

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 13, 2025

Paul Henchan
Fremont Environmental
PO Box 1289
Wellington, CO 80549

RE: Noble - Pappenheim 02-32 Tank

Work Order #2502209

Enclosed are the results of analyses for samples received by Summit Scientific on 02/11/25 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Natalie Tessier". The signature is written in a cursive, flowing style.

Natalie Tessier For Paul Shrewsbury
President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
Project Manager: Paul Henchan

Reported:
03/13/25 13:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sep Base 01 9Ft	2502209-01	Soil	02/11/25 15:00	02/11/25 16:30

Summit Scientific

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S₂

S2 Work Order# 2502209

Sample Receipt Checklist

Client: Fremont Client Project ID: Rapenheim 2-32 TankReceived Via: H.D./ U./FedEx/UPS/USPS/Other Airbill #: _____Matrix (Circle all that apply) Air/ Soil/ Water/ Other Temp (°C) 2.7 Thermometer # 1Bottle ware (Circle all that apply) Glass Jar/ Voa/ Amber/ Poly/ Other

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ice
If custody seals are present, are they intact? ⁽¹⁾	-			
Are samples due within 48 hours?	-			Same day
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/ Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD, Total Residual Chlorine (TRC)		-		
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	-			
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	-			
Were all samples received intact? ⁽¹⁾	✓			
Was adequate sample volume provided? ⁽¹⁾	✓			
Were samples provided in appropriate bottle ware?	✓			
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	✓			
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾		✓		no times
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are any samples/bottles preserved (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			✓	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Are there requested analysis that cannot be performed by S2? Note analysis in the comments column		✓		
<u>Additional Comments (if any):</u>				

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

Control Form #: SRC-001

AS
Custodian Printed Name

2/11/25
Date/Time



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Sep Base 01 9Ft
2502209-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BIB0579	02/11/25	02/11/25	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0399	99.8 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0400	100 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0385	96.2 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BIB0581	02/11/25	02/11/25	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	9.69	77.5 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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2502209-01 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BIB1308	02/24/25	02/28/25	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0135	40.5 %	40-140		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0138	41.3 %	40-140		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BIB0585	02/12/25	02/13/25	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	2.87	0.200	mg/kg dry	1	BIB0603	02/12/25	02/13/25	EPA 6020B
Barium	55.0	0.400	"	"	"	"	"	"
Cadmium	0.424	0.200	"	"	"	"	"	"
Copper	9.30	0.400	"	"	"	"	"	"
Lead	12.0	0.200	"	"	"	"	"	"
Nickel	5.55	0.400	"	"	"	"	"	"
Silver	0.0370	0.0200	"	"	"	"	"	"
Zinc	31.3	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BIB0597	02/12/25	02/12/25	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	67.9	0.0500	mg/L dry	1	BIB0580	02/11/25	02/12/25	EPA 6020B	
Magnesium	22.8	0.0500	"	"	"	"	"	"	
Sodium	12.7	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.340	0.00100	units	1	BIB0697	02/13/25	02/13/25	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Physical Parameters by APHA/ASTM/EPA Methods

% Solids	87.6	%	1	BIB0586	02/12/25	02/12/25	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.647	0.0100	mmhos/cm	1	BIB0582	02/11/25	02/12/25	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/11/25 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.01		pH Units	1	BIB0583	02/11/25	02/12/25	EPA 9045D	

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch BIB0579 - EPA 5030 Soil MS

Blank (BIB0579-BLK1)

Prepared: 02/11/25 Analyzed: 02/12/25

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0396		"	0.0400		99.0	50-150				
<i>Surrogate: Toluene-d8</i>	0.0398		"	0.0400		99.4	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0382		"	0.0400		95.6	50-150				

LCS (BIB0579-BS1)

Prepared: 02/11/25 Analyzed: 02/12/25

Benzene	0.108	0.0020	mg/kg	0.100		108	70-130				
Toluene	0.106	0.0050	"	0.100		106	70-130				
Ethylbenzene	0.113	0.0050	"	0.100		113	70-130				
m,p-Xylene	0.219	0.010	"	0.200		110	70-130				
o-Xylene	0.104	0.0050	"	0.100		104	70-130				
1,2,4-Trimethylbenzene	0.104	0.0050	"	0.100		104	70-130				
1,3,5-Trimethylbenzene	0.105	0.0050	"	0.100		105	70-130				
Naphthalene	0.0962	0.0038	"	0.100		96.2	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0402		"	0.0400		101	50-150				
<i>Surrogate: Toluene-d8</i>	0.0401		"	0.0400		100	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0383		"	0.0400		95.8	50-150				

Matrix Spike (BIB0579-MS1)

Source: 2502200-01

Prepared: 02/11/25 Analyzed: 02/12/25

Benzene	0.107	0.0020	mg/kg	0.100	ND	107	70-130				
Toluene	0.104	0.0050	"	0.100	ND	104	70-130				
Ethylbenzene	0.116	0.0050	"	0.100	ND	116	70-130				
m,p-Xylene	0.218	0.010	"	0.200	ND	109	70-130				
o-Xylene	0.105	0.0050	"	0.100	ND	105	70-130				
1,2,4-Trimethylbenzene	0.102	0.0050	"	0.100	ND	102	70-130				
1,3,5-Trimethylbenzene	0.105	0.0050	"	0.100	ND	105	70-130				
Naphthalene	0.0997	0.0038	"	0.100	ND	99.7	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0391		"	0.0400		97.7	50-150				
<i>Surrogate: Toluene-d8</i>	0.0398		"	0.0400		99.4	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0398		"	0.0400		99.5	50-150				

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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		

Batch BIB0579 - EPA 5030 Soil MS

Matrix Spike Dup (BIB0579-MSD1)	Source: 2502200-01			Prepared: 02/11/25 Analyzed: 02/12/25						
Benzene	0.104	0.0020	mg/kg	0.100	ND	104	70-130	2.58	30	
Toluene	0.106	0.0050	"	0.100	ND	106	70-130	1.98	30	
Ethylbenzene	0.113	0.0050	"	0.100	ND	113	70-130	2.52	30	
m,p-Xylene	0.216	0.010	"	0.200	ND	108	70-130	0.969	30	
o-Xylene	0.102	0.0050	"	0.100	ND	102	70-130	2.97	30	
1,2,4-Trimethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130	1.03	30	
1,3,5-Trimethylbenzene	0.102	0.0050	"	0.100	ND	102	70-130	2.47	30	
Naphthalene	0.0962	0.0038	"	0.100	ND	96.2	70-130	3.59	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.0</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.3</i>	<i>50-150</i>			

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03/13/25 13:41

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BIB0581 - EPA 3550A

Blank (BIB0581-BLK1)

Prepared & Analyzed: 02/11/25

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: <i>o</i> -Terphenyl	13.6		"	12.5		109	30-150			

LCS (BIB0581-BS1)

Prepared & Analyzed: 02/11/25

C10-C28 (DRO)	416	50	mg/kg	500		83.2	70-130			
Surrogate: <i>o</i> -Terphenyl	15.0		"	12.5		120	30-150			

Matrix Spike (BIB0581-MS1)

Source: 2502200-01

Prepared: 02/11/25 Analyzed: 02/12/25

C10-C28 (DRO)	364	50	mg/kg	500	6.11	71.6	70-130			
Surrogate: <i>o</i> -Terphenyl	9.82		"	12.5		78.5	30-150			

Matrix Spike Dup (BIB0581-MSD1)

Source: 2502200-01

Prepared: 02/11/25 Analyzed: 02/12/25

C10-C28 (DRO)	354	50	mg/kg	500	6.11	69.7	70-130	2.73	20	QM-05
Surrogate: <i>o</i> -Terphenyl	9.58		"	12.5		76.7	30-150			

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PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BIB1308 - EPA 5030 Soil MS

Blank (BIB1308-BLK1)

Prepared: 02/24/25 Analyzed: 02/27/25

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0212</i>		"	<i>0.0333</i>		<i>63.7</i>	<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0229</i>		"	<i>0.0333</i>		<i>68.8</i>	<i>40-140</i>			

LCS (BIB1308-BS1)

Prepared: 02/24/25 Analyzed: 02/27/25

Acenaphthene	0.0187	0.00500	mg/kg	0.0333		56.2	40-140			
Anthracene	0.0184	0.00500	"	0.0333		55.3	40-140			
Benzo (a) anthracene	0.0186	0.00500	"	0.0333		55.8	40-140			
Benzo (a) pyrene	0.0182	0.00500	"	0.0333		54.5	40-140			
Benzo (b) fluoranthene	0.0190	0.00500	"	0.0333		56.9	40-140			
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333		57.5	40-140			
Chrysene	0.0192	0.00500	"	0.0333		57.7	40-140			
Dibenz (a,h) anthracene	0.0177	0.00500	"	0.0333		53.0	40-140			
Fluoranthene	0.0197	0.00500	"	0.0333		59.2	40-140			
Fluorene	0.0192	0.00500	"	0.0333		57.7	40-140			
Indeno (1,2,3-cd) pyrene	0.0178	0.00500	"	0.0333		53.4	40-140			
Pyrene	0.0180	0.00500	"	0.0333		54.1	40-140			
1-Methylnaphthalene	0.0188	0.00500	"	0.0333		56.3	40-140			
2-Methylnaphthalene	0.0186	0.00500	"	0.0333		55.8	40-140			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0196</i>		"	<i>0.0333</i>		<i>58.9</i>	<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0207</i>		"	<i>0.0333</i>		<i>62.2</i>	<i>40-140</i>			

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PAH by EPA Method 8270D SIM - Quality Control

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

Batch BIB1308 - EPA 5030 Soil MS

Matrix Spike (BIB1308-MS1)	Source: 2502201-04			Prepared: 02/24/25 Analyzed: 03/04/25						
Acenaphthene	0.0254	0.00500	mg/kg	0.0333	ND	76.1	40-140			
Anthracene	0.0267	0.00500	"	0.0333	ND	80.2	40-140			
Benzo (a) anthracene	0.0264	0.00500	"	0.0333	ND	79.2	40-140			
Benzo (a) pyrene	0.0218	0.00500	"	0.0333	ND	65.5	40-140			
Benzo (b) fluoranthene	0.0219	0.00500	"	0.0333	ND	65.7	40-140			
Benzo (k) fluoranthene	0.0219	0.00500	"	0.0333	ND	65.7	40-140			
Chrysene	0.0259	0.00500	"	0.0333	ND	77.7	40-140			
Dibenz (a,h) anthracene	0.0233	0.00500	"	0.0333	ND	69.9	40-140			
Fluoranthene	0.0275	0.00500	"	0.0333	ND	82.6	40-140			
Fluorene	0.0232	0.00500	"	0.0333	ND	69.7	40-140			
Indeno (1,2,3-cd) pyrene	0.0336	0.00500	"	0.0333	ND	101	40-140			
Pyrene	0.0225	0.00500	"	0.0333	ND	67.6	40-140			
1-Methylnaphthalene	0.0266	0.00500	"	0.0333	ND	79.7	40-140			
2-Methylnaphthalene	0.0274	0.00500	"	0.0333	ND	82.3	40-140			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0250</i>		<i>"</i>	<i>0.0333</i>		<i>75.1</i>	<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0265</i>		<i>"</i>	<i>0.0333</i>		<i>79.5</i>	<i>40-140</i>			

Matrix Spike Dup (BIB1308-MSD1)	Source: 2502201-04			Prepared: 02/24/25 Analyzed: 03/04/25						
Acenaphthene	0.0234	0.00500	mg/kg	0.0333	ND	70.3	40-140	7.87	30	
Anthracene	0.0257	0.00500	"	0.0333	ND	77.1	40-140	3.94	30	
Benzo (a) anthracene	0.0249	0.00500	"	0.0333	ND	74.8	40-140	5.71	30	
Benzo (a) pyrene	0.0218	0.00500	"	0.0333	ND	65.5	40-140	0.0321	30	
Benzo (b) fluoranthene	0.0228	0.00500	"	0.0333	ND	68.4	40-140	4.07	30	
Benzo (k) fluoranthene	0.0220	0.00500	"	0.0333	ND	66.1	40-140	0.487	30	
Chrysene	0.0244	0.00500	"	0.0333	ND	73.3	40-140	5.79	30	
Dibenz (a,h) anthracene	0.0235	0.00500	"	0.0333	ND	70.4	40-140	0.695	30	
Fluoranthene	0.0263	0.00500	"	0.0333	ND	78.8	40-140	4.63	30	
Fluorene	0.0230	0.00500	"	0.0333	ND	69.1	40-140	0.993	30	
Indeno (1,2,3-cd) pyrene	0.0323	0.00500	"	0.0333	ND	96.9	40-140	4.00	30	
Pyrene	0.0219	0.00500	"	0.0333	ND	65.7	40-140	2.92	30	
1-Methylnaphthalene	0.0256	0.00500	"	0.0333	ND	76.9	40-140	3.64	30	
2-Methylnaphthalene	0.0264	0.00500	"	0.0333	ND	79.2	40-140	3.88	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0235</i>		<i>"</i>	<i>0.0333</i>		<i>70.6</i>	<i>40-140</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0256</i>		<i>"</i>	<i>0.0333</i>		<i>76.7</i>	<i>40-140</i>			

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BIB0585 - EPA 3050B

Blank (BIB0585-BLK1)

Prepared & Analyzed: 02/12/25

Boron ND 2.00 mg/L

LCS (BIB0585-BS1)

Prepared & Analyzed: 02/12/25

Boron 5.08 2.00 mg/L 5.00 102 80-120

Duplicate (BIB0585-DUP1)

Source: 2502201-01

Prepared & Analyzed: 02/12/25

Boron 0.657 2.00 mg/L 0.678 3.09 20

Matrix Spike (BIB0585-MS1)

Source: 2502201-01

Prepared & Analyzed: 02/12/25

Boron 5.35 2.00 mg/L 4.99 0.678 93.7 75-125

Matrix Spike Dup (BIB0585-MSD1)

Source: 2502201-01

Prepared & Analyzed: 02/12/25

Boron 5.61 2.00 mg/L 4.99 0.678 99.0 75-125 4.87 25

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
Project Manager: Paul Henchan

Reported:
03/13/25 13:41

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BIB0603 - EPA 3050B

Blank (BIB0603-BLK1)

Prepared: 02/12/25 Analyzed: 02/13/25

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							
Selenium	ND	0.260	"							

LCS (BIB0603-BS1)

Prepared: 02/12/25 Analyzed: 02/13/25

Arsenic	40.7	0.200	mg/kg wet	41.7	97.6	80-120				
Barium	42.5	0.400	"	41.7	102	80-120				
Cadmium	2.09	0.200	"	2.08	100	80-120				
Copper	46.8	0.400	"	41.7	112	80-120				
Lead	21.4	0.200	"	20.8	103	80-120				
Nickel	46.5	0.400	"	41.7	112	80-120				
Silver	2.09	0.0200	"	2.08	100	80-120				
Zinc	46.4	0.400	"	41.7	111	80-120				
Selenium	3.95	0.260	"	4.17	94.9	80-120				

Duplicate (BIB0603-DUP1)

Source: 2502202-01

Prepared: 02/12/25 Analyzed: 02/13/25

Arsenic	5.66	0.200	mg/kg dry	5.44	4.06	20				
Barium	111	0.400	"	140	22.8	20				QR-04
Cadmium	0.383	0.200	"	0.389	1.47	20				
Copper	6.85	0.400	"	6.41	6.62	20				
Lead	10.6	0.200	"	11.8	11.0	20				
Nickel	7.54	0.400	"	7.15	5.23	20				
Silver	0.0461	0.0200	"	0.0426	7.90	20				
Zinc	29.5	0.400	"	26.2	12.1	20				
Selenium	0.194	0.260	"	ND	200	20				QR-01

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 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BIB0603 - EPA 3050B

Matrix Spike (BIB0603-MS1)	Source: 2502202-01			Prepared: 02/12/25		Analyzed: 02/13/25					
Arsenic	51.2	0.200	mg/kg dry	47.2	5.44	96.8	75-125				
Barium	181	0.400	"	47.2	140	87.2	75-125				
Cadmium	2.78	0.200	"	2.36	0.389	101	75-125				
Copper	38.8	0.400	"	47.2	6.41	68.6	75-125				QM-05
Lead	35.3	0.200	"	23.6	11.8	99.4	75-125				
Nickel	38.4	0.400	"	47.2	7.15	66.1	75-125				QM-05
Silver	2.44	0.0200	"	2.36	0.0426	101	75-125				
Zinc	62.5	0.400	"	47.2	26.2	76.9	75-125				
Selenium	4.04	0.260	"	4.72	ND	85.6	75-125				

Matrix Spike Dup (BIB0603-MSD1)	Source: 2502202-01			Prepared: 02/12/25		Analyzed: 02/13/25					
Arsenic	52.0	0.200	mg/kg dry	46.4	5.44	100	75-125	1.56	25		
Barium	149	0.400	"	46.4	140	20.2	75-125	19.2	25		QM-05
Cadmium	2.77	0.200	"	2.32	0.389	103	75-125	0.219	25		
Copper	38.1	0.400	"	46.4	6.41	68.1	75-125	1.94	25		QM-05
Lead	34.9	0.200	"	23.2	11.8	99.4	75-125	1.09	25		
Nickel	38.0	0.400	"	46.4	7.15	66.4	75-125	0.975	25		QM-05
Silver	2.40	0.0200	"	2.32	0.0426	101	75-125	1.58	25		
Zinc	64.6	0.400	"	46.4	26.2	82.7	75-125	3.36	25		
Selenium	4.13	0.260	"	4.64	ND	89.0	75-125	2.28	25		

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank
 Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BIB0597 - 3060A Mod

Blank (BIB0597-BLK1)

Prepared & Analyzed: 02/12/25

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BIB0597-BS1)

Prepared & Analyzed: 02/12/25

Chromium, Hexavalent 24.2 0.30 mg/kg wet 24.5 98.6 80-120

Duplicate (BIB0597-DUP1)

Source: 2502005-01

Prepared & Analyzed: 02/12/25

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BIB0597-MS1)

Source: 2502005-01

Prepared & Analyzed: 02/12/25

Chromium, Hexavalent 33.4 0.30 mg/kg dry 28.9 ND 116 75-125

Matrix Spike Dup (BIB0597-MSD1)

Source: 2502005-01

Prepared & Analyzed: 02/12/25

Chromium, Hexavalent 30.1 0.30 mg/kg dry 28.3 ND 106 75-125 10.6 20

Summit Scientific

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Fremont Environmental
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Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BIB0580 - General Preparation

Blank (BIB0580-BLK1)

Prepared: 02/11/25 Analyzed: 02/12/25

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BIB0580-BS1)

Prepared: 02/11/25 Analyzed: 02/12/25

Calcium	6.41	0.0500	mg/L wet	5.00	128	70-130				
Magnesium	5.44	0.0500	"	5.00	109	70-130				
Sodium	5.57	0.0500	"	5.00	111	70-130				

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Fremont Environmental
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Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BIB0586 - General Preparation

Duplicate (BIB0586-DUP1)

Source: 2502201-01

Prepared & Analyzed: 02/12/25

% Solids	87.3		%		87.6			0.274	20	
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Fremont Environmental
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Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BIB0582 - General Preparation

Blank (BIB0582-BLK1)

Prepared: 02/11/25 Analyzed: 02/12/25

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BIB0582-BS1)

Prepared: 02/11/25 Analyzed: 02/12/25

Specific Conductance (EC) 0.156 0.0100 mmhos/cm 0.150 104 95-105

Duplicate (BIB0582-DUP1)

Source: 2502204-01

Prepared: 02/11/25 Analyzed: 02/12/25

Specific Conductance (EC) 0.929 0.0100 mmhos/cm 0.925 0.475 20

Summit Scientific

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
 Project Manager: Paul Henchan

Reported:
 03/13/25 13:41

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BIB0583 - General Preparation

LCS (BIB0583-BS1)

Prepared: 02/11/25 Analyzed: 02/12/25

pH	9.19	pH Units	9.18	100	95-105
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Duplicate (BIB0583-DUP1)

Source: 2502204-01

Prepared: 02/11/25 Analyzed: 02/12/25

pH	9.12	pH Units	9.14	0.219	20
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Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Pappenheim 02-32 Tank

Project Number: UWRWE-A3114-ENV CO23-174
Project Manager: Paul Henchan

Reported:
03/13/25 13:41

Notes and Definitions

- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits. Sample results were accepted based on LCS and/or LCSD recoveries and/or RPD values.
- QR-01 Analyses are not controlled on RPD values from sample concentrations below the reporting limit. Sample results were accepted based on LCS and/or LCSD recoveries and/or RPD values.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. Sample results were accepted based on LCS and/or LCSD recoveries and/or RPD values.
- 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