	11.8	30	
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		110	23-173			
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.8	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:**  
08/19/19 14:28

### 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