

# **FREMONT ENVIRONMENTAL INC.**

September 14, 2018

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

Subject:     **Ground Water Data Submittal**  
              Weideman PM J28-2, 28-7  
              API # 05-123-14002 (J28-2)  
              Weld County, Colorado  
              Fremont Project No. C016-110  
              Facility #327010, Remediation #10028

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Ground Water Data Submittal for the Wiedeman PM J28-2, 28-7 site in Weld County, Colorado. The enclosed data describes the ground water quality at the site during the recent quarterly sampling and monitoring event. Two monitoring wells were installed on July 27, 2018 to replace previously destroyed monitoring wells MW-3 and MW-7, see Figure 3 for details. Water levels were collected on August 23, 2018 to allow the groundwater levels to stabilize following the well installations.

The solar powered Soil Vapor Extraction (SVE) unit was installed on April 27, 2018 and continues to operate and has had a significant impact remediating the light non-aqueous phase liquid (LNAPL) that was present in monitoring well MW-2, see Table 1 for details.

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

**1759 REDWING LANE, BROOMFIELD, CO 80020**  
**(303) 956-8714 (DIRECT)**

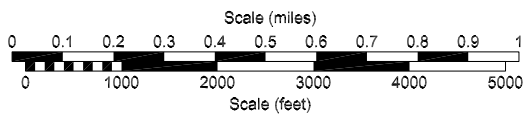
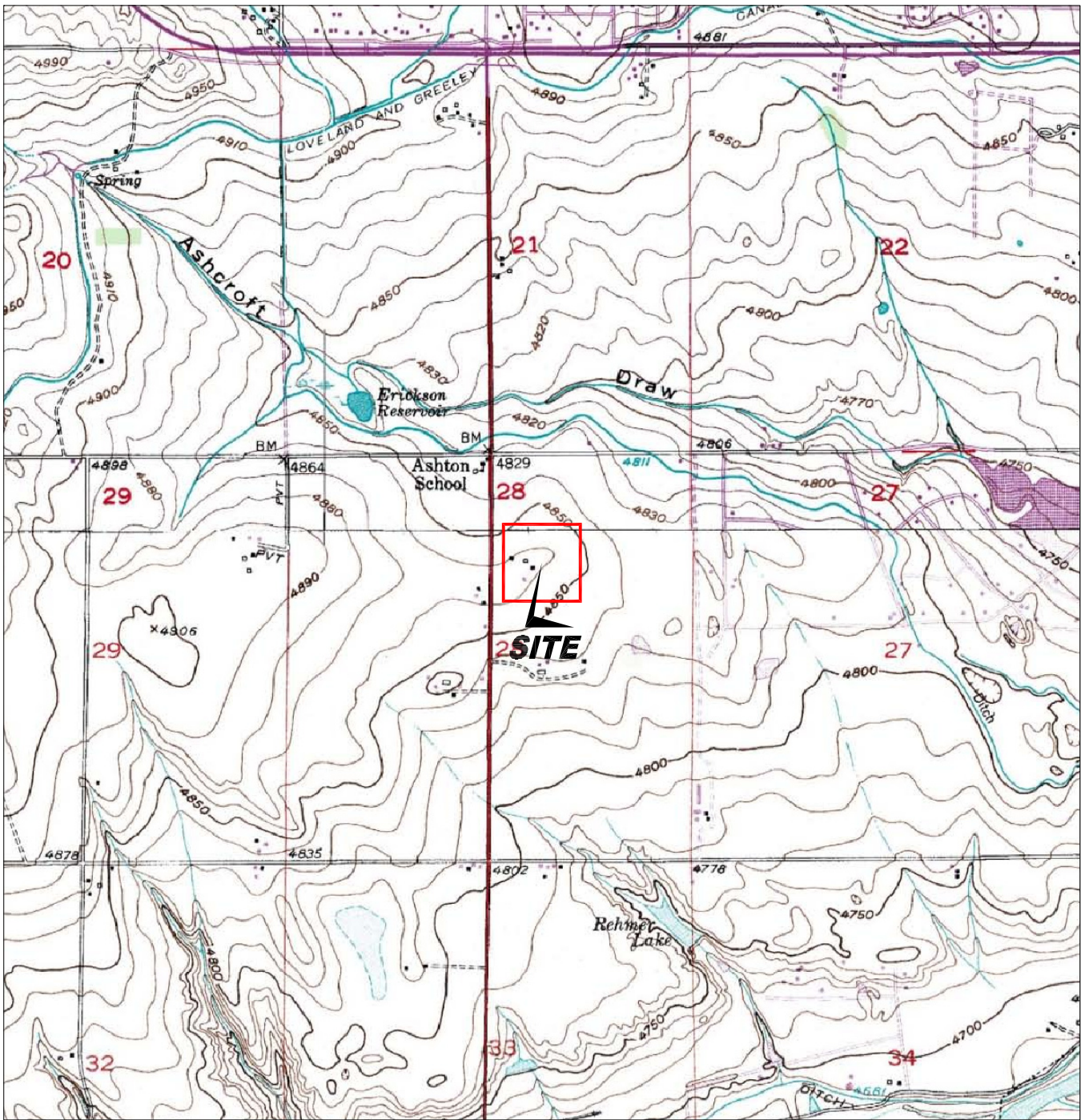
TABLE 1  
SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA  
NOBLE ENERGY INC.  
WIEDEMAN PMJ 28-2, WELD COUNTY, COLORADO  
FREMONT PROJECT NO. C016-110

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	10/12/16	<1.0	1.5	<1.0	<1.0	98.19	12.67	85.52	NP
	01/06/17	<1.0	<1.0	<1.0	<1.0		15.87	82.32	NP
	04/05/17	<1.0	<1.0	<1.0	<1.0		18.19	80.00	NP
	08/14/17	<1.0	<1.0	<1.0	<1.0		9.36	88.83	NP
	10/11/17	<1.0	<1.0	<1.0	<1.0		12.43	85.76	NP
	01/11/18	<1.0	<1.0	<1.0	<1.0		15.46	82.73	NP
	04/27/18	<1.0	<1.0	<1.0	<2.0		17.85	80.34	NP
	07/27/18	<1.0	<1.0	<1.0	<2.0		8.79	89.40	NP
08/23/18	NS	NS	NS	NS	8.12	90.07	NP		
MW-2	10/12/16	<b>20000</b>	<b>32000</b>	<b>1400</b>	<b>19000</b>	97.58	12.43	85.15	NP
	01/06/17	NS	NS	NS	NS		15.95	81.63	<b>0.34</b>
	04/05/17	NS	NS	NS	NS		18.42	79.16	<b>1.00</b>
	08/14/17	NS	NS	NS	NS		9.03	88.55	<b>0.13</b>
	10/11/17	NS	NS	NS	NS		12.11	98.19	<b>0.25</b>
	01/11/18	NS	NS	NS	NS		15.39	82.19	<b>0.24</b>
	04/27/18	NS	NS	NS	NS		18.82	78.76	<b>1.66</b>
	07/27/18	<b>1900</b>	41	27	<b>81000</b>		8.05	89.53	NP
08/23/18	NS	NS	NS	NS	7.61	89.97	NP		
MW-3  MW-3R	10/12/16	<b>260</b>	<b>640</b>	150	<b>2600</b>	97.52	12.53	84.99	NP
	01/06/17	<b>1400</b>	<b>1900</b>	310	<b>6700</b>		15.99	81.53	NP
	04/05/17	Dry	Dry	Dry	Dry		Dry	Dry	Dry
	08/14/17	<1.0	<1.0	<1.0	2.2		7.61	89.91	NP
	10/11/17	2.7	2.0	7.6	280		12.18	98.19	NP
	01/11/18	inaccessible	inaccessible	inaccessible	inaccessible		inaccessible	inaccessible	inaccessible
	04/27/18	inaccessible	inaccessible	inaccessible	inaccessible		inaccessible	inaccessible	inaccessible
	07/27/18	<1.0	<1.0	<1.0	<2.0		97.55	97.55	NP
08/23/18	NS	NS	NS	NS	5.64	91.91		NP	
MW-4	10/12/16	<1.0	<1.0	<1.0	<1.0	96.80	12.38	84.42	NP
	01/06/17	<1.0	<1.0	<1.0	<1.0		15.62	81.18	NP
	04/05/17	Dry	Dry	Dry	Dry		Dry	Dry	Dry
	08/14/17	<1.0	<1.0	<1.0	<1.0		7.84	88.96	NP
	10/11/17	<1.0	<1.0	<1.0	<1.0		11.92	84.88	NP

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-4	01/11/18	<1.0	<1.0	<1.0	<1.0	96.80	15.22	81.58	NP	
	04/27/18	Dry	Dry	Dry	Dry		Dry	Dry	Dry	
	07/27/18	<1.0	<1.0	<1.0	<2.0		5.90	90.90	NP	
	08/23/18	NS	NS	NS	NS		6.22	90.58	NP	
MW-5	10/12/16	<1.0	<1.0	<1.0	2.9	95.98	11.50	84.48	NP	
	01/06/17	<1.0	<1.0	<1.0	2.8		15.24	80.74	NP	
	04/05/17	Dry	Dry	Dry	Dry		Dry	Dry	Dry	
	08/14/17	<1.0	<1.0	<1.0	<1.0		5.74	90.24	NP	
	10/11/17	<1.0	<1.0	<1.0	<1.0		11.13	84.85	NP	
	01/11/18	<1.0	<1.0	<1.0	<1.0		14.70	81.28	NP	
	04/27/18	Dry	Dry	Dry	Dry		Dry	Dry	Dry	
	07/27/18	<1.0	<1.0	<1.0	<2.0		4.03	91.95	NP	
	08/23/18	NS	NS	NS	NS		4.72	91.26	NP	
MW-6	10/12/16	<1.0	<1.0	<1.0	<1.0	100.00	14.63	85.37	NP	
	01/06/17	<1.0	<1.0	<1.0	<1.0		18.27	81.73	NP	
	04/05/17	Dry	Dry	Dry	Dry		Dry	Dry	Dry	
	08/14/17	<1.0	<1.0	<1.0	<1.0		9.23	90.77	NP	
	10/11/17	<1.0	<1.0	<1.0	<1.0		14.31	85.69	NP	
	01/11/18	<1.0	<1.0	<1.0	<1.0		18.33	81.67	NP	
	04/27/18	Dry	Dry	Dry	Dry		Dry	Dry	Dry	
	07/27/18	<1.0	<1.0	<1.0	<2.0		7.26	92.74	NP	
	08/23/18	NS	NS	NS	NS		7.58	92.42	NP	
MW-7	10/12/16	<1.0	<1.0	<1.0	<1.0	97.02	11.80	85.22	NP	
	01/06/17	<1.0	<1.0	<1.0	<1.0		14.91	82.11	NP	
	04/05/17	Dry	Dry	Dry	Dry		Dry	Dry	Dry	
	08/14/17	<1.0	<1.0	<1.0	<1.0		9.55	87.47	NP	
	10/11/17	inaccessible	inaccessible	inaccessible	inaccessible		inaccessible	inaccessible	inaccessible	inaccessible
	01/11/18	inaccessible	inaccessible	inaccessible	inaccessible		inaccessible	inaccessible	inaccessible	inaccessible
	04/27/18	inaccessible	inaccessible	inaccessible	inaccessible		inaccessible	inaccessible	inaccessible	inaccessible
	MW-7R	07/27/18	<1.0	<1.0	<1.0		<2.0	96.91		96.91
08/23/18		NS	NS	NS	NS	8.08	88.83		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 Wiedeman PM J28-2, 28-7  
NE SW Section 28, T5N, R66W  
Weld County, Colorado

Project No. C016-110	Prepared by	Drawn by JMA
Date 10/2/16	Reviewed by	Filename 16110T





**LEGEND**

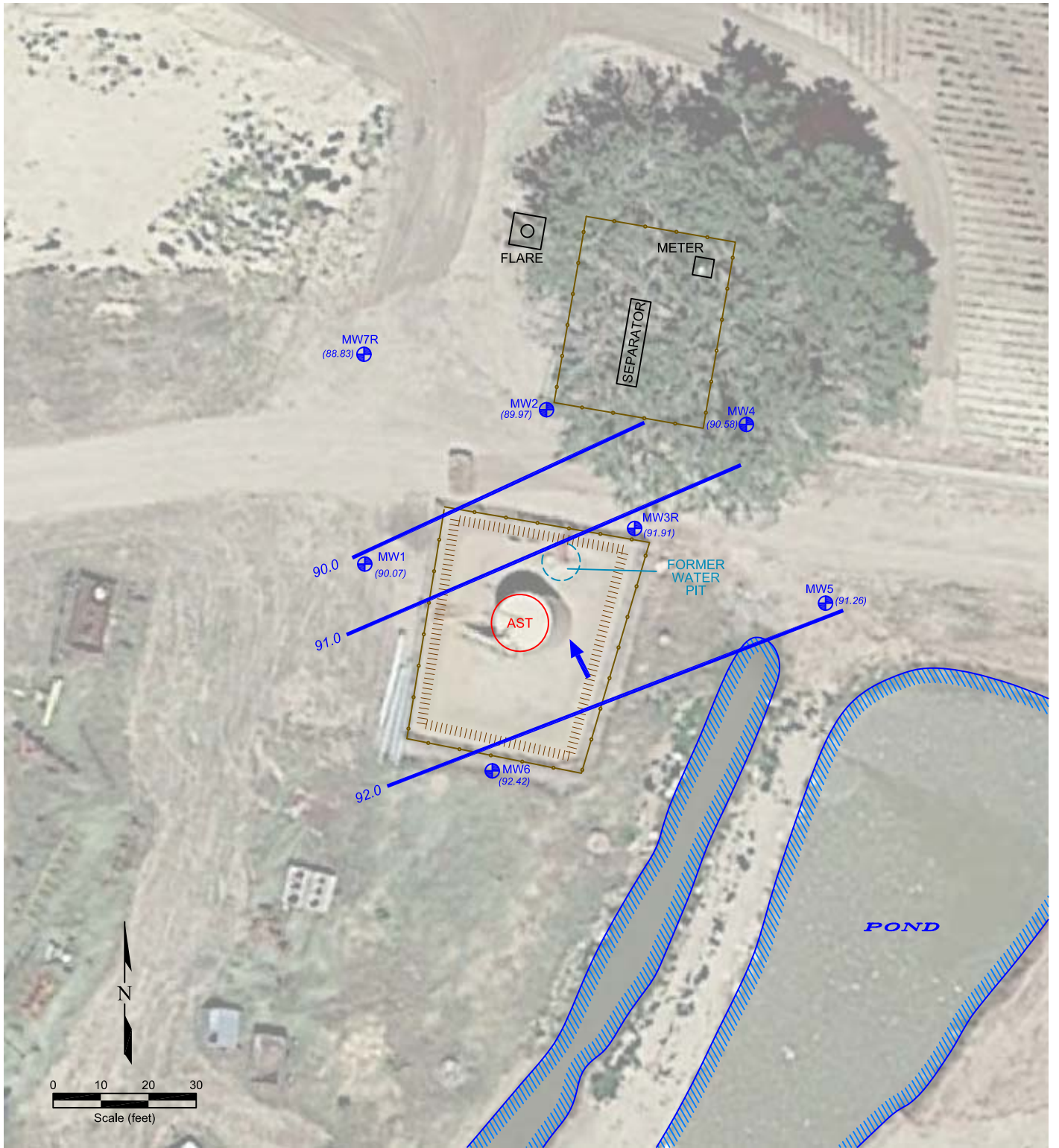
-  MONITORING WELL
-  FENCE LINE
-  CONTAINMENT BERM
-  PIPELINE
-  ABOVE GROUND STORAGE TANK
-  FORMER FACILITY

**Figure 2  
SITE MAP**

**Noble Wiedeman PM J28-2, 28-7**  
NE SW Section 28, T5N, R66W  
Weld County, Colorado

Project No. <b>C016-110</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>9/25/17</b>	Reviewed by	Filename <b>16110Q</b>





**LEGEND**










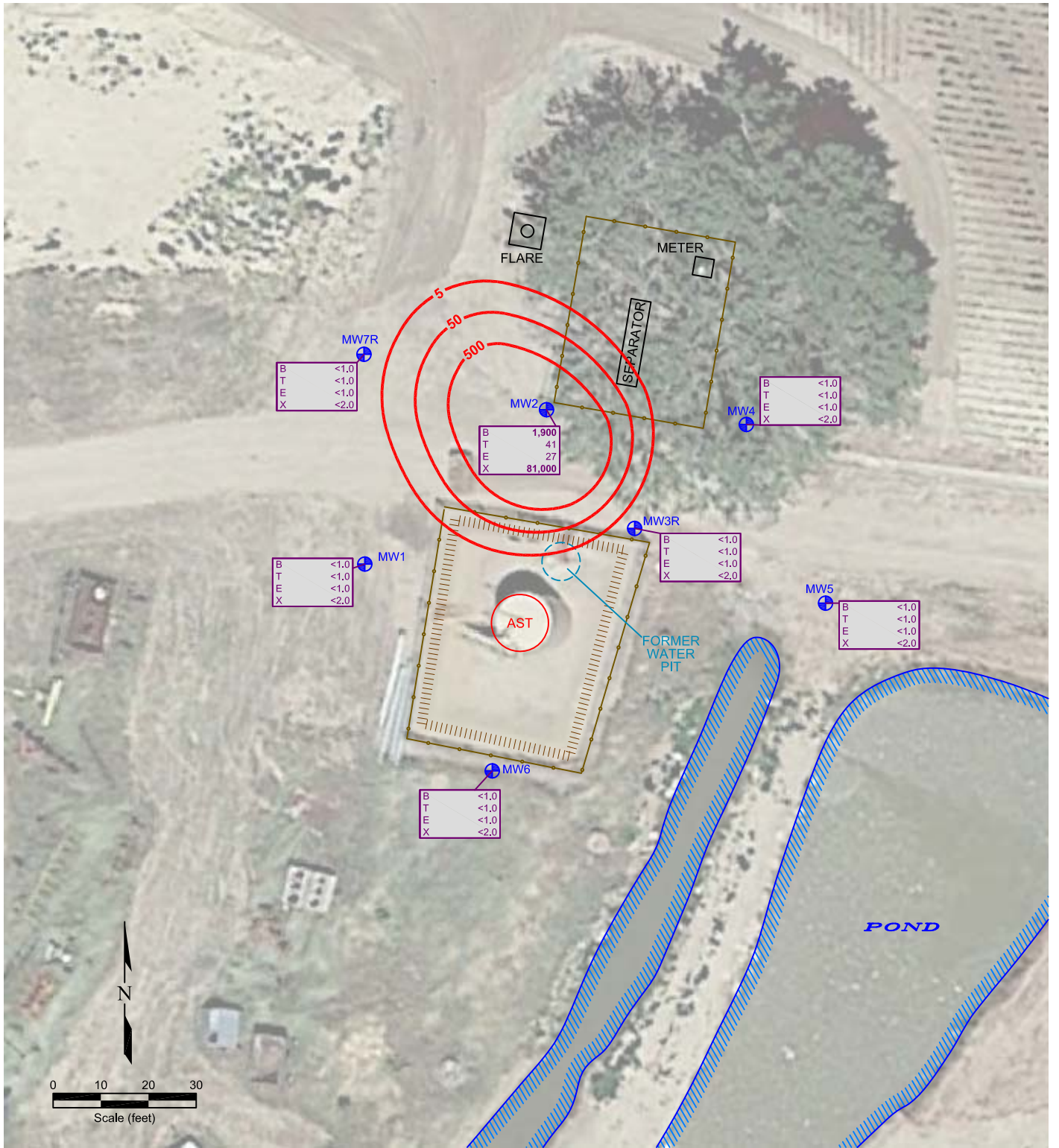
-  MONITORING WELL
-  FENCE LINE
-  CONTAINMENT BERM
-  ABOVE GROUND STORAGE TANK
-  FORMER FACILITY
-  NOT USED FOR CONTOURING
-  GROUND WATER ELEVATION (ft above arbitrary datum)
-  WATER TABLE CONTOUR
-  GROUND WATER FLOW DIRECTION

Figure 3  
**INFERRED GROUNDWATER CONTOUR**  
 August 23, 2018

**Noble Wiedeman PM J28-2, 28-7**  
 NE SW Section 28, T5N, R66W  
 Weld County, Colorado

Project No. <b>C016-110</b>	Prepared by <b>TDA</b>	Drawn by <b>JMA</b>
Date <b>9/11/18</b>	Reviewed by <b>KR</b>	Filename <b>16110Q</b>





**LEGEND**







-  MONITORING WELL
  -  FENCE LINE
  -  CONTAINMENT BERM
  -  ABOVE GROUND STORAGE TANK
  -  FORMER FACILITY
- 
- |    |      |                |
|----|------|----------------|
| B  | <1.0 | BENZENE (ug/L) |
| T  | <1.0 |                |
| E  | <1.0 |                |
| X  | <1.0 |                |
| NS |      | NOT SAMPLED    |
- 
-  BENZENE ISOCONCENTRATION (ug/L)  
Base in part on historical data  
Dashed where inferred

Figure 4  
**GROUND WATER CHEMISTRY MAP**  
 July 27, 2018

**Noble Wiedeman PM J28-2, 28-7**  
 NE SW Section 28, T5N, R66W  
 Weld County, Colorado

Project No. <b>C016-110</b>	Prepared by <b>TDA</b>	Drawn by <b>JMA</b>
Date <b>9/20/18</b>	Reviewed by <b>KR</b>	Filename <b>16110Q</b>



# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 07, 2018

Paul Henehan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Wiedeman PM J28

Enclosed are the results of analyses for samples received by Summit Scientific on 07/27/18 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Wiedeman PM J28

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
08/07/18 09:04

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MM-1	1807363-01	Water	07/27/18 14:50	07/27/18 15:15
MM-2	1807363-02	Water	07/27/18 14:40	07/27/18 15:15
MM-3	1807363-03	Water	07/27/18 09:15	07/27/18 15:15
MM-4	1807363-04	Water	07/27/18 14:30	07/27/18 15:15
MM-5	1807363-05	Water	07/27/18 14:20	07/27/18 15:15
MM-6	1807363-06	Water	07/27/18 14:10	07/27/18 15:15
MM-7	1807363-07	Water	07/27/18 09:30	07/27/18 15:15

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

1807363

741 Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: FREMONT  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Sampler Name: ROGAWSKI

Project Manager: HENEHAN  
E-Mail: \_\_\_\_\_  
Project Name: Noble WIEDENMAN PM J28  
Project Number: Col6-110

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX	GRO/DRO	NAPHTHALENE	SAP	EC		pH	
MW-1	7.27.18	1450	2	X				X					X						
MW-2	↓	1440	↓	X				↓					↓						
MW-3		95	↓			X							↓						
MW-4		1430	↓	X									↓						
MW-5		1420	↓	X									↓						
MW-6	↓	1410	↓	X				↓					↓						
MW-7	7.27.18	930	2			X		X					X						
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Turn Around Time (Check)				Notes:							
7.27.18/515				[Signature]				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"/>											
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				Sample Integrity:											
								Temperature Upon Receipt: <u>9.3</u> Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No											

1807363

Sample Receipt Checklist

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

Client: Fremont

Client Project ID: Noble Wiedeman PM J28

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

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

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

Temp (°C)	<u>9.3</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.	<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"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form 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 w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>		<input checked="" type="checkbox"/>		
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	<input checked="" type="checkbox"/>			HCl
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	

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 or Initials of Custodian

7.27.18 1649  
Date/Time



Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-1**  
**1807363-01 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1807335	07/30/18	08/01/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/27/18 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		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 - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-2**  
**1807363-02 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>1900</b>	100		ug/l	100	1807335	07/30/18	08/01/18	EPA 8260B	
<b>Toluene</b>	<b>41</b>	1.0		"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>27</b>	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>81000</b>	200		"	100	"	"	"	"	

Date Sampled: **07/27/18 14:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		123 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		129 %		21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-3**  
**1807363-03 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 09:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1807335	07/30/18	08/01/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/27/18 09:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %		21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-4**  
**1807363-04 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1807335	07/30/18	08/01/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/27/18 14:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		101 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-5**  
**1807363-05 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1807335	07/30/18	08/01/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/27/18 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %		21-167		"	"	"	"	

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Fremont Environmental  
 PO Box 1289  
 Wellington CO, 80549

Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-6**  
**1807363-06 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1807335	07/30/18	08/01/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/27/18 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		21-167		"	"	"	"	

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Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**MM-7**  
**1807363-07 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/18 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1807335	07/30/18	08/01/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/27/18 09:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		102 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %		21-167		"	"	"	"	

Summit Scientific

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Project: Noble - Wiedeman PM J28

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
08/07/18 09:04

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

#### Summit Scientific

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

#### Batch 1807335 - EPA 5030 Water MS

##### Blank (1807335-BLK1)

Prepared: 07/30/18 Analyzed: 07/31/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.2		97.6	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.7	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.5	21-167			

##### LCS (1807335-BS1)

Prepared: 07/30/18 Analyzed: 07/31/18

Benzene	29.3	1.0	ug/l	33.3		87.9	70-130			
Toluene	32.5	1.0	"	33.3		97.4	70-130			
Ethylbenzene	33.9	1.0	"	33.3		102	70-130			
m,p-Xylene	52.0	2.0	"	66.7		78.0	70-130			
o-Xylene	32.3	1.0	"	33.3		96.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		96.9	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.1	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.3	21-167			

##### Matrix Spike (1807335-MS1)

Source: 1807357-02

Prepared: 07/30/18 Analyzed: 07/31/18

Benzene	29.0	1.0	ug/l	33.3	ND	86.9	70-130			
Toluene	31.7	1.0	"	33.3	ND	95.2	70-130			
Ethylbenzene	34.1	1.0	"	33.3	ND	102	70-130			
m,p-Xylene	51.3	2.0	"	66.7	ND	76.9	70-130			
o-Xylene	32.2	1.0	"	33.3	ND	96.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.5		"	13.2		95.0	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.3		"	13.3		92.2	21-167			

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Project: Noble - Wiedeman PM J28

Project Number: C016-110  
 Project Manager: Paul Henehan

**Reported:**  
 08/07/18 09:04

**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 1807335 - EPA 5030 Water MS**

**Matrix Spike Dup (1807335-MSD1)**

**Source: 1807357-02**

Prepared: 07/30/18 Analyzed: 07/31/18

Benzene	29.8	1.0	ug/l	33.3	ND	89.3	70-130	2.76	30	
Toluene	32.4	1.0	"	33.3	ND	97.2	70-130	2.06	30	
Ethylbenzene	33.6	1.0	"	33.3	ND	101	70-130	1.48	30	
m,p-Xylene	51.3	2.0	"	66.7	ND	77.0	70-130	0.0585	30	
o-Xylene	31.7	1.0	"	33.3	ND	95.2	70-130	1.47	30	
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.2		105	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.8	21-167			

Summit Scientific

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Project: Noble - Wiedeman PM J28

Project Number: C016-110  
Project Manager: Paul Henehan

**Reported:**  
08/07/18 09:04

### 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