



June 17, 2019

Blake Ford
Environmental Coordinator
Extraction Oil & Gas
370 17th Street, Suite 5300
Denver, Colorado 80202

Subject: Work Completion Report – Produced-Water Vessel Remedial Investigation

Nelson Battery 43-10
COGCC Location ID: 448667
40.410332,-104.642836
10 5N65W
Unincorporated Weld County, Colorado

Dear Mr. Ford:

Apex Companies LLC (Apex) has prepared this work completion report to document remedial investigation activities conducted in support of equipment removal and the legacy soil impacts uncovered during the removal of the partially-buried produced-water vessel at the Nelson Battery 43-10, (Location ID: 448667), located in Unincorporated Weld County, Colorado. The remedial investigation included soil sampling and field-screening which were completed under an approved Form 27 (Site Investigation and Remediation Workplan) with Remediation Project Number 12245 and under an approved Form 19 (Spill/Release Report) with an approved Spill/Release Point ID 463376, both assigned by the Colorado Oil and Gas Conservation Commission (COGCC).

Remedial Investigation

On March 11, 2019 an Apex Field Coordinator was dispatched to the Nelson Battery 43-10 location to support excavation efforts for the removal of a partially-buried produced-water vessel. A photoionization detector (PID) was successfully utilized to field-screen four sidewall samples (N01@5, W01@5, E01@5, and S01@5), and one base sample (B01@6). An additional sample (W02@2.5) was collected from the western sidewall at a depth of 2.5 feet below ground surface (2.5' bgs) to analyze for inorganics. Additional samples were also collected from the on-site stockpile (C01) and from a pothole excavation to the north of the produced-water excavation (B01@5_PH). Based on the results of the field screening, six samples (B01@6, N01@5, W01@5, W02@2.5, S01@5, and E01@5) were submitted for analysis at a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory for the approved constituents of concern, including total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX). W02@2.5 was also analyzed for specific conductance (EC), sodium adsorption ratio (SAR) and pH. The results from the western, southern, and eastern sidewall samples (W01@6, W02@2.5, S01@5, and E01@5) fell within the COGCC allowable limits for all constituents of concern. The base sample (B01@6) and north sidewall sample (N01@5) results exceeded COGCC allowable limits for TPH, indicating that source removal via excavation would be needed.

Between March 20 and March 25, 2019 additional remedial activities were performed. PID field-screening and laboratory results were used to guide the excavation of impacted soil. Subsequent confirmation soil samples were collected from the extents of the excavation and submitted for laboratory analysis to demonstrate clearance. Remediation continued until all soils collected from the excavation were within allowable limits for COGCC Table 910-1 constituents of concern (TPH and BTEX). Final dimensions of the excavation were approximately 31' by 36', with an approximate depth of 10' bgs.

In addition to investigation of the soil at the site of excavation, the Apex Field Coordinator completed a visual assessment of the site for soil staining, salt accumulation, stressed vegetation, or other signs of soil impacts at the surface or adjacent to recently disturbed soils. The visual assessment of the site yielded no known areas of concern outside the excavation margins.

Results

Field-screening was used to direct the removal of impacted soils, and laboratory results were used to characterize the vertical and horizontal extent of impacts and to document site clearance. When contaminated soils were encountered, the impacted soil was removed, and subsequent confirmation soil samples were collected to demonstrate clearance. Laboratory results for sidewall samples and base samples from the final extents of the produced-water vessel excavation were within allowable limits for COGCC Table 910-1 constituents of concern (TPH and BTEX). Laboratory results for sidewall sample W02@2.5 fell within COGCC Table 910-1 allowable levels for EC, pH, and SAR; therefore, additional samples were not analyzed for inorganic constituents.

All impacted or potentially impacted material (approximately 605 cubic yards of soil) was hauled off-site and disposed at the North Weld Landfill in Ault, Colorado. See the attached site diagram, laboratory results summary table, and copies of the laboratory results for an illustration of sample collection points and findings. No other indications of soil impacts were noted during the site investigation.

Conclusions

Based on field observations and laboratory results, there does not appear to be any remaining evidence of recent or legacy release of byproducts associated with the removed partially-buried produced-water vessels or flowlines. No further site investigation or remedial action is recommended at this time. If you have any questions about this report, onsite activities, or anything else related to this effort, please do not hesitate to contact me at 720-501-5065.

Sincerely,
Apex Companies, LLC

Maggie Graham

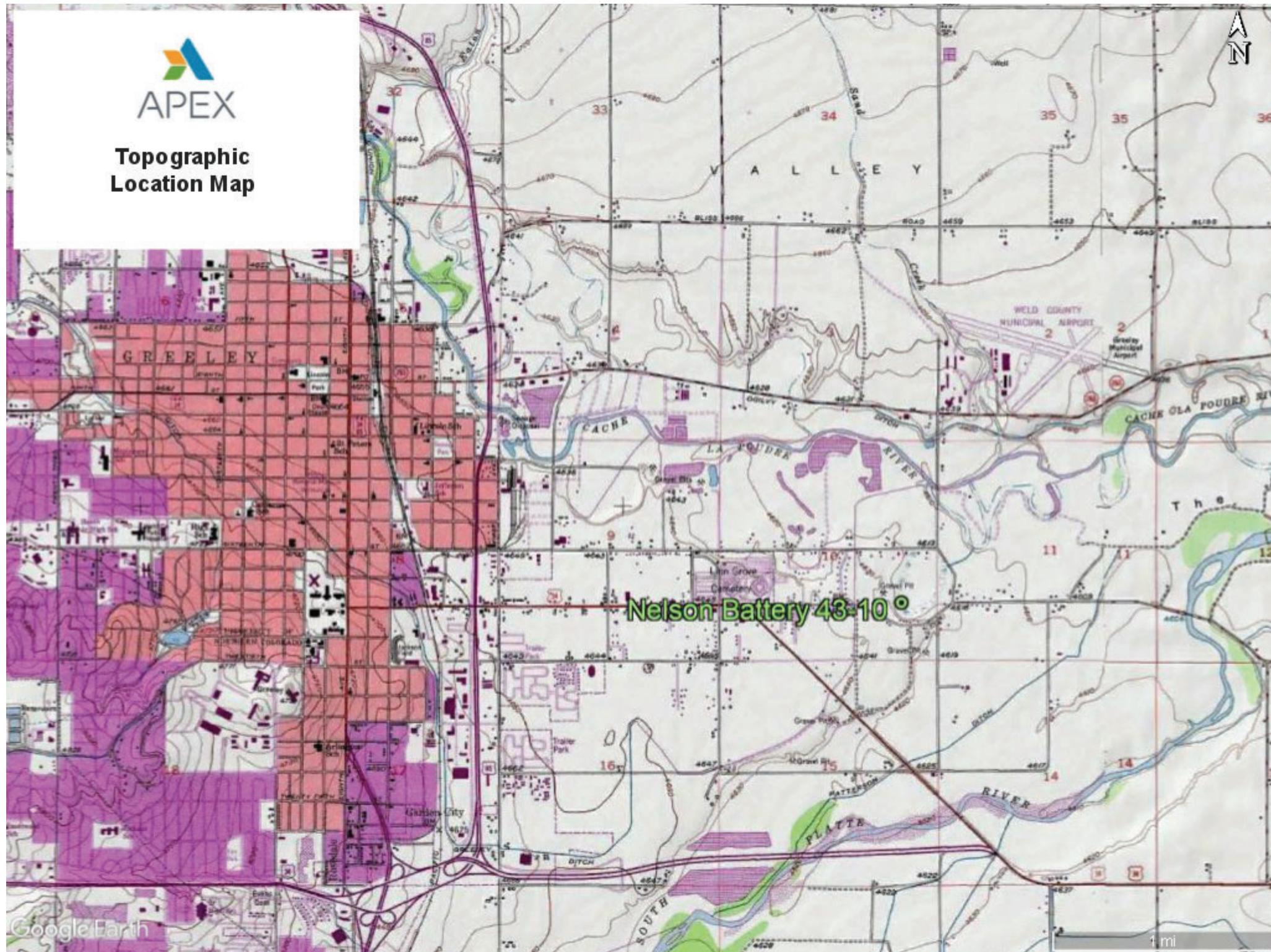
Maggie Graham
Senior Project Manager

Attachments:

1. Topographic Location Map
2. Site Diagram
3. Laboratory Results Summary Table
4. Laboratory Reports



Google Earth





Extraction Oil & Gas
Nelson Battery 43-10
COGCC Location ID: 448667
Site Diagram

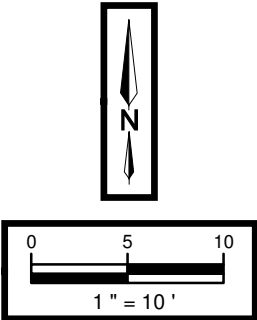
Legal Description: NESE, Sec 10, T5N R65W
County: Weld
Land Use: Non-cropland
Topography: Not Available
Run-Off Risk: Not Available
Soil Type: Wiley-Colby complex
Receiving Waters: Unnamed ditch

- Soil Sample (3/11/2019)
- Soil Sample (3/20/2019)
- Soil Sample (3/25/2019)
- Excavation Extent (3/11/2019)
- Excavation Extent (3/20/2018)
- Excavation Extent (3/25/2019)
- Former Crude Oil Tank
- Former Sump
- Former Secondary Containment

* Sample ID in Purple font indicates a regulatory exceedance.



Sample ID	Latitude NAD83	Longitude NAD83	Sample ID	Latitude NAD83	Longitude NAD83
B01@6'	40.410335	-104.642840	W02@2.5'	40.410335	-104.642870
S01@5'	40.410315	-104.642839	B01@5'_PH	40.410383	-104.642854
W01@5'	40.410338	-104.642869	B03@7'	40.410327	-104.642843
E01@5'	40.410335	-104.642812	N03@5'	40.410390	-104.642842
N01@5'	40.410360	-104.642840	B04@10'	40.410306	-104.642846



SOIL SAMPLE RESULTS									
		Organics (mg/kg)				(mmhos/cm)	Units	(pH Units)	
COGCC Allowable Concentration (Soil) -->		500	0.17	85	100	175	4	12	(6-9)
Sample Date	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	Benzene	Toluene	Ethylbenzene	Xylenes - total	EC (<4 mmhos/cm or 2x background)	SAR (calculation)	pH
3/11/19	S01@5	4.3	<0.0020	<0.0050	<0.0050	<0.010			
3/11/19	E01@5	15	<0.0020	<0.0050	<0.0050	<0.010			
3/11/19	W01@5	334	<0.0020	<0.0050	<0.0050	<0.010			
3/11/19	N01@5	508	<0.0020	<0.0050	<0.0050	<0.010			
3/11/19	B01@6	630	<0.0020	<0.0050	<0.0050	<0.010			
3/11/19	W02@2.5	<50	<0.0020	<0.0050	<0.0050	<0.010	0.475	0.119	8.41
3/11/19	B01@5'_PH	0.69	<0.0020	<0.0050	<0.0050	<0.010			
3/20/19	B03@7	1930	<0.0020	<0.0050	0.056	<0.010			
3/20/19	N03@5	<50	<0.0020	<0.0050	<0.0050	<0.010			
3/25/19	B04@10	<50	<0.0020	<0.0050	<0.0050	<0.010			

Spatial data collected for this project was acquired using a GPS with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. To accurately reflect field conditions, illustrated data may have been manually corrected in order to fit with the aerial imagery reference points and other collected data points.



Laboratory Results Summary Table - Soil Nelson 43-10

			Organics (mg/kg)					(mmhos/cm)	Units	(pH Units)
COGCC Allowable Concentration (Soil) -->			500	0.17	85	100	175	4	12	(6-9)
Location	Sample Date	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	Benzene	Toluene	Ethylbenzene	Xylenes - total	EC (Specific Conductance) (<4 mmhos/cm or 2x background)	SAR (Sodium Adsorption Ratio) (calculation)	pH
Nelson Battery 43-10	3/11/19	S01@5	4.3	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA
Nelson Battery 43-10	3/11/19	E01@5	15	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA
Nelson Battery 43-10	3/11/19	W01@5	334	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA
Nelson Battery 43-10	3/11/19	N01@5	508	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA
Nelson Battery 43-10	3/11/19	B01@6	630	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA
Nelson Battery 43-10	3/11/19	W02@2.5	<50	<0.0020	<0.0050	<0.0050	<0.010	0.475	0.119	8.41
Nelson Battery 43-10	3/11/19	B01@5_PH	0.69	NA	NA	NA	NA	NA	NA	NA
Nelson Battery 43-10	3/20/19	B03@7	1930	<0.0020	<0.0050	0.056	<0.010	NA	NA	NA
Nelson Battery 43-10	3/20/19	N03@5	<50	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA
Nelson Battery 43-10	3/25/19	B04@10	<50	<0.0020	<0.0050	<0.0050	<0.010	NA	NA	NA

Attachment A

Laboratory Analytical Report

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 15, 2019

Maggie Graham

Extraction Oil&Gas

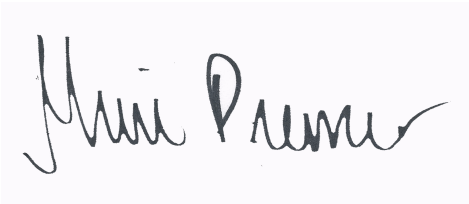
370 17th Street Suite 5300

Denver, CO 80202

RE: Nelson Battery 43-10

Enclosed are the results of analyses for samples received by Summit Scientific on 03/11/19 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is cursive and reads "Muri Premier".

Muri Premier For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/15/19 15:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@6	1903082-01	Soil	03/11/19 12:03	03/11/19 16:00
E01@5	1903082-02	Soil	03/11/19 12:05	03/11/19 16:00
S01@5	1903082-03	Soil	03/11/19 12:08	03/11/19 16:00
W01@5	1903082-04	Soil	03/11/19 12:10	03/11/19 16:00
N01@5	1903082-05	Soil	03/11/19 12:15	03/11/19 16:00
W02@2.5	1903082-06	Soil	03/11/19 12:50	03/11/19 16:00
B01@5_PH	1903082-08	Soil	03/11/19 13:00	03/11/19 16:00

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

S2 Work Order 1903082

Client: APEX Companies

Client Project ID: Nelson Battery 43-10

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

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____ (Describe)

Temp (°C)	5.1
-----------	-----

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
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⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
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 , ect				
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?			✓	
Additional Comments (if any):				

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

Custodian Printed Name or Initials

Signature of Custodian

3.11.19 1658
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

B01@6
1903082-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 12:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1903120	03/11/19	03/11/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	330	50	"	100	"	"	03/12/19	"	

Date Sampled: **03/11/19 12:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		82.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		89.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		123 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 12:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	300	50	mg/kg	1	1903124	03/11/19	03/11/19	EPA 8015M	

Date Sampled: **03/11/19 12:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

E01@5
1903082-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 12:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1903120	03/11/19	03/11/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	15	0.50	"	"	"	"	03/11/19	"	

Date Sampled: **03/11/19 12:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		82.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		133 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 12:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1903124	03/11/19	03/11/19	EPA 8015M	

Date Sampled: **03/11/19 12:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

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370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

S01@5
1903082-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1903120	03/11/19	03/11/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	4.3	0.50	"	"	"	"	03/11/19	"	

Date Sampled: **03/11/19 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		86.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1903124	03/11/19	03/11/19	EPA 8015M	

Date Sampled: **03/11/19 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		96.8 %	30-150		"	"	"	"	

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370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

W01@5
1903082-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1903120	03/11/19	03/11/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	54	0.50	"	"	"	"	03/12/19	"	

Date Sampled: **03/11/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		85.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		132 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	280	50	mg/kg	1	1903124	03/11/19	03/11/19	EPA 8015M	

Date Sampled: **03/11/19 12:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

N01@5
1903082-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1903120	03/11/19	03/11/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	68	0.50	"	"	"	"	03/12/19	"	

Date Sampled: **03/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		80.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		136 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	450	50	mg/kg	1	1903124	03/11/19	03/11/19	EPA 8015M	

Date Sampled: **03/11/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

W02@2.5
1903082-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1903120	03/11/19	03/11/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1903124	03/11/19	03/11/19	EPA 8015M	

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

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

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	6230	11.9	mg/kg dry	1	1903162	03/14/19	03/14/19	EPA 6020B	
Magnesium	835	5.94	"	"	"	"	"	"	
Sodium	37.7	5.94	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/15/19 15:03

W02@2.5
1903082-06 (Soil)

Summit Scientific

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

Calculated Analysis

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.119	0.100	units	1	1903164	03/15/19	03/15/19	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.2		%	1	1903140	03/13/19	03/14/19	Calculation	
pH	8.41		pH Units	"	1903142	03/13/19	03/14/19	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **03/11/19 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.475	0.0100	mmhos/cm	1	1903141	03/13/19	03/14/19	EPA 120.1	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

B01@5_PH
1903082-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/11/19 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gasoline Range Hydrocarbons	0.69	0.50	mg/kg	1	1903136	03/12/19	03/13/19	EPA 8260B	

Date Sampled: **03/11/19 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/11/19 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1903137	03/12/19	03/13/19	EPA 8015M	

Date Sampled: **03/11/19 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.0 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/15/19 15:03

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1903120 - EPA 5030 Soil MS

Blank (1903120-BLK1)

Prepared: 03/11/19 Analyzed: 03/12/19

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0338		"	0.0400		84.4	23-173			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0400		99.7	21-167			

LCS (1903120-BS1)

Prepared: 03/11/19 Analyzed: 03/12/19

Benzene	0.105	0.0020	mg/kg	0.100		105	70-130			
Toluene	0.110	0.0050	"	0.100		110	70-130			
Ethylbenzene	0.109	0.0050	"	0.100		109	70-130			
m,p-Xylene	0.216	0.010	"	0.200		108	70-130			
o-Xylene	0.111	0.0050	"	0.100		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0319		"	0.0400		79.7	23-173			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.6	21-167			

Matrix Spike (1903120-MS1)

Source: 1903078-01

Prepared: 03/11/19 Analyzed: 03/12/19

Benzene	0.0927	0.0020	mg/kg	0.100	ND	92.7	70-130			
Toluene	0.0944	0.0050	"	0.100	ND	94.4	70-130			
Ethylbenzene	0.0942	0.0050	"	0.100	ND	94.2	70-130			
m,p-Xylene	0.185	0.010	"	0.200	ND	92.3	70-130			
o-Xylene	0.0939	0.0050	"	0.100	ND	93.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0340		"	0.0400		85.1	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0400		95.3	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

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 1903120 - EPA 5030 Soil MS

Matrix Spike Dup (1903120-MSD1)		Source: 1903078-01		Prepared: 03/11/19 Analyzed: 03/12/19						
Benzene	0.0880	0.0020	mg/kg	0.100	ND	88.0	70-130	5.11	30	
Toluene	0.0917	0.0050	"	0.100	ND	91.7	70-130	2.87	30	
Ethylbenzene	0.0895	0.0050	"	0.100	ND	89.5	70-130	5.16	30	
m,p-Xylene	0.176	0.010	"	0.200	ND	88.2	70-130	4.56	30	
o-Xylene	0.0903	0.0050	"	0.100	ND	90.3	70-130	3.91	30	
Surrogate: 1,2-Dichloroethane-d4	0.0325		"	0.0400		81.2	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0400		94.0	21-167			

Batch 1903136 - EPA 5030 Soil MS

Blank (1903136-BLK1)		Prepared: 03/12/19 Analyzed: 03/13/19								
Gasoline Range Hydrocarbons	ND	0.50	mg/kg							
Surrogate: 1,2-Dichloroethane-d4	0.0356		"	0.0400		88.9	23-173			
Surrogate: Toluene-d8	0.0377		"	0.0400		94.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.6	21-167			

LCS (1903136-BS1)		Prepared: 03/12/19 Analyzed: 03/13/19								
Surrogate: 1,2-Dichloroethane-d4	0.0368		mg/kg	0.0400		91.9	23-173			
Surrogate: Toluene-d8	0.0372		"	0.0400		93.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.6	21-167			

Matrix Spike (1903136-MS1)		Source: 1903094-01		Prepared: 03/12/19 Analyzed: 03/13/19						
Surrogate: 1,2-Dichloroethane-d4	0.0370		mg/kg	0.0400		92.4	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.2	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/15/19 15:03

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1903136 - EPA 5030 Soil MS

Matrix Spike Dup (1903136-MSD1)

Source: 1903094-01

Prepared: 03/12/19 Analyzed: 03/13/19

Surrogate: 1,2-Dichloroethane-d4	0.0371	mg/kg	0.0400	92.7	23-173
Surrogate: Toluene-d8	0.0375	"	0.0400	93.8	20-170
Surrogate: 4-Bromofluorobenzene	0.0385	"	0.0400	96.2	21-167

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1903124 - EPA 3550A

Blank (1903124-BLK1)				Prepared & Analyzed: 03/11/19						
C10-C28 (DRO)	ND	50	mg/kg							
LCS (1903124-BS1)				Prepared: 03/11/19 Analyzed: 03/12/19						
C10-C28 (DRO)	550	50	mg/kg	500		110	70-130			
Matrix Spike (1903124-MS1)				Source: 1903082-01		Prepared: 03/11/19 Analyzed: 03/12/19				
C10-C28 (DRO)	977	50	mg/kg	500	298	136	70-130			QM-07
Matrix Spike Dup (1903124-MSD1)				Source: 1903082-01		Prepared: 03/11/19 Analyzed: 03/12/19				
C10-C28 (DRO)	1040	50	mg/kg	500	298	148	70-130	5.83	20	QM-07

Batch 1903137 - EPA 3550A

Blank (1903137-BLK1)				Prepared: 03/12/19 Analyzed: 03/13/19						
C10-C28 (DRO)	ND	50	mg/kg							
LCS (1903137-BS1)				Prepared: 03/12/19 Analyzed: 03/13/19						
C10-C28 (DRO)	505	50	mg/kg	500		101	70-130			
Matrix Spike (1903137-MS1)				Source: 1903094-01		Prepared: 03/12/19 Analyzed: 03/13/19				
C10-C28 (DRO)	499	50	mg/kg	500	ND	99.8	70-130			
Matrix Spike Dup (1903137-MSD1)				Source: 1903094-01		Prepared: 03/12/19 Analyzed: 03/13/19				
C10-C28 (DRO)	533	50	mg/kg	500	ND	107	70-130	6.54	20	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

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

Summit Scientific

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

Batch 1903162 - General Preparation

Blank (1903162-BLK1)

Prepared & Analyzed: 03/14/19

Calcium	ND	10.0	mg/kg wet
Magnesium	ND	5.00	"
Sodium	ND	5.00	"

LCS (1903162-BS1)

Prepared & Analyzed: 03/14/19

Calcium	513	10.0	mg/kg wet	500	103	70-130
Magnesium	514	5.00	"	500	103	70-130
Sodium	504	5.00	"	500	101	70-130

Duplicate (1903162-DUP1)

Source: 1903081-01

Prepared & Analyzed: 03/14/19

Calcium	990	11.2	mg/kg dry	1050	6.10	20
Magnesium	580	5.61	"	595	2.43	20
Sodium	40.6	5.61	"	44.6	9.35	20

Matrix Spike (1903162-MS1)

Source: 1903081-01

Prepared & Analyzed: 03/14/19

Calcium	1520	11.2	mg/kg dry	561	1050	82.9	70-130
Magnesium	1110	5.61	"	561	595	91.4	70-130
Sodium	590	5.61	"	561	44.6	97.2	70-130

Matrix Spike Dup (1903162-MSD1)

Source: 1903081-01

Prepared & Analyzed: 03/14/19

Calcium	1540	11.2	mg/kg dry	561	1050	86.5	70-130	1.33	25
Magnesium	1090	5.61	"	561	595	89.1	70-130	1.13	25
Sodium	685	5.61	"	561	44.6	114	70-130	14.9	25

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/15/19 15:03

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

Summit Scientific

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

Batch 1903140 - General Preparation

Duplicate (1903140-DUP1)

Source: 1903074-01

Prepared: 03/13/19 Analyzed: 03/14/19

% Solids	67.7	%	67.7	0.0998	20
----------	------	---	------	--------	----

Batch 1903142 - General Preparation

LCS (1903142-BS1)

Prepared: 03/13/19 Analyzed: 03/14/19

pH	9.39	pH Units	9.23	102	95-105
----	------	----------	------	-----	--------

Duplicate (1903142-DUP1)

Source: 1903081-01

Prepared: 03/13/19 Analyzed: 03/14/19

pH	8.36	pH Units	8.35	0.120	20
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Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/15/19 15:03

Specific Conductance by EPA Method 120.1 - Quality Control

Summit Scientific

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

Batch 1903141 - General Preparation

Blank (1903141-BLK1)

Prepared: 03/13/19 Analyzed: 03/14/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1903141-BS1)

Prepared: 03/13/19 Analyzed: 03/14/19

Specific Conductance (EC) 0.750 0.0100 mmhos/cm 0.750 99.9 90-110

Duplicate (1903141-DUP1)

Source: 1903081-01

Prepared: 03/13/19 Analyzed: 03/14/19

Specific Conductance (EC) 1.71 0.0100 mmhos/cm 1.65 3.81 20

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/15/19 15:03

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 21, 2019

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Nelson 43-10

Enclosed are the results of analyses for samples received by Summit Scientific on 03/20/19 13:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/21/19 06:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B03@7	1903185-01	Soil	03/20/19 12:55	03/20/19 13:30
N03@5	1903185-02	Soil	03/20/19 13:15	03/20/19 13:30

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

1903185

Page 1 of 1

Sampler Name: Ryan Finley

Project Number: 1800819-6000-940.88

www.s2scientific.com

COGCC/ CDPHE

Client Name:

Sample Receipt Checklist

S2 Work Order 1903185

Client: APEX/XOG Client Project ID: Nelson 43-10

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

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)

Temp (°C)	<u>6.2</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ice</u>
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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>same day</u>
Is a chain-of-custody (COC) form present and filled out completely ⁽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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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, H2SO4, NaOH, HNO3, ect	<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"/>	

Additional Comments (if any):

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

Custodian Printed Name or Initials

Signature of Custodian

3.20.19 1716
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/21/19 06:26

B03@7
1903185-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/20/19 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1903228	03/20/19	03/21/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.056	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	990	50	"	100	"	"	"	"	

Date Sampled: **03/20/19 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		96.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		85.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/20/19 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	940	50	mg/kg	1	1903229	"	03/20/19	EPA 8015M	

Date Sampled: **03/20/19 12:55**

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

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/21/19 06:26

N03@5
1903185-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/20/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1903228	03/20/19	03/20/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **03/20/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/20/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1903229	"	03/20/19	EPA 8015M	

Date Sampled: **03/20/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/21/19 06:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1903228 - EPA 5030 Soil MS

Blank (1903228-BLK1)

Prepared: 03/20/19 Analyzed: 03/21/19

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0367		"	0.0400		91.8	23-173			
Surrogate: Toluene-d8	0.0373		"	0.0400		93.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0400		96.8	21-167			

LCS (1903228-BS1)

Prepared: 03/20/19 Analyzed: 03/21/19

Benzene	0.0911	0.0020	mg/kg	0.100		91.1	70-130			
Toluene	0.0975	0.0050	"	0.100		97.5	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.217	0.010	"	0.200		108	70-130			
o-Xylene	0.101	0.0050	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0380		"	0.0400		95.1	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0375		"	0.0400		93.8	21-167			

Matrix Spike (1903228-MS1)

Source: 1903174-05

Prepared: 03/20/19 Analyzed: 03/21/19

Benzene	0.0923	0.0020	mg/kg	0.100	ND	92.3	70-130			
Toluene	0.0986	0.0050	"	0.100	ND	98.6	70-130			
Ethylbenzene	0.105	0.0050	"	0.100	ND	105	70-130			
m,p-Xylene	0.218	0.010	"	0.200	ND	109	70-130			
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.7	23-173			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.4	21-167			

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/21/19 06:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 1903228 - EPA 5030 Soil MS

Matrix Spike Dup (1903228-MSD1)		Source: 1903174-05			Prepared: 03/20/19 Analyzed: 03/21/19					
Benzene	0.0928	0.0020	mg/kg	0.100	ND	92.8	70-130	0.551	30	
Toluene	0.0989	0.0050	"	0.100	ND	98.9	70-130	0.395	30	
Ethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130	0.974	30	
m,p-Xylene	0.215	0.010	"	0.200	ND	108	70-130	1.27	30	
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130	0.207	30	
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0400		100	23-173			
Surrogate: Toluene-d8	0.0379		"	0.0400		94.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.5	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/21/19 06:26

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1903229 - EPA 3550A

Blank (1903229-BLK1)

Prepared: 03/20/19 Analyzed: 03/21/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1903229-BS1)

Prepared: 03/20/19 Analyzed: 03/21/19

C10-C28 (DRO) 539 50 mg/kg 500 108 70-130

Matrix Spike (1903229-MS1)

Source: 1903174-01

Prepared: 03/20/19 Analyzed: 03/21/19

C10-C28 (DRO) 571 50 mg/kg 500 10.1 112 70-130

Matrix Spike Dup (1903229-MSD1)

Source: 1903174-01

Prepared: 03/20/19 Analyzed: 03/21/19

C10-C28 (DRO) 555 50 mg/kg 500 10.1 109 70-130 2.84 20

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson 43-10

Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/21/19 06:26

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 27, 2019

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Nelson Battery 43-10

Enclosed are the results of analyses for samples received by Summit Scientific on 03/25/19 16:21. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/27/19 06:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B04@10	1903244-01	Soil	03/25/19 14:33	03/25/19 16:21

Summit Scientific

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Summit Scientific

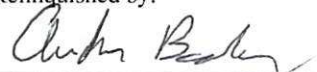
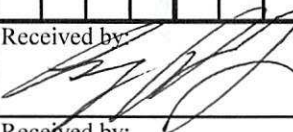
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Sampler Name: Andrew Bowsher

Project Number: 1800819 - 6000 - 940.88

byibson@extranet.org.com

				Preservative				Matrix				Analyze For:								Special Instructions	
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)										
B04 @ 10	3/25/19	1433	1			X			X			X	X							Call Maggie Graham with questions	
Relinquished by: 				Date/Time: 3.25.19 1621		Received by: 				Date/Time: 3.28.19 1621		Turn Around Time (Check)								Notes Circle applicable regulatory agency: <u>COGCC/ CDPHE</u> Client Name: <u>XOG</u>	
Relinquished by:				Date/Time:		Received by:				Date/Time:		Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>									
Relinquished by:				Date/Time:		Received in Lab by:				Date/Time:		Sample Integrity: Temperature Upon Receipt: <u>9.1</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									

Sample Receipt Checklist

S2 Work Order 1903244

Client: APEX/XOB Client Project ID: Nelson Battery 43-10

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

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)

Temp (°C)	<u>9.1</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
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"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>same day</u>
Is a chain-of-custody (COC) form present and filled out completely ⁽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"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽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⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

Custodian Printed Name or Initials

Signature of Custodian

3.28.19 1633
Date/Time



Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10
Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/27/19 06:50

B04@10
1903244-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/25/19 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1903304	03/25/19	03/25/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **03/25/19 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/25/19 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1903307	03/25/19	03/25/19	EPA 8015M	

Date Sampled: **03/25/19 14:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/27/19 06:50

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1903304 - EPA 5030 Soil MS

Blank (1903304-BLK1)

Prepared: 03/25/19 Analyzed: 03/26/19

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0394		"	0.0400		98.6	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		93.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.4	21-167			

LCS (1903304-BS1)

Prepared: 03/25/19 Analyzed: 03/26/19

Benzene	0.0872	0.0020	mg/kg	0.100		87.2	70-130			
Toluene	0.0964	0.0050	"	0.100		96.4	70-130			
Ethylbenzene	0.102	0.0050	"	0.100		102	70-130			
m,p-Xylene	0.215	0.010	"	0.200		107	70-130			
o-Xylene	0.0987	0.0050	"	0.100		98.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0373		"	0.0400		93.2	23-173			
Surrogate: Toluene-d8	0.0372		"	0.0400		93.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0378		"	0.0400		94.5	21-167			

Matrix Spike (1903304-MS1)

Source: 1903242-01

Prepared: 03/25/19 Analyzed: 03/26/19

Benzene	0.0895	0.0020	mg/kg	0.100	ND	89.5	70-130			
Toluene	0.0966	0.0050	"	0.100	ND	96.6	70-130			
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130			
m,p-Xylene	0.217	0.010	"	0.200	ND	109	70-130			
o-Xylene	0.102	0.0050	"	0.100	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.8	23-173			
Surrogate: Toluene-d8	0.0373		"	0.0400		93.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		95.0	21-167			

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/27/19 06:50

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1903304 - EPA 5030 Soil MS

Matrix Spike Dup (1903304-MSD1)		Source: 1903242-01			Prepared: 03/25/19 Analyzed: 03/26/19					
Benzene	0.0906	0.0020	mg/kg	0.100	ND	90.6	70-130	1.17	30	
Toluene	0.0993	0.0050	"	0.100	ND	99.3	70-130	2.73	30	
Ethylbenzene	0.105	0.0050	"	0.100	ND	105	70-130	1.24	30	
m,p-Xylene	0.218	0.010	"	0.200	ND	109	70-130	0.400	30	
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130	0.741	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0384		"	0.0400		96.1	23-173			
Surrogate: Toluene-d8	0.0372		"	0.0400		93.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400		93.5	21-167			

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88

Project Manager: Maggie Graham

Reported:
03/27/19 06:50

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1903307 - EPA 3550A

Blank (1903307-BLK1)

Prepared: 03/25/19 Analyzed: 03/26/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1903307-BS1)

Prepared: 03/25/19 Analyzed: 03/26/19

C10-C28 (DRO) 534 50 mg/kg 500 107 70-130

Matrix Spike (1903307-MS1)

Source: 1903242-01

Prepared: 03/25/19 Analyzed: 03/26/19

C10-C28 (DRO) 466 50 mg/kg 500 ND 93.3 70-130

Matrix Spike Dup (1903307-MSD1)

Source: 1903242-01

Prepared: 03/25/19 Analyzed: 03/26/19

C10-C28 (DRO) 442 50 mg/kg 500 ND 88.4 70-130 5.36 20

Summit Scientific

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Extraction Oil&Gas
370 17th Street Suite 5300
Denver CO, 80202

Project: Nelson Battery 43-10

Project Number: 1800819-6000-940.88
Project Manager: Maggie Graham

Reported:
03/27/19 06:50

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