

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 17, 2018

Randy Edelen  
Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver, CO 80237  
RE: WH Croissant #4

Enclosed are the results of analyses for samples received by Summit Scientific on 04/09/18 16:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

**Reported:**  
04/17/18 12:07

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH 1A-2	1804168-01	Soil	04/09/18 10:12	04/09/18 16:05
WH 1-2	1804168-02	Soil	04/09/18 10:02	04/09/18 16:05
WH 1-3	1804168-03	Soil	04/09/18 10:33	04/09/18 16:05
WH 2-1	1804168-04	Soil	04/09/18 10:10	04/09/18 16:05
WH 2-5	1804168-05	Soil	04/09/18 10:20	04/09/18 16:05
WH 3-2	1804168-06	Soil	04/09/18 09:56	04/09/18 16:05
WH 3-3	1804168-07	Soil	04/09/18 10:07	04/09/18 16:05
WH 4-1	1804168-08	Soil	04/09/18 10:04	04/09/18 16:05
WH 3-4	1804168-09	Soil	04/09/18 10:17	04/09/18 16:05
WH 4-5	1804168-10	Soil	04/09/18 10:25	04/09/18 16:05
WH 5-2	1804168-11	Soil	04/09/18 10:32	04/09/18 16:05
WH 5-5	1804168-12	Soil	04/09/18 10:29	04/09/18 16:05

Summit Scientific

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# Summit Scientific

1804168

S<sub>2</sub>

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Grynberg Petroleum Project Manager: Randy Edelen  
 Address: 3600 S Yosemite St suite 900 E-Mail: r.edelen@grynberg.com  
 City/State/Zip: Denver CO 80237  
 Phone: 303-850-7490 Fax: 303-850-7498 Project Name: WH Croissant #4  
 Sampler Name: Pinky Zarembo Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested						Special Instructions
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	PH - DRO	TPH GRO	PH	EC	
1	WH 1A-2	4/9	10:12	1														Samples 11 and 12 are written in the Notes. Total of 12 samples all for same analyses. (WH)
2	WH 1-2	4/9	10:02	1														
3	WH 1-3	4/9	10:33	1														
4	WH 2-1	4/9	10:10	1														
5	WH 2-5	4/9	10:20	1														
6	WH 3-2	4/9	9:50	1														
7	WH 3-3	4/9	10:07	1														
8	WH 4-1	4/9	10:04	1														
9	WH 3-4	4/9	10:17	1														
10	WH 4-5	4/9	10:25	1														

Relinquished by: <u>[Signature]</u> Date/Time: <u>4/9/18 4:05 PM</u>	Received by: <u>[Signature]</u> Date/Time: <u>4/9/18 1605</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes: on ice 11. WH 5-2 4/9 10:32 12. WH 5-5 4/9 10:29 Same analysis
Relinquished by:	Received by:	Sample Integrity: <u>4.6°C</u>	
Relinquished by:	Received by:	Temperature Upon Receipt: <u>4.6°C</u>	
		Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

**Sample Receipt Checklist**

S2 Work Order: 1804168

Client: Grynberg Petroleum Client Project ID: WH Croissant #4

Shipped Via: Hand Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID					
Temp (°C)	<u>4.6</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 short holding time analytes or samples with HTs 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"/>	
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.

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

4/9/18 1610  
Date/Time



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 1A-2**  
**1804168-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.9 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		93.1 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	966	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
Magnesium	226	1.00	"	"	"	"	"	"	

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Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 1A-2**  
**1804168-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

<b>Sodium</b>	<b>870</b>	5.00 mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B
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**Calculated Analysis**

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>6.55</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1.38</b>	0.0100	mmhos/cm	1	1804109	04/16/18	04/16/18	EPA 120.1	
<b>% Solids</b>	<b>90.5</b>		%	"	1804129	04/17/18	04/17/18	Calculation	
<b>pH</b>	<b>8.7</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 1-2**  
**1804168-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.5 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		93.8 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>576</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>272</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>819</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 1-2  
 1804168-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>7.05</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>93.5</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.965</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.4</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 1-3**  
**1804168-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.0 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		93.4 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>2340</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>301</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>504</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 1-3**  
**1804168-03 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>2.61</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>91.2</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.899</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.7</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 2-1**  
**1804168-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.6 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		93.1 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		118 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>2280</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
Magnesium	<b>442</b>	1.00	"	"	"	"	"	"	
Sodium	<b>108</b>	5.00	"	"	"	"	"	"	

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 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 2-1  
 1804168-04 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>0.540</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>96.5</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.460</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.5</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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3600 S Yosemite Suite 900  
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Project: WH Croissant #4  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 2-5**  
**1804168-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.7 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		94.2 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>2430</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>121</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>283</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 2-5  
 1804168-05 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.52</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>90.2</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>1.39</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.4</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 3-2**  
**1804168-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.0 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		92.4 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		118 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1400</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>344</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>1900</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 3-2**  
**1804168-06 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>11.8</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 09:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>88.8</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>4.82</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.0</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 3-3**  
**1804168-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.8 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		92.1 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.6 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>782</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>314</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>1200</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 3-3**  
**1804168-07 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>9.17</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1.41</b>	0.0100	mmhos/cm	1	1804109	04/16/18	04/16/18	EPA 120.1	
<b>% Solids</b>	<b>87.9</b>		%	"	1804129	04/17/18	04/17/18	Calculation	
<b>pH</b>	<b>8.4</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 4-1**  
**1804168-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.9 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		93.3 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>4080</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>3870</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>16400</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 4-1  
 1804168-08 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>44.2</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>90.6</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>1.01</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.5</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 3-4**  
**1804168-09 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.6 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		91.0 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>40600</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>19000</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>52000</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 3-4  
 1804168-09 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>53.4</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>119</b>	0.0100	mmhos/cm	1	1804109	04/16/18	04/16/18	EPA 120.1	
<b>% Solids</b>	<b>91.7</b>		%	"	1804129	04/17/18	04/17/18	Calculation	
<b>pH</b>	<b>8.1</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 4-5**  
**1804168-10 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.9 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		91.4 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		133 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>29300</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>33100</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>14700</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 4-5**  
**1804168-10 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>14.0</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>90.9</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.521</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.6</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 5-2**  
**1804168-11 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.1 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		91.9 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>6990</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>19300</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>8210</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 5-2  
 1804168-11 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>11.5</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>94.6</b>		%	1	1804129	04/17/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.510</b>	0.0100	mmhos/cm	"	1804109	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.7</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Denver CO, 80237

Project: WH Croissant #4  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**WH 5-5**  
**1804168-12 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	1804048	04/10/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.3 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		88.9 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804071	04/09/18	04/11/18	EPA 8015M	

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		121 %	30-150		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>14200</b>	2.50	mg/kg dry	1	1804061	04/13/18	04/16/18	EPA 6020B	
<b>Magnesium</b>	<b>22500</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>4570</b>	5.00	"	"	"	"	"	"	

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**WH 5-5  
 1804168-12 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>5.56</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/09/18 10:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.872</b>	0.0100	mmhos/cm	1	1804109	04/16/18	04/16/18	EPA 120.1	
<b>% Solids</b>	<b>91.1</b>		%	"	1804129	04/17/18	04/17/18	Calculation	
<b>pH</b>	<b>8.5</b>		pH Units	"	1804108	04/16/18	04/16/18	EPA 9045D	

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Gryberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

Reported:  
 04/17/18 12:07

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

**Summit Scientific**

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

**Batch 1804048 - EPA 5030 Soil MS**

**Blank (1804048-BLK1)**

Prepared: 04/10/18 Analyzed: 04/11/18

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0331</i>		<i>"</i>	<i>0.0396</i>		<i>83.5</i>	<i>75-125</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0375</i>		<i>"</i>	<i>0.0400</i>		<i>93.7</i>	<i>81-119</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0381</i>		<i>"</i>	<i>0.0400</i>		<i>95.2</i>	<i>57-173</i>				

**LCS (1804048-BS1)**

Prepared: 04/10/18 Analyzed: 04/11/18

Benzene	0.0881	0.0020	mg/kg	0.100		88.1	70-130				
Toluene	0.103	0.0050	"	0.100		103	70-130				
Ethylbenzene	0.119	0.0050	"	0.100		119	70-130				
Xylenes (total)	ND	0.010	"				70-130				
Gasoline Range Hydrocarbons	2.51	0.50	"				0-200				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0327</i>		<i>"</i>	<i>0.0396</i>		<i>82.5</i>	<i>75-125</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0362</i>		<i>"</i>	<i>0.0400</i>		<i>90.6</i>	<i>81-119</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0370</i>		<i>"</i>	<i>0.0400</i>		<i>92.5</i>	<i>57-173</i>				

**Matrix Spike (1804048-MS1)**

Source: 1804168-01

Prepared: 04/10/18 Analyzed: 04/11/18

Benzene	0.0909	0.0020	mg/kg	0.100	ND	90.9	70-130				
Toluene	0.107	0.0050	"	0.100	ND	107	70-130				
Ethylbenzene	0.121	0.0050	"	0.100	ND	121	70-130				
Xylenes (total)	ND	0.010	"		ND		70-130				
Gasoline Range Hydrocarbons	2.61	0.50	"		0.0142		70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0351</i>		<i>"</i>	<i>0.0396</i>		<i>88.6</i>	<i>75-125</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0372</i>		<i>"</i>	<i>0.0400</i>		<i>93.1</i>	<i>81-119</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0377</i>		<i>"</i>	<i>0.0400</i>		<i>94.3</i>	<i>57-173</i>				

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Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
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Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**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 1804048 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1804048-MSD1)</b>	<b>Source: 1804168-01</b>			Prepared: 04/10/18		Analyzed: 04/11/18				
Benzene	0.0893	0.0020	mg/kg	0.100	ND	89.3	70-130	1.76	20	
Toluene	0.105	0.0050	"	0.100	ND	105	70-130	2.18	20	
Ethylbenzene	0.117	0.0050	"	0.100	ND	117	70-130	2.72	20	
Xylenes (total)	ND	0.010	"		ND		70-130		20	
Gasoline Range Hydrocarbons	2.53	0.50	"		0.0142		70-130	3.33	20	
Surrogate: 1,2-Dichloroethane-d4	0.0346		"	0.0396		87.4	75-125			
Surrogate: Toluene-d8	0.0367		"	0.0400		91.7	81-119			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.3	57-173			

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Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**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 1804071 - EPA 3550A**

<b>Blank (1804071-BLK1)</b>				Prepared: 04/09/18 Analyzed: 04/10/18							
C10-C28 (DRO)	ND	50	mg/kg								
<b>LCS (1804071-BS1)</b>				Prepared: 04/09/18 Analyzed: 04/10/18							
C10-C28 (DRO)	550	50	mg/kg	500	110	81.4-129					
<b>Matrix Spike (1804071-MS1)</b>				<b>Source: 1804168-01</b>		Prepared: 04/09/18 Analyzed: 04/10/18					
C10-C28 (DRO)	547	50	mg/kg	500	10.5	107	77.8-133				
<b>Matrix Spike Dup (1804071-MSD1)</b>				<b>Source: 1804168-01</b>		Prepared: 04/09/18 Analyzed: 04/10/18					
C10-C28 (DRO)	578	50	mg/kg	500	10.5	113	77.8-133	5.50	8.48		

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Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/17/18 12:07

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1804061 - General Preparation**

**Blank (1804061-BLK1)**

Prepared: 04/13/18 Analyzed: 04/14/18

Calcium	ND	2.50	mg/kg wet							
Magnesium	ND	1.00	"							
Sodium	ND	5.00	"							

**LCS (1804061-BS1)**

Prepared: 04/13/18 Analyzed: 04/14/18

Calcium	1070	2.50	mg/kg wet	1000		107	70-130			
Magnesium	1130	1.00	"	1000		113	70-130			
Sodium	1120	5.00	"	1000		112	70-130			

**Duplicate (1804061-DUP1)**

Source: 1804067-01

Prepared: 04/13/18 Analyzed: 04/14/18

Calcium	1030	2.50	mg/kg dry		1050			2.27	20	
Magnesium	885	1.00	"		905			2.21	20	
Sodium	499	5.00	"		482			3.33	20	

**Matrix Spike (1804061-MS1)**

Source: 1804067-01

Prepared: 04/13/18 Analyzed: 04/14/18

Calcium	1950	2.50	mg/kg dry	1080	1050	83.3	70-130			
Magnesium	1870	1.00	"	1080	905	89.8	70-130			
Sodium	1330	5.00	"	1080	482	78.9	70-130			

**Matrix Spike Dup (1804061-MSD1)**

Source: 1804067-01

Prepared: 04/13/18 Analyzed: 04/14/18

Calcium	1920	2.50	mg/kg dry	1080	1050	80.4	70-130	1.59	25	
Magnesium	1860	1.00	"	1080	905	89.1	70-130	0.377	25	
Sodium	1290	5.00	"	1080	482	75.2	70-130	3.09	25	

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Grynberg Petroleum Company  
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Project: WH Croissant #4

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/17/18 12:07

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 1804108 - General Preparation**

<b>Duplicate (1804108-DUP1)</b>		<b>Source: 1804168-01</b>			Prepared & Analyzed: 04/16/18						
pH	8.7		pH Units		8.7			0.00		20	

**Batch 1804109 - General Preparation**

<b>Duplicate (1804109-DUP1)</b>		<b>Source: 1804168-01</b>			Prepared & Analyzed: 04/16/18						
Specific Conductance (EC)	1.39	0.0100	mmhos/cm		1.38			1.01		20	

**Batch 1804129 - General Preparation**

<b>Duplicate (1804129-DUP1)</b>		<b>Source: 1804168-01</b>			Prepared & Analyzed: 04/17/18						
% Solids	89.2		%		90.5			1.50		20	

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Denver CO, 80237

Project: WH Croissant #4

Project Number: [none]  
Project Manager: Randy Edelen

**Reported:**  
04/17/18 12:07

### 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