

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 03, 2023

Paul Henchan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Pappenheim 02-32 FL

Work Order #2306425

Enclosed are the results of analyses for samples received by Summit Scientific on 06/21/23 16:38. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury

President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01 3feet	2306425-01	Soil	06/21/23 10:53	06/21/23 16:38
FL02 3feet	2306425-02	Soil	06/21/23 10:35	06/21/23 16:38

Summit Scientific

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4653 Table Mountain Drive
Golden, CO 80403
303-277-9310

Lab ID	Page	of
2306425		1

Send Data To:		Send Invoice To:
Client: Fremont Environmental	Project Manager: Paul Henchan	Company: Noble
Address:	E-Mail: Fremont Distribution List	Project Name/Location: Pappenheim 02-32 FL
City/State/Zip:		AFE#:
Phone: 303-261-6246	Project Name: Pappenheim 02-32 FL	PO/Billing Codes: UWRWE-A3114-ABN
Sampler Name: Stanley Gilbert	Project Number:	Contact: Mike Montoya

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Air-Canister #	Other	Analysis Requested						Special Instructions				
					HCl	HNO3	None	Other	Water	Soil			BTEX, TMBs, Naph.	TPH	PAH (915)	EC, SAR, Ph, Boron	Metals (915)	TDS, Chloride, Sulfate		HOLD			
1	FLO1 3 feet	6/21/23	10:53	2			X			X			X	X	X	X							
2	FLO2 3 feet	6/21/23	10:35	2			X			X			X	X	X	X							
3																							
4																							
5																							
6																							
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14																							
15																							

Relinquished by:	Date/Time: 6/21/23 16:38	Received by: Summit North	Date/Time: 6/21/23 16:38	TAT Business Days	Field DO	Notes:
Relinquished by:	Date/Time: 6/21/23 16:38	Received by:	Date/Time: 6/21/23 16:38	Same Day	Field EC	
				1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
				Standard	<input checked="" type="checkbox"/> Field Turb.	
Temperature Upon Receipt: 11.0	Corrected Temperature: 0	IR gun #: 1	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2306425

Client: Fremont Client Project ID: Pappenheim 02-32 FL

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C)

Thermometer #

	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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ICE</u>
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<u>Additional Comments (if any):</u>				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

AS
Custodian Printed Name

4/21/23
Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

FL01 3feet
2306425-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGF0810	06/22/23	06/22/23	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: **06/21/23 10:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0454	113 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0416	104 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0416	104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0812	06/22/23	06/22/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.1	96.6 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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FL01 3feet
2306425-01 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGF0780	06/22/23	06/23/23	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: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0155	46.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0246	73.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.121	0.0100	mg/L	1	BGF0820	06/22/23	06/26/23	EPA 6020B	

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

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Pappenheim 02-32 FL
Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

FL01 3feet
2306425-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	37.5	0.0561	mg/L dry	1	BGF0902	06/26/23	06/29/23	EPA 6020B	
Magnesium	14.1	0.0561	"	"	"	"	"	"	
Sodium	9.28	0.0561	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.328	0.00100	units	1	BGF1123	06/30/23	06/30/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.1		%	1	BGF0804	06/22/23	06/22/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.724	0.0100	mmhos/cm	1	BGF0982	06/27/23	06/27/23	EPA 120.1	

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

Date Sampled: **06/21/23 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.66		pH Units	1	BGF0983	06/27/23	06/27/23	EPA 9045D	

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Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

FL02 3feet
2306425-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGF0810	06/22/23	06/22/23	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: **06/21/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0439	110 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0413	103 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0415	104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGF0812	06/22/23	06/22/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.1	96.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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07/03/23 12:16

FL02 3feet
2306425-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGF0780	06/22/23	06/23/23	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: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0192	57.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0290	86.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.186	0.0100	mg/L	1	BGF0820	06/22/23	06/26/23	EPA 6020B	

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

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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PO Box 1289
Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL
Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

FL02 3feet
2306425-02 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	43.3	0.0606	mg/L dry	1	BGF0902	06/26/23	06/29/23	EPA 6020B	
Magnesium	8.44	0.0606	"	"	"	"	"	"	
Sodium	2.23	0.0606	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0812	0.00100	units	1	BGF1123	06/30/23	06/30/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.4		%	1	BGF0804	06/22/23	06/22/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.268	0.0100	mmhos/cm	1	BGF0982	06/27/23	06/27/23	EPA 120.1	

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

Date Sampled: **06/21/23 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.83		pH Units	1	BGF0983	06/27/23	06/27/23	EPA 9045D	

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Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

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 BGF0810 - EPA 5030 Soil MS

Blank (BGF0810-BLK1)

Prepared & Analyzed: 06/22/23

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0441		"	0.0400		110	50-150			
Surrogate: Toluene-d8	0.0421		"	0.0400		105	50-150			
Surrogate: 4-Bromofluorobenzene	0.0425		"	0.0400		106	50-150			

LCS (BGF0810-BS1)

Prepared & Analyzed: 06/22/23

Benzene	0.0944	0.0020	mg/kg	0.125		75.5	70-130			
Toluene	0.124	0.0050	"	0.125		99.2	70-130			
Ethylbenzene	0.148	0.0050	"	0.125		118	70-130			
m,p-Xylene	0.306	0.010	"	0.250		122	70-130			
o-Xylene	0.141	0.0050	"	0.125		113	70-130			
1,2,4-Trimethylbenzene	0.156	0.0050	"	0.125		125	70-130			
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.125		124	70-130			
Naphthalene	0.146	0.0038	"	0.125		117	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0430		"	0.0400		107	50-150			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	50-150			

Matrix Spike (BGF0810-MS1)

Source: 2306389-01

Prepared & Analyzed: 06/22/23

Benzene	0.0956	0.0020	mg/kg	0.125	ND	76.5	70-130			
Toluene	0.126	0.0050	"	0.125	ND	101	70-130			
Ethylbenzene	0.142	0.0050	"	0.125	ND	113	70-130			
m,p-Xylene	0.303	0.010	"	0.250	ND	121	70-130			
o-Xylene	0.141	0.0050	"	0.125	ND	113	70-130			
1,2,4-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130			
1,3,5-Trimethylbenzene	0.154	0.0050	"	0.125	ND	123	70-130			
Naphthalene	0.154	0.0038	"	0.125	ND	123	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0453		"	0.0400		113	50-150			
Surrogate: Toluene-d8	0.0426		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	50-150			

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Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

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 BGF0810 - EPA 5030 Soil MS

Matrix Spike Dup (BGF0810-MSD1)	Source: 2306389-01			Prepared & Analyzed: 06/22/23						
Benzene	0.0943	0.0020	mg/kg	0.125	ND	75.4	70-130	1.39	30	
Toluene	0.127	0.0050	"	0.125	ND	102	70-130	0.616	30	
Ethylbenzene	0.151	0.0050	"	0.125	ND	121	70-130	6.36	30	
m,p-Xylene	0.311	0.010	"	0.250	ND	125	70-130	2.80	30	
o-Xylene	0.144	0.0050	"	0.125	ND	115	70-130	2.19	30	
1,2,4-Trimethylbenzene	0.154	0.0050	"	0.125	ND	123	70-130	0.659	30	
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130	0.892	30	
Naphthalene	0.155	0.0038	"	0.125	ND	124	70-130	0.331	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0436</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BGF0812 - EPA 3550A

Blank (BGF0812-BLK1)

Prepared & Analyzed: 06/22/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	12.0		"	12.5	95.7	30-150					

LCS (BGF0812-BS1)

Prepared & Analyzed: 06/22/23

C10-C28 (DRO)	660	50	mg/kg	500	132	70-130				QLCS-01
Surrogate: <i>o</i> -Terphenyl	11.9		"	12.5	95.4	30-150				

Matrix Spike (BGF0812-MS1)

Source: 2306389-01

Prepared & Analyzed: 06/22/23

C10-C28 (DRO)	667	50	mg/kg	500	26.2	128	70-130			
Surrogate: <i>o</i> -Terphenyl	12.1		"	12.5	96.5	30-150				

Matrix Spike Dup (BGF0812-MSD1)

Source: 2306389-01

Prepared & Analyzed: 06/22/23

C10-C28 (DRO)	675	50	mg/kg	500	26.2	130	70-130	1.21	20	
Surrogate: <i>o</i> -Terphenyl	11.7		"	12.5	93.9	30-150				

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Project: Noble - Pappenheim 02-32 FL
Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

PAH by EPA Method 8270D SIM - Quality Control
Summit Scientific

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

Batch BGF0780 - EPA 5030 Soil MS

Blank (BGF0780-BLK1)

Prepared & Analyzed: 06/22/23

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>0.0303</i>		<i>"</i>	<i>0.0333</i>		<i>90.9</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0391</i>		<i>"</i>	<i>0.0333</i>		<i>117</i>		<i>40-150</i>		

LCS (BGF0780-BS1)

Prepared & Analyzed: 06/22/23

Acenaphthene	0.0352	0.00500	mg/kg	0.0333	106	31-137
Anthracene	0.0368	0.00500	"	0.0333	111	30-120
Benzo (a) anthracene	0.0398	0.00500	"	0.0333	119	30-120
Benzo (a) pyrene	0.0328	0.00500	"	0.0333	98.3	30-120
Benzo (b) fluoranthene	0.0346	0.00500	"	0.0333	104	30-120
Benzo (k) fluoranthene	0.0323	0.00500	"	0.0333	96.8	30-120
Chrysene	0.0370	0.00500	"	0.0333	111	30-120
Dibenz (a,h) anthracene	0.0324	0.00500	"	0.0333	97.3	30-120
Fluoranthene	0.0366	0.00500	"	0.0333	110	30-120
Fluorene	0.0350	0.00500	"	0.0333	105	30-120
Indeno (1,2,3-cd) pyrene	0.0356	0.00500	"	0.0333	107	30-120
Pyrene	0.0380	0.00500	"	0.0333	114	35-142
1-Methylnaphthalene	0.0334	0.00500	"	0.0333	100	35-142
2-Methylnaphthalene	0.0299	0.00500	"	0.0333	89.7	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0338</i>		<i>"</i>	<i>0.0333</i>	<i>101</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0390</i>		<i>"</i>	<i>0.0333</i>	<i>117</i>	<i>40-150</i>

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Fremont Environmental
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Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

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 BGF0780 - EPA 5030 Soil MS

Matrix Spike (BGF0780-MS1)	Source: 2306402-01			Prepared & Analyzed: 06/22/23						
Acenaphthene	0.0309	0.00500	mg/kg	0.0333	ND	92.7	31-137			
Anthracene	0.0314	0.00500	"	0.0333	ND	94.2	30-120			
Benzo (a) anthracene	0.0351	0.00500	"	0.0333	ND	105	30-120			
Benzo (a) pyrene	0.0300	0.00500	"	0.0333	ND	90.2	30-120			
Benzo (b) fluoranthene	0.0309	0.00500	"	0.0333	ND	92.7	30-120			
Benzo (k) fluoranthene	0.0296	0.00500	"	0.0333	ND	88.7	30-120			
Chrysene	0.0326	0.00500	"	0.0333	ND	97.9	30-120			
Dibenz (a,h) anthracene	0.0292	0.00500	"	0.0333	ND	87.5	30-120			
Fluoranthene	0.0314	0.00500	"	0.0333	ND	94.1	30-120			
Fluorene	0.0293	0.00500	"	0.0333	ND	87.9	30-120			
Indeno (1,2,3-cd) pyrene	0.0328	0.00500	"	0.0333	ND	98.4	30-120			
Pyrene	0.0341	0.00500	"	0.0333	ND	102	35-142			
1-Methylnaphthalene	0.0299	0.00500	"	0.0333	ND	89.8	15-130			
2-Methylnaphthalene	0.0267	0.00500	"	0.0333	ND	80.0	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0314</i>		<i>"</i>	<i>0.0333</i>		<i>94.1</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0334</i>		<i>"</i>	<i>0.0333</i>		<i>100</i>	<i>40-150</i>			

Matrix Spike Dup (BGF0780-MSD1)	Source: 2306402-01			Prepared & Analyzed: 06/22/23						
Acenaphthene	0.0236	0.00500	mg/kg	0.0333	ND	70.7	31-137	27.0	30	
Anthracene	0.0248	0.00500	"	0.0333	ND	74.3	30-120	23.6	30	
Benzo (a) anthracene	0.0284	0.00500	"	0.0333	ND	85.3	30-120	21.1	30	
Benzo (a) pyrene	0.0233	0.00500	"	0.0333	ND	69.9	30-120	25.3	30	
Benzo (b) fluoranthene	0.0246	0.00500	"	0.0333	ND	73.7	30-120	22.9	30	
Benzo (k) fluoranthene	0.0225	0.00500	"	0.0333	ND	67.6	30-120	26.9	30	
Chrysene	0.0253	0.00500	"	0.0333	ND	75.9	30-120	25.3	30	
Dibenz (a,h) anthracene	0.0222	0.00500	"	0.0333	ND	66.7	30-120	26.9	30	
Fluoranthene	0.0246	0.00500	"	0.0333	ND	73.8	30-120	24.2	30	
Fluorene	0.0227	0.00500	"	0.0333	ND	68.1	30-120	25.3	30	
Indeno (1,2,3-cd) pyrene	0.0250	0.00500	"	0.0333	ND	75.1	30-120	26.9	30	
Pyrene	0.0269	0.00500	"	0.0333	ND	80.7	35-142	23.4	30	
1-Methylnaphthalene	0.0193	0.00500	"	0.0333	ND	58.0	15-130	42.9	50	
2-Methylnaphthalene	0.0176	0.00500	"	0.0333	ND	52.8	15-130	40.8	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0208</i>		<i>"</i>	<i>0.0333</i>		<i>62.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0269</i>		<i>"</i>	<i>0.0333</i>		<i>80.6</i>	<i>40-150</i>			

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

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 BGF0820 - EPA 3050B

Blank (BGF0820-BLK1)

Prepared: 06/22/23 Analyzed: 06/26/23

Boron ND 0.0100 mg/L

LCS (BGF0820-BS1)

Prepared: 06/22/23 Analyzed: 06/26/23

Boron 4.43 0.0100 mg/L 5.00 88.7 80-120

Duplicate (BGF0820-DUP1)

Source: 2306391-01

Prepared: 06/22/23 Analyzed: 06/26/23

Boron 0.204 0.0100 mg/L 0.304 39.3 20 QR-04

Matrix Spike (BGF0820-MS1)

Source: 2306391-01

Prepared: 06/22/23 Analyzed: 06/26/23

Boron 4.81 0.0100 mg/L 5.00 0.304 90.1 75-125

Matrix Spike Dup (BGF0820-MSD1)

Source: 2306391-01

Prepared: 06/22/23 Analyzed: 06/26/23

Boron 4.61 0.0100 mg/L 5.00 0.304 86.2 75-125 4.07 25

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Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

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 BGF0902 - General Preparation

Blank (BGF0902-BLK1)

Prepared: 06/26/23 Analyzed: 06/29/23

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

LCS (BGF0902-BS1)

Prepared: 06/26/23 Analyzed: 06/29/23

Calcium	4.06	0.0500	mg/L wet	5.00	81.3	70-130				
Magnesium	5.46	0.0500	"	5.00	109	70-130				
Sodium	5.36	0.0500	"	5.00	107	70-130				

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 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

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 BGF0804 - General Preparation

Duplicate (BGF0804-DUP1)

Source: 2306400-40

Prepared & Analyzed: 06/22/23

% Solids	90.7		%		88.5			2.48	20	
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Fremont Environmental
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 Wellington CO, 80549

Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

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 BGF0982 - General Preparation

Blank (BGF0982-BLK1)

Prepared & Analyzed: 06/27/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGF0982-BS1)

Prepared & Analyzed: 06/27/23

Specific Conductance (EC) 0.154 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BGF0982-DUP1)

Source: 2306425-01

Prepared & Analyzed: 06/27/23

Specific Conductance (EC) 0.707 0.0100 mmhos/cm 0.724 2.32 20

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Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
 Project Manager: Paul Henchan

Reported:
 07/03/23 12:16

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 BGF0983 - General Preparation

LCS (BGF0983-BS1)

Prepared & Analyzed: 06/27/23

pH	9.01	pH Units	9.18	98.1	95-105
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Duplicate (BGF0983-DUP1)

Source: 2306425-01

Prepared & Analyzed: 06/27/23

pH	7.68	pH Units	7.66	0.261	20
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Project: Noble - Pappenheim 02-32 FL

Project Number: UWRWE-A3114-ABN
Project Manager: Paul Henchan

Reported:
07/03/23 12:16

Notes and Definitions

- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QLCS-01 The spike recovery was outside acceptance limits for this analyte indicating a potential high bias. The corresponding samples did not exhibit concentrations above reporting level for this analyte. Data quality is not affected.
- 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