



May 30, 2018

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

Subject: Work Completion Report – Remedial Investigation

State MRJV Tank Battery
COGCC Location ID: 446013
SWNW, Section 36, T7N-R67W
40.530894/-104.847485
Unincorporated Weld County, Colorado

Dear Mr. Ford:

Apex Companies LLC (Apex) has prepared this work completion report to document remedial investigation activities conducted at State MRJV TB location (446013) in Unincorporated Weld County, Colorado. These efforts included soil field screening and sampling of disturbed soils to support closure of a partially buried produced water vessel. These efforts were completed under an approved Form 27 (Site Investigation and Remediation Workplan), and remediation project number 11037, assigned by the Colorado Oil and Gas Conservation Commission (COGCC).

Remedial Investigation

On February 26, 2018, an Apex Field Coordinator collected and field-screened eight soil samples from the sidewalls and bottom of the excavation completed to remove a partially buried produced water vessel. The excavation was approximately 68 feet (68') by 47', with a depth of six and a half feet. No odor or visual staining was noted at the extent of the excavation, and field-screening of collected soil with a photoionization detector (PID) yielded results of less than 70 parts per million (ppm) for all eight collected samples. The eight collected soil samples were submitted for laboratory analysis to confirm field observations.

In addition to characterization efforts at the site of the excavation, in support of the larger reclamation effort, the Apex Field Coordinator completed a visual assessment of the site. The assessment looked for soil staining, salt accumulation, stressed vegetation, or other signs of soil impacts at the surface or near any recently disturbed soils.

Results

Laboratory results from all soil samples were below laboratory detection limits for the organic constituents of concern (BTEX and TPH). All soil samples were consistent with typical background levels for analyzed inorganics (pH, SAR, EC).

No other indications of soil impacts were noted after the site investigation.

Conclusions

Based on field observations and laboratory results, there is no evidence of any recent or historic release of produced water associated with the operation of the removed partially buried produced water vessel, or other onsite evidence of impacts related to the operation of this well pad.

If you have any questions about this report, onsite activities, or anything else related to this effort, please don't hesitate to contact me at 970-261-1127.

Sincerely,
Apex Companies, LLC

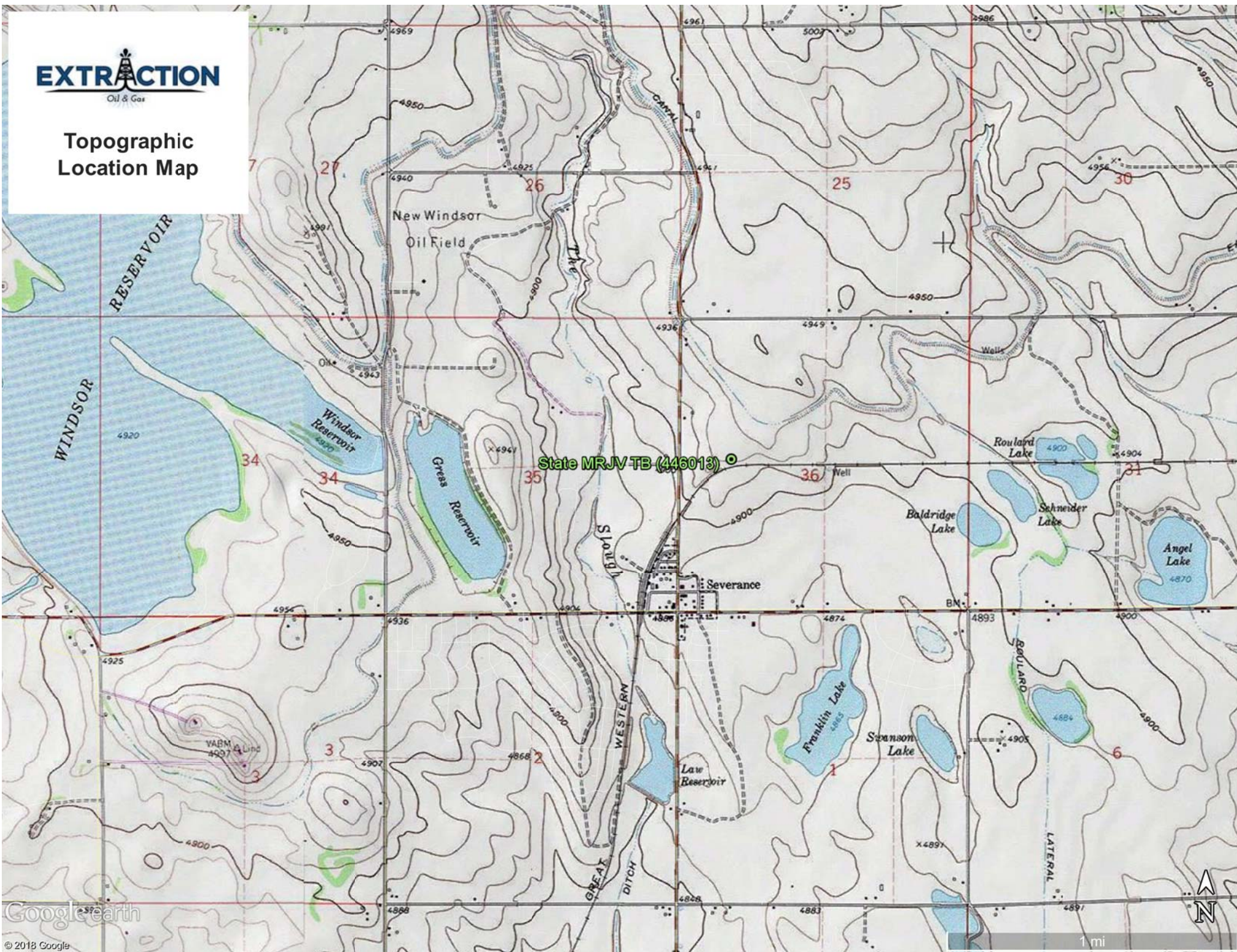


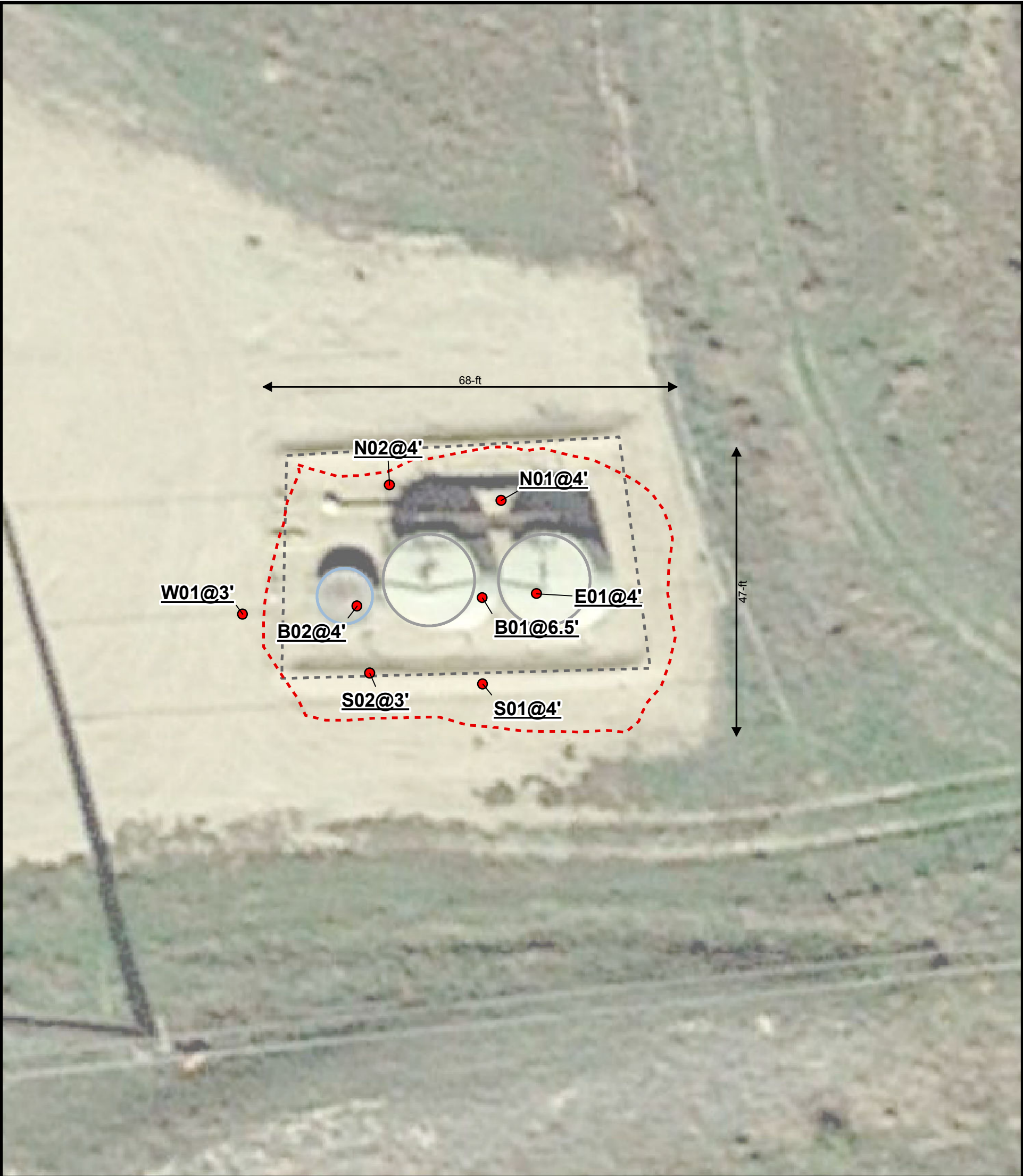
Chris Hines
Project Manager

Attachments:

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

**Topographic
Location Map**





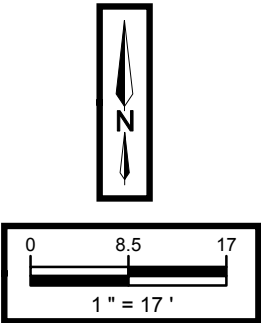
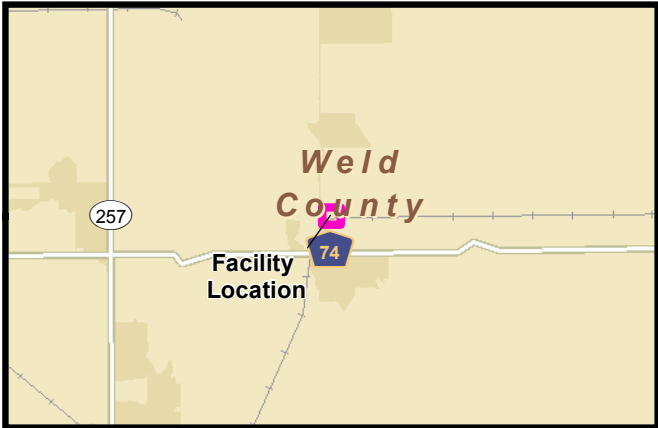
Extraction Oil & Gas
State MRJV Tank Battery
COGCC Location ID: 446013
Site Diagram

Legal Description: SWNW, Sec 36, T7N R67W
County: Weld
Land Use: Cropland
Topography: 1-3% Slopes
Run-Off Risk: Very low
Soil Type: Kim loam
Receiving Waters: Eaton Ditch



- Soil Sample (2/26/2018)
- - - Excavation Extent (2/26/2018)
- Former Crude Oil Tank
- Former Sump
- - - Former Secondary Containment

| Sample ID | Latitude NAD83 | Longitude NAD83 |
|-----------|----------------|-----------------|
| N02@4' | 40.530944 | -104.847539 |
| N01@4' | 40.530937 | -104.847474 |
| E01@4' | 40.530895 | -104.847453 |
| B01@6.5' | 40.530894 | -104.847485 |
| S01@4' | 40.530855 | -104.847485 |
| S02@3' | 40.530860 | -104.847551 |
| B02@4' | 40.530890 | -104.847558 |
| W01@3' | 40.530886 | -104.847626 |



| | | SOIL SAMPLE RESULTS | | | | | | |
|-----------------------------------|--|--|----------------------------------|------------------------------------|---------|---------|--------------|-----------------|
| | | Organic Compounds in Soil (mg/kg [ppm]) | | | | | | |
| COGCC Allowable Concentration --> | | 500 | | | 0.17 | 85 | 100 | 175 |
| Sample Date: | Matrix Notes (Sample Point - Depth) | TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO) | TPH-GRO (C6-C10) Low Fraction | TPH-DRO (C10-C36) High Fraction | Benzene | Toluene | Ethylbenzene | Xylenes - total |
| 2/26/18 | N01@4' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | E01@4' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | B01@6.5' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | B02@4' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | W01@3' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | N02@4' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | S01@4' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |
| 2/26/18 | S02@3' | <0.50 | <0.50 | <50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 |

| COGCC Allowable Concentration (Soil) --> | | | 500 | 0.17 | 85 | 100 | 175 | 4 | 12 | (6-9) |
|--|--------------|--|--|---------|---------|--------------|-----------------|--------------------------------------|-------------------|-------|
| Location | Sample Date: | Matrix Notes [Sample Point - Depth] | 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 |
| State MRJV | 2/26/18 | N01@4' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | 0.451 | 0.0985 | 8.65 |
| State MRJV | 2/26/18 | E01@4' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |
| State MRJV | 2/26/18 | B01@6.5' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |
| State MRJV | 2/26/18 | B02@4' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |
| State MRJV | 2/26/18 | W01@3' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |
| State MRJV | 2/26/18 | N02@4' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |
| State MRJV | 2/26/18 | S01@4' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |
| State MRJV | 2/26/18 | S02@3' | <0.50 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | | | |

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 20, 2018

Chris Hines

Extraction Oil & Gas

570 17th St. Suite 550

Denver, CO 80202

RE: State MRJV

Enclosed are the results of analyses for samples received by Summit Scientific on 02/26/18 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|-----------|---------------|--------|----------------|----------------|
| B01@6.5' | 1802261-01 | Soil | 02/26/18 11:24 | 02/26/18 16:00 |
| B02@4' | 1802261-02 | Soil | 02/26/18 11:26 | 02/26/18 16:00 |
| W01@3' | 1802261-03 | Soil | 02/26/18 11:31 | 02/26/18 16:00 |
| N01@4' | 1802261-04 | Soil | 02/26/18 11:34 | 02/26/18 16:00 |
| N02@4' | 1802261-05 | Soil | 02/26/18 11:39 | 02/26/18 16:00 |
| S01@4' | 1802261-06 | Soil | 02/26/18 11:40 | 02/26/18 16:00 |
| S02@3' | 1802261-07 | Soil | 02/26/18 11:41 | 02/26/18 16:00 |
| E01@4' | 1802261-08 | Soil | 02/26/18 11:42 | 02/26/18 16:00 |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

Summit Scientific 1862261

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Client: Extraction Oil & Gas- Blake Ford

Address: 370 17th Street, Suite 5300

City/State/Zip: Denver, Colorado 80202

Phone: 970.778.5956

Fax:

Sampler Name: Kennedy Whalen

Page 1 of 1

Project Manager: Chris Hines- 970.261.1127

E-Mail: BFord@extractionog.com, DenverRemediation@ApexCos.onmicrosoft.com

Project Name: State MRJV

Produced water tank closure

Project Number: 744.1702.01 - 446013

| Sample Description | Date Sampled | Time Sampled | Number of Containers | Preservative | | | Matrix | | Analyze For: | | | | | Special Instructions | |
|-------------------------------------|--------------|--------------|----------------------|------------------|------------------------|------|-----------------|-------------|--------------------------|--|-----------------|-----------------|------|----------------------|---|
| | | | | HCl | HNO ₃ | None | Other (Specify) | Groundwater | Soil | Air - Canister Serial # | Other (Specify) | TPH (DRO & GRO) | BTEX | | pH, SAR, EC |
| B01065' | 2/26/18 | 1124 | 1 | | | X | | | | | | | | | * Run if TPH>500ppm, or benzene>0.17ppm Call Chris Hines with Questions. (970-261-1127) N0104' EC, SAR, pH On Standard Turn. |
| B0204' | | 1126 | 1 | | | | | | | | | | | | |
| W0103' | | 1131 | 1 | | | | | | | | | | | | |
| N0104' | | 1134 | 1 | | | | | | | | | | | | |
| N0204' | | 1139 | 1 | | | | | | | X | X | X | | | |
| S0104' | | 1140 | 1 | | | | | | | | | | X | | |
| S0203' | | 1141 | 1 | | | | | | | | | | X | | |
| E0104' | | 1142 | 1 | | | | | | | X | X | | | | |
| Relinquished by: <i>Chris Hines</i> | | | | Date/Time: 11:00 | Received by: <i>KB</i> | | | | Date/Time: 2-26-18 11:00 | Turn Around Time (Check) 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"/> | | | | | Notes: COGCC Table 910-1 analytes. |
| Relinquished by: | | | | Date/Time: | Received by: | | | | Date/Time: | Sample Integrity: Temperature Upon Receipt: 10.1 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | |
| Relinquished by: | | | | Date/Time: | Received in Lab by: | | | | Date/Time: | | | | | | |

www.s2scientific.com

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

Sample Receipt Checklist

S2 Work Order: 1802261
Client: Extraction O&G Client Project ID: State MRJV
Shipped Via: H.D. on ice (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: _____
Matrix (check all that apply): Air X Soil/Solid Water Other: _____
(Describe)

| | | | | | |
|-----------|------------|--|--|--|--|
| Cooler ID | | | | | |
| Temp (°C) | <u>6.1</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⁾ ? | | | | |
| NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun. | X | | | |
| Were all samples received intact ⁽¹⁾ ? | X | | | |
| Was adequate sample volume provided ⁽¹⁾ ? | X | | | |
| If custody seals are present, are they intact ⁽¹⁾ ? | | | X | |
| Are short holding time analytes or samples with HTs due within 48 hours present? | X | | | |
| Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ? | X | | | |
| Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ? | X | | | |
| Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ? | X | | | |
| Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ? | X | | | |
| For volatiles in water – is there headspace present? If yes, contact client and note in narrative. | | | X | |
| Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? | | | X | |
| Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect | | | X | |
| If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments. | | | X | |
| If dissolved metals are requested, were samples field filtered? | | | X | |
| Additional Comments (if any): | | | | |
| ⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative. | | | | |

Muri P.
Custodian Printed Name

MS 2-26-18
Signature or Initials of Custodian

11:15
Date/Time



Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

B01@6.5'
1802261-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:24**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1803040 | 03/02/18 | 03/02/18 | 8015M | |

Date Sampled: **02/26/18 11:24**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 82.2 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:24**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1803039 | 03/02/18 | 03/03/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:24**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 104 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 93.9 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 98.1 % | 21-167 | | " | " | " | " | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

B02@4'
1802261-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1803040 | 03/02/18 | 03/02/18 | 8015M | |

Date Sampled: **02/26/18 11:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 95.9 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1803039 | 03/02/18 | 03/03/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:26**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 106 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 94.6 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 95.7 % | 21-167 | | " | " | " | " | |

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

W01@3'
1802261-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:31**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1803040 | 03/02/18 | 03/02/18 | 8015M | |

Date Sampled: **02/26/18 11:31**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 92.4 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:31**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1803039 | 03/02/18 | 03/03/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:31**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 105 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 93.8 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 95.6 % | 21-167 | | " | " | " | " | |

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

N01@4'
1802261-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1802247 | 02/26/18 | 02/26/18 | 8015M | |

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 88.5 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1802245 | 02/26/18 | 02/26/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 111 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 98.0 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 97.0 % | 21-167 | | " | " | " | " | |

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

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------|-------------|-----------------|-----------|----------|---------|----------|----------|-------------------------------|-------|
| Calcium | 8360 | 11.0 | mg/kg dry | 1 | 1802255 | 02/27/18 | 02/28/18 | EPA 6020/Mod. USDA60 6(2, 3A) | |
| Magnesium | 773 | 5.49 | " | " | " | " | " | " | |

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

N01@4'
1802261-04 (Soil)

Summit Scientific

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

| | | | | | | | | |
|-------------------------|--------|------|-----------|---|---------|----------|----------|----------------------------------|
| Sodium | 35.1 | 5.49 | mg/kg dry | 1 | 1802255 | 02/27/18 | 02/28/18 | EPA 6020/Mod. USDA60 6(2, 3A) |
| Sodium Adsorption Ratio | 0.0985 | | units | " | 1803017 | 03/01/18 | 03/01/18 | " |

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------|--------|--------------------|----------|----------|---------|----------|----------|---------------|-------|
| pH | 8.65 | 0.100 | pH Units | 1 | 1802257 | 02/27/18 | 02/27/18 | EPA 9045 | |
| % Solids | 91.0 | | % | " | 1802259 | 02/27/18 | 03/01/18 | % calculation | |

Specific Conductance by EPA120.1

Date Sampled: **02/26/18 11:34**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------------------|--------|--------------------|----------|----------|---------|----------|----------|-----------|-------|
| Specific Conductance (EC) | 0.451 | 0.0100 | mmhos/cm | 1 | 1802258 | 02/27/18 | 02/27/18 | EPA 120.1 | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

N02@4'
1802261-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:39**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1803040 | 03/02/18 | 03/02/18 | 8015M | |

Date Sampled: **02/26/18 11:39**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 88.6 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:39**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1803039 | 03/02/18 | 03/03/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:39**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 103 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 95.2 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 98.0 % | 21-167 | | " | " | " | " | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

S01@4'
1802261-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:40**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1803040 | 03/02/18 | 03/03/18 | 8015M | |

Date Sampled: **02/26/18 11:40**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 93.2 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:40**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1803039 | 03/02/18 | 03/03/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:40**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 107 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 94.1 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 97.3 % | 21-167 | | " | " | " | " | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

S02@3'
1802261-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:41**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1803040 | 03/02/18 | 03/03/18 | 8015M | |

Date Sampled: **02/26/18 11:41**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 92.7 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:41**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1803039 | 03/02/18 | 03/03/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:41**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 110 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 95.2 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 95.4 % | 21-167 | | " | " | " | " | |

Summit Scientific

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



Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

E01@4'
1802261-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/26/18 11:42**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND | 50 | mg/kg | 1 | 1802247 | 02/26/18 | 02/26/18 | 8015M | |

Date Sampled: **02/26/18 11:42**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl | | 91.1 % | 30-150 | | " | " | " | " | |

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/26/18 11:42**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Benzene | ND | 0.0020 | mg/kg | 1 | 1802245 | 02/26/18 | 02/26/18 | EPA 8260B | |
| Toluene | ND | 0.0050 | " | " | " | " | " | " | |
| Ethylbenzene | ND | 0.0050 | " | " | " | " | " | " | |
| Xylenes (total) | ND | 0.0050 | " | " | " | " | " | " | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | " | " | " | " | " | |

Date Sampled: **02/26/18 11:42**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 | | 107 % | 23-173 | | " | " | " | " | |
| Surrogate: Toluene-d8 | | 96.3 % | 20-170 | | " | " | " | " | |
| Surrogate: 4-Bromofluorobenzene | | 97.8 % | 21-167 | | " | " | " | " | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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 1802247 - EPA 3550A

| | | | | | | | | | | |
|--|------|----|-------|-------------------------------|------|-------------------------------|--------|------|----|--|
| LCS (1802247-BS1) | | | | Prepared & Analyzed: 02/26/18 | | | | | | |
| C10-C28 (DRO) | 565 | 50 | mg/kg | 499 | | 113 | 73-134 | | | |
| Surrogate: o-Terphenyl | 14.6 | | " | 12.5 | | 117 | 30-150 | | | |
| Matrix Spike (1802247-MS1) | | | | Source: 1802250-01 | | Prepared & Analyzed: 02/26/18 | | | | |
| C10-C28 (DRO) | 551 | 50 | mg/kg | 499 | 19.2 | 107 | 50-148 | | | |
| Surrogate: o-Terphenyl | 14.1 | | " | 12.5 | | 113 | 30-150 | | | |
| Matrix Spike Dup (1802247-MSD1) | | | | Source: 1802250-01 | | Prepared & Analyzed: 02/26/18 | | | | |
| C10-C28 (DRO) | 534 | 50 | mg/kg | 499 | 19.2 | 103 | 50-148 | 3.20 | 20 | |
| Surrogate: o-Terphenyl | 13.9 | | " | 12.5 | | 111 | 30-150 | | | |

Batch 1803040 - EPA 3550A

| | | | | | | | | | | |
|--|------|----|-------|-------------------------------|------|-------------------------------|--------|------|----|--|
| Blank (1803040-BLK1) | | | | Prepared & Analyzed: 03/02/18 | | | | | | |
| C10-C28 (DRO) | ND | 50 | mg/kg | | | | | | | |
| Surrogate: o-Terphenyl | 11.5 | | " | 12.5 | | 92.3 | 30-150 | | | |
| LCS (1803040-BS1) | | | | Prepared & Analyzed: 03/02/18 | | | | | | |
| C10-C28 (DRO) | 389 | 50 | mg/kg | 399 | | 97.4 | 73-134 | | | |
| Surrogate: o-Terphenyl | 13.2 | | " | 12.5 | | 106 | 30-150 | | | |
| Matrix Spike (1803040-MS1) | | | | Source: 1803033-01 | | Prepared & Analyzed: 03/02/18 | | | | |
| C10-C28 (DRO) | 379 | 50 | mg/kg | 399 | 19.1 | 90.2 | 50-148 | | | |
| Surrogate: o-Terphenyl | 13.5 | | " | 12.5 | | 108 | 30-150 | | | |
| Matrix Spike Dup (1803040-MSD1) | | | | Source: 1803033-01 | | Prepared & Analyzed: 03/02/18 | | | | |
| C10-C28 (DRO) | 406 | 50 | mg/kg | 399 | 19.1 | 97.0 | 50-148 | 6.88 | 20 | |
| Surrogate: o-Terphenyl | 15.0 | | " | 12.5 | | 120 | 30-150 | | | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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 1802245 - EPA 5030 Soil MS

Blank (1802245-BLK1)

Prepared & Analyzed: 02/26/18

| | | | | | | | | | | |
|----------------------------------|--------|--------|-------|--------|--|------|--------|--|--|--|
| Benzene | ND | 0.0020 | mg/kg | | | | | | | |
| Toluene | ND | 0.0050 | " | | | | | | | |
| Ethylbenzene | ND | 0.0050 | " | | | | | | | |
| Xylenes (total) | ND | 0.0050 | " | | | | | | | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0392 | | " | 0.0400 | | 98.0 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0377 | | " | 0.0400 | | 94.4 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0378 | | " | 0.0400 | | 94.5 | 21-167 | | | |

LCS (1802245-BS1)

Prepared & Analyzed: 02/26/18

| | | | | | | | | | | |
|----------------------------------|--------|--------|-------|--------|--|------|--------|--|--|--|
| Benzene | 0.159 | 0.0020 | mg/kg | 0.150 | | 106 | 58-130 | | | |
| Toluene | 0.156 | 0.0050 | " | 0.150 | | 104 | 61-134 | | | |
| Ethylbenzene | 0.166 | 0.0050 | " | 0.150 | | 111 | 74-139 | | | |
| m,p-Xylene | 0.324 | 0.010 | " | 0.300 | | 108 | 73-137 | | | |
| o-Xylene | 0.160 | 0.0050 | " | 0.150 | | 107 | 73-141 | | | |
| Xylenes (total) | 0.484 | 0.0050 | " | | | | 30-150 | | | |
| Gasoline Range Hydrocarbons | 15.4 | 0.50 | " | | | | 30-150 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0406 | | " | 0.0400 | | 102 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0388 | | " | 0.0400 | | 96.9 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0391 | | " | 0.0400 | | 97.6 | 21-167 | | | |

Matrix Spike (1802245-MS1)

Source: 1802250-01

Prepared & Analyzed: 02/26/18

| | | | | | | | | | | |
|----------------------------------|--------|--------|-------|--------|----|------|--------|--|--|--|
| Benzene | 0.161 | 0.0020 | mg/kg | 0.150 | ND | 108 | 30-131 | | | |
| Toluene | 0.159 | 0.0050 | " | 0.150 | ND | 106 | 30-134 | | | |
| Ethylbenzene | 0.166 | 0.0050 | " | 0.150 | ND | 111 | 22-153 | | | |
| m,p-Xylene | 0.322 | 0.010 | " | 0.300 | ND | 107 | 10-159 | | | |
| o-Xylene | 0.159 | 0.0050 | " | 0.150 | ND | 106 | 31-151 | | | |
| Xylenes (total) | 0.481 | 0.0050 | " | | ND | | 30-150 | | | |
| Gasoline Range Hydrocarbons | 15.5 | 0.50 | " | | ND | | 30-150 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0424 | | " | 0.0400 | | 106 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0388 | | " | 0.0400 | | 97.0 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0396 | | " | 0.0400 | | 98.9 | 21-167 | | | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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 1802245 - EPA 5030 Soil MS

| Matrix Spike Dup (1802245-MSD1) | | | Source: 1802250-01 | | Prepared & Analyzed: 02/26/18 | | | | | |
|----------------------------------|--------|--------|--------------------|--------|-------------------------------|------|--------|--------|----|--|
| Benzene | 0.157 | 0.0020 | mg/kg | 0.150 | ND | 105 | 30-131 | 2.66 | 34 | |
| Toluene | 0.156 | 0.0050 | " | 0.150 | ND | 104 | 30-134 | 2.17 | 30 | |
| Ethylbenzene | 0.165 | 0.0050 | " | 0.150 | ND | 110 | 22-153 | 0.635 | 24 | |
| m,p-Xylene | 0.320 | 0.010 | " | 0.300 | ND | 107 | 10-159 | 0.748 | 68 | |
| o-Xylene | 0.159 | 0.0050 | " | 0.150 | ND | 106 | 31-151 | 0.0188 | 38 | |
| Xylenes (total) | 0.479 | 0.0050 | " | | ND | | 30-150 | 0.506 | 20 | |
| Gasoline Range Hydrocarbons | 15.4 | 0.50 | " | | ND | | 30-150 | 0.429 | 20 | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0414 | | " | 0.0400 | | 104 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0386 | | " | 0.0400 | | 96.4 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0399 | | " | 0.0400 | | 99.8 | 21-167 | | | |

Batch 1803039 - EPA 5030 Soil MS

| Blank (1803039-BLK1) | | | Prepared & Analyzed: 03/02/18 | | | | | | | |
|----------------------------------|--------|--------|-------------------------------|--------|--|------|--------|--|--|--|
| Benzene | ND | 0.0020 | mg/kg | | | | | | | |
| Toluene | ND | 0.0050 | " | | | | | | | |
| Ethylbenzene | ND | 0.0050 | " | | | | | | | |
| Xylenes (total) | ND | 0.0050 | " | | | | | | | |
| Gasoline Range Hydrocarbons | ND | 0.50 | " | | | | | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0406 | | " | 0.0400 | | 102 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0374 | | " | 0.0400 | | 93.4 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0380 | | " | 0.0400 | | 95.1 | 21-167 | | | |

| LCS (1803039-BS1) | | | Prepared & Analyzed: 03/02/18 | | | | | | | |
|----------------------------------|--------|--------|-------------------------------|--------|--|------|--------|--|--|--|
| Benzene | 0.0964 | 0.0020 | mg/kg | 0.100 | | 96.4 | 58-130 | | | |
| Toluene | 0.0999 | 0.0050 | " | 0.100 | | 99.9 | 61-134 | | | |
| Ethylbenzene | 0.114 | 0.0050 | " | 0.0992 | | 115 | 74-139 | | | |
| m,p-Xylene | 0.209 | 0.010 | " | 0.200 | | 105 | 73-137 | | | |
| o-Xylene | 0.103 | 0.0050 | " | 0.0980 | | 105 | 73-141 | | | |
| Xylenes (total) | 0.312 | 0.0050 | " | | | | 30-150 | | | |
| Gasoline Range Hydrocarbons | 3.27 | 0.50 | " | | | | 30-150 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0404 | | " | 0.0400 | | 101 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0392 | | " | 0.0400 | | 98.0 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0382 | | " | 0.0400 | | 95.5 | 21-167 | | | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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 1803039 - EPA 5030 Soil MS

| Matrix Spike (1803039-MS1) | | Source: 1803033-01 | | | Prepared & Analyzed: 03/02/18 | | | | | |
|----------------------------------|--------|--------------------|-------|--------|-------------------------------|------|--------|--|--|--|
| Benzene | 0.0970 | 0.0020 | mg/kg | 0.100 | ND | 97.0 | 30-131 | | | |
| Toluene | 0.101 | 0.0050 | " | 0.100 | ND | 101 | 30-134 | | | |
| Ethylbenzene | 0.113 | 0.0050 | " | 0.0992 | ND | 114 | 22-153 | | | |
| m,p-Xylene | 0.208 | 0.010 | " | 0.200 | ND | 104 | 10-159 | | | |
| o-Xylene | 0.103 | 0.0050 | " | 0.0980 | ND | 105 | 31-151 | | | |
| Xylenes (total) | 0.312 | 0.0050 | " | | ND | | 30-150 | | | |
| Gasoline Range Hydrocarbons | 3.30 | 0.50 | " | | ND | | 30-150 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0371 | | " | 0.0400 | | 92.7 | 23-173 | | | |
| Surrogate: Toluene-d8 | 0.0390 | | " | 0.0400 | | 97.4 | 20-170 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.0421 | | " | 0.0400 | | 105 | 21-167 | | | |

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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

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

Batch 1802255 - General Preparation

Blank (1802255-BLK1)

Prepared: 02/27/18 Analyzed: 02/28/18

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

LCS (1802255-BS1)

Prepared: 02/27/18 Analyzed: 02/28/18

| | | | | | | |
|-----------|-----|------|-----------|-----|------|----------|
| Calcium | 448 | 10.0 | mg/kg wet | 500 | 89.6 | 82.9-118 |
| Magnesium | 478 | 5.00 | " | 500 | 95.7 | 77.1-123 |
| Sodium | 477 | 5.00 | " | 500 | 95.4 | 71-129 |

Duplicate (1802255-DUP1)

Source: 1802210-03

Prepared: 02/27/18 Analyzed: 02/28/18

| | | | | | | |
|-----------|------|------|-----------|------|-------|-----|
| Calcium | 6270 | 12.7 | mg/kg dry | 6440 | 2.67 | 200 |
| Magnesium | 836 | 6.37 | " | 840 | 0.506 | 200 |
| Sodium | 623 | 6.37 | " | 629 | 0.982 | 200 |

Matrix Spike (1802255-MS1)

Source: 1802210-03

Prepared: 02/27/18 Analyzed: 02/28/18

| | | | | | | | |
|-----------|------|------|-----------|-----|------|------|--------|
| Calcium | 7070 | 12.7 | mg/kg dry | 637 | 6440 | 99.1 | 75-125 |
| Magnesium | 1320 | 6.37 | " | 637 | 840 | 76.0 | 75-125 |
| Sodium | 1200 | 6.37 | " | 637 | 629 | 89.0 | 75-125 |

Matrix Spike Dup (1802255-MSD1)

Source: 1802210-03

Prepared: 02/27/18 Analyzed: 02/28/18

| | | | | | | | | | |
|-----------|------|------|-----------|-----|------|------|--------|-------|----|
| Calcium | 7020 | 12.7 | mg/kg dry | 637 | 6440 | 92.2 | 75-125 | 0.624 | 25 |
| Magnesium | 1330 | 6.37 | " | 637 | 840 | 77.1 | 75-125 | 0.563 | 25 |
| Sodium | 1240 | 6.37 | " | 637 | 629 | 96.2 | 75-125 | 3.80 | 25 |

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
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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

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

Batch 1802257 - General Preparation

LCS (1802257-BS1)

Prepared & Analyzed: 02/27/18

| | | | | | | |
|----|------|-------|----------|------|-----|--------|
| pH | 9.17 | 0.100 | pH Units | 9.16 | 100 | 95-105 |
|----|------|-------|----------|------|-----|--------|

Duplicate (1802257-DUP1)

Source: 1802182-02

Prepared & Analyzed: 02/23/18

| | | | | | | |
|----|------|-------|----------|------|-------|----|
| pH | 8.76 | 0.100 | pH Units | 8.79 | 0.342 | 20 |
|----|------|-------|----------|------|-------|----|

Batch 1802259 - General Preparation

Duplicate (1802259-DUP1)

Source: 1802156-01

Prepared: 02/27/18 Analyzed: 03/01/18

| | | | | | | |
|----------|------|--|---|------|-------|----|
| % Solids | 97.0 | | % | 96.8 | 0.206 | 20 |
|----------|------|--|---|------|-------|----|

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

Specific Conductance by EPA120.1 - Quality Control
Summit Scientific

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

Batch 1802258 - General Preparation

Blank (1802258-BLK1)

Prepared & Analyzed: 02/27/18

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1802258-BS1)

Prepared & Analyzed: 02/27/18

Specific Conductance (EC) 0.751 0.0100 mmhos/cm 0.750 100 90-110

Duplicate (1802258-DUP1)

Source: 1802182-02

Prepared & Analyzed: 02/27/18

Specific Conductance (EC) 0.558 0.0100 mmhos/cm 0.554 0.899 20

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: State MRJV
Project Number: 744.1702.01-446013
Project Manager: Chris Hines

Reported:
03/20/18 15:46

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 |