

**Skim Pit Closure Report
for the
Wright DE No. 1 Lease Site
Washington County, Colorado
COGCC Remediation #s 8747 and 9064**

Prepared for:

Mr. Terry Pape
HRM Resources, LLC
410 17th Street, Suite 1100
Denver, CO 80202



Nicholson GeoSolutions, LLC
3433 East Lake Drive
Centennial, CO 80121

October 2015

1.0 INTRODUCTION

Nicholson GeoSolutions LLC was retained by HRM Resources, LLC to perform skim pit closure at the Wright DE No. 1 Lease, an active oil well site located in the SE¼ SW¼ Section 22, T2S, R53W, Washington County, Colorado. Remediation activities were conducted in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Rules.

Form 27 Remediation Work Plans were submitted to the COGCC by the previous operator and HRM. The Form 27s and Conditions of Approval are included in Appendix A of this report.

The site consists of a wellhead, one unlined skim pit, an evaporation pit, a heater-treater, and a tank battery with two 400-bbl storage tanks. The skim pit was closed and associated impacted soil was excavated and transported to the Denver Arapahoe Disposal Landfill operated by Waste Management in Aurora, Colorado for disposal. Closure of the skim pit was performed by Kelly Environmental LLC (Kelly) with oversight from Nicholson GeoSolutions.

This report provides the documentation of activities conducted on November 17th and April 24th, 2015.

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2.0 REMEDIATION ACTIVITIES

The following sections discuss the site remediation procedures. Photographs that document the closure of the skim pit and excavation of impacted soils are included in Appendix B.

Impacted soils were excavated and trucked to the Denver Arapahoe Disposal Landfill for disposal. Appendix C contains a summary of the landfill gatehouse tickets. Visual observations were conducted by Nicholson GeoSolutions during excavation and used to evaluate when the approximate limits of the impacted soils had been reached. Confirmation samples were then collected to assess whether compliance with the COGCC Table 910-1 standards had been achieved. Table 1 provides the confirmation sample results for the skim pit excavation. Figure 1 provides the limits of the excavation and the locations of the confirmation samples. The laboratory reports are included in Appendix D.

2.1 Skim Pit Closure and Other Remediation Activities

Closure of the unlined skim pit was initiated on November 17th, 2014. First, the metal cage covering the pit was removed and dismantled. The scrap metal was transported off-site for recycling. Petroleum-contaminated soil was present beneath and surrounding the skim pit to an approximate maximum depth of 15 feet. Approximately 846 yards of soil was excavated and transported to the landfill for disposal.

Five confirmation samples were collected from the sidewalls and base of the skim pit excavation on November 17th, 2014 and analyzed for sodium adsorption ratio (SAR), pH, conductivity, Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil range), and BTEX compounds (benzene, toluene, ethylbenzene, and xylenes).

All results for confirmation samples WrightDE-C-1 (bottom), WrightDE-C-3 (east wall), and WrightDE-C-5 (north wall) were below the standards except for pH. The combined TPH for samples WrightDE-C-2 (south wall) and WrightDE-C-4 (west wall) exceeded the COGCC standard of 500 mg/kg at 1,150 mg/kg and 1,790 mg/kg respectively.

Additional confirmation samples were collected from the south and west walls on April 24th, 2015 in the same general locations as samples WrightDE-C-2 and WrightDE-C-4. All results from resample WrightDE-C-6 (south wall) were below the standards, except for SAR (14). For sample WrightDE-C-7 (west wall), the combined TPH exceeded the COGCC standard at 1,060 mg/kg. SAR also exceeded the standard at 19. This wall cannot be excavated further without undermining the adjacent evaporation pit.

Confirmation samples were not collected from the foundation soil beneath the skim pit berms. These berms were completely removed and the final skim pit excavation extends

beyond the original footprint of the berms in all directions except towards the evaporation pit where the shared wall remains.

Table 1 Skim Pit Excavation Confirmation Sample Results

| Sample ID, Location, and depth | pH | SAR | SC | BTEX | TVPH – Gasoline (mg/kg) | TEPH – Diesel (mg/kg) | TEPH – Motor Oil (mg/kg) |
|--------------------------------|------------|-----------|------|--------|-------------------------|-----------------------|--------------------------|
| WrightDE-C-1 (bottom – 15') | 9.3 | 2.7 | 0.57 | All ND | <0.5 | <4.0 | <4.0 |
| WrightDE-C-2 (south – 8') | 9.7 | 3.9 | 1.0 | All ND | <0.5 | 670 | 480 |
| WrightDE-C-3 (east – 8') | 8.3 | 1.4 | 0.78 | All ND | <0.5 | 220 | 240 |
| WrightDE-C-4 (west – 8') | 8.6 | 2.8 | 0.87 | All ND | <0.5 | 830 | 960 |
| WrightDE-C-5 (north – 8') | 9.3 | 2.0 | 0.57 | All ND | <0.5 | <4.0 | <4.0 |
| WrightDE-C-6 (south – 7') | 8.4 | 14 | 1.1 | All ND | <0.5 | 58 | 89 |
| WrightDE-C-7 (west – 7') | 8.1 | 19 | 1.6 | All ND | <0.5 | 450 | 580 |
| Table 910-1 Standard | 6-9 | <12 | <4.0 | | 500 ¹ | 500 ¹ | 500 ¹ |

¹The standard is 500 mg/kg for the combined TEPH and TVPH results

Bold values exceed standards ND = Not detected

2.2 Data Quality Review

A data quality review was conducted using the quality assurance report supplied by the laboratory and standard EPA data validation guidance. All analyses were conducted within the recommended holding times. All method blank results were reported as not detected. All laboratory control sample (LCS), surrogate, laboratory duplicate, and matrix spike/matrix spike duplicate (MS/MSD) recoveries were within the laboratory control limits.

All results are usable for the intended purposes of this remediation.



APPENDIX A
Form 27

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

Spill Complaint
Inspection NOAV

Tracking No:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): _____

OGCC Operator Number: _____

Name of Operator: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact Name and Telephone: _____

No: _____

Fax: _____

API Number: _____

County: _____

Facility Name: _____

Facility Number: _____

Well Name: _____

Well Number: _____

Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): _____

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): _____

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: _____

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check): Extent of Impact: How Determined:

Soils _____ _____

Vegetation _____ _____

Groundwater _____ _____

Surface Water _____ _____

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Describe how source is to be removed:

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

There are no impacts to groundwater.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The skim pit area will be regraded and evaporation pit berms rebuilt as necessary.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☐ Y ☒ N If yes, describe:

Confirmation samples will be collected from the base and sidewalls of the skim pit excavation to confirm that soil with petroleum levels above the Table 910-1 standards have been removed.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Disposal at the DADS landfill.

IMPLEMENTATION SCHEDULE

| | | |
|--|--|--|
| Date Site Investigation Began: <u>June 5, 2014</u> | Date Site Investigation Completed: <u>June 5, 2014</u> | Date Remediation Plan Submitted: <u>Oct 27, 2014</u> |
| Remediation Start Date: <u>November 1, 2014</u> | Anticipated Completion Date: <u>Nov 30, 2014</u> | Actual Completion Date: _____ |

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: David K Nicholson

Signed: DK Nicholson

Title: Consultant to Ritchie Exploration

Date: Oct 27, 2014

OGCC Approved: _____ Title: _____ Date: _____

State of Colorado



02086936



REM 9064

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Skim Pit Closure

OGCC Operator Number: 10548

Name of Operator: HRM Resources II, LLC

Address: 410 17th Street, Suite 1100

City: Denver State: CO Zip: 80202

Contact Name and Telephone:

Terry Pape

No: (970) 768-5700

Fax: (303) 893-6892

API Number: 05-121-09291

County: Washington

Facility Name: Wright DE

Facility Number: 104594

Well Name: Wright DE

Well Number: 1

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SESW Sec. 22, T2S, R53W, 6PM Latitude: Longitude:

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): crude oil and produced water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): agricultural - grazing and cultivated

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: upland soils derived from glacial till

Potential receptors (water wells within 1/4 mi, surface waters, etc.): none

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):



Soils

Extent of Impact:

200 yards

How Determined:

visual inspection



Vegetation



Groundwater



Surface Water

REMEDIALATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

The skim pit was partially excavated in November 2014. Approximately 800 yards of oily soil was transported to the Waste Management Denver-Aurora Disposal Site (DADS) for disposal.

Describe how source is to be removed:

Confirmation samples will be collected to evaluate whether impacted soil remains in the excavation. Remaining impacted soils beneath the skim pit will be excavated and placed in one or more bermed areas on the lease and landfarmed.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Any remaining impacted soil will be landfarmed on site. Confirmation samples will be collected from the base and sidewalls of the skim pit excavation to confirm that all soils that exceed the Table 910-1 standards for TPH have been removed. Materials placed in the landfarm will be periodically tilled and sampled to evaluate when the Table 910-1 standards have been achieved. The skim pit excavation will be backfilled with the landfarmed soil and clean fill and the evaporation pit berms rebuilt as necessary.



REMEDIATION WORKPLAN (Cont.)

Tracking Number: 2086936
Name of Operator: HRM Resources II, LLC
OGCC Operator No: 10548
Received Date: 3/30/2015
Well Name & No: Wright DE 1
Facility Name & No: _____

OGCC Employee: Robert Young

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Impacts to groundwater have not been identified at the site.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

It is anticipated that no reclamation will be required. The landfarm will be constructed on areas currently used for production activities. After Table 910-1 standards have been achieved, the landfarmed soil and berms will be used to backfill the excavation. Weeds will be controlled by spraying and mechanical removal as necessary.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

The landfarm materials will be periodically sampled to evaluate progress in achieving the Table 910-1 standards.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Impacted soils and clean fill will be backfilled into the skim pit excavation once the Table 910-1 standards have been achieved with approval from COGCC.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: _____ Date Site Investigation Completed: _____ Date Remediation Plan Submitted: April 1, 2015
Remediation Start Date: _____ Anticipated Completion Date: November 1, 2015 Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: L. Roger Hutson

Signed: [Signature]

Title: President

Date: 3/25/15

OGCC Approved: Robert J. Young Title: NE EPS II Date: 5/7/2015

* See Conditions of Approval Correspondence.

April Prohaska

From: Young - DNR, Rob <rob.young@state.co.us>
Sent: Monday, May 18, 2015 12:46 PM
To: Roger Hutson; aprohaska@hrmres.com; OGCC EnviroScan - DNR; John Axelson - DNR
Subject: Conditionally approved Form 27 - HRM Resources II LLC - Wright DE 1 oil skim pit (Remediation #9064) API 05-121-09291
Attachments: 9064_Wright DE.pdf

Mr. Hutson,

Please find attached the conditionally approved Form 27 (Remediation #9064) for the Wright DE 1 oil skim pit remediation. The following conditions of approval (COA) have been added to the Form 27:

Remove petroleum hydrocarbon and produced water impacted soils above Table 910-1 allowable concentrations per Rule 905. Document the disposition of soil impacted above Table 910-1 allowable concentrations. Collect a minimum of one (1) discrete confirmation soil sample from the base and a minimum of four (4) discrete soil samples from the sidewalls of the oil skim pit excavation to document that soils at the extent of the excavation meet the allowable concentrations listed in Table 910-1 for BTEX, TPH, EC, pH and SAR. Oil skim pit berm material can be used to backfill the oil skim pit excavation if it meets the Table 910-1 allowable concentrations for TPH. A minimum of three feet of cover material is required if the berm materials are above the Table 910-1 allowable concentrations for pH, EC and SAR. Collect a minimum of three (3) soil samples from the oil skim pit berm footprint to document that the pH, EC and SAR concentrations of the exposed surface soil comply with Table 910-1 allowable concentrations.

Following the removal of impacted materials, submit a report referencing remediation project #9064 to the COGCC northeast EPS, Rob Young, via email. The report should describe the oil skim pit excavation activities, include a soil sample analytical summary table comparing the soil sample analytical results to Table 910-1 allowable concentrations; analytical laboratory reports; excavation figures showing the original and final extents of the oil skim pit with soil sample locations and depths below ground surface; excavation photographs showing the final excavation extents and sample locations and of the land treatment area showing the placement of the impacted soils and stormwater BMPs. The report shall be due to COGCC no later than November 1, 2015.

The on site land treatment area is subject to the following requirements:

Land treatment of oily waste shall be performed in strict accordance with the requirements of COGCC Rule 907.e.(2). Store stockpiled oily waste in a manner to prevent contamination of surrounding soil, stormwater, surface water and groundwater; until such time that the waste is properly treated or disposed in accordance with COGCC Rule 907.e.

The land treatment of soils on the location will be strictly limited to a three year completion timetable. All soils in the land treatment area will be required to be removed by May 31, 2018. An aggressive and diligent effort will be expected with regard to tilling, application of fertilizer, other soil amendments and water to ensure that bioremediation of the impacted soil is fostered and enhanced in order to meet the deadline.

Prior to using treated material for backfill, submit soil sampling and analytical results verifying that the treated material complies with all contaminants of concern in soil listed on Table 910-1 for COGCC approval. If the backfill material will be covered with at least 3-feet clean cover, analysis of the inorganics (EC, pH, SAR) in soil is not required. For progress and confirmation sampling, collect a minimum of one (1) discrete soil sample from each 100 cubic yards of treated soil. At a minimum, collect soil samples

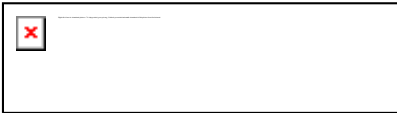
from the treatment area twice per year to establish the rate of biodegradation. The soil samples shall be collected consistently from the same locations during each sampling event.

Prepare and submit a land treatment progress report twice per year consisting of one sampling event in the late spring (May) and one sampling event in the early fall (October). The reporting deadlines for the sampling events will be June 30 and November 30, respectively. Once the representative soil samples indicate that the soils meet the Table 910-1 allowable concentrations for BTEX, TPH, SAR, EC and pH, the soils can be used to backfill the oil skim pit excavation. If the soils will be under a minimum of three feet of clean cover material, pH, EC and SAR do not have to meet Table 910-1 concentrations. Following the removal of the treated soils, after 3 years or adequate remediation has been achieved, a minimum of four (4) discrete soil samples shall be collected from the footprint of the land treatment area to confirm that the remaining soils comply with the Table 910-1 allowable concentrations for pH, EC, SAR, BTEX and TPH.

Please reference Remediation #9064 on all correspondence regarding this project.

Thank you,

Robert J. Young
Environmental Protection Specialist



P 303.252.0126 | C 720.471.1304 | F 303.252.0472
1120 Lincoln Street, Suite 801, Denver, CO 80203 rob.young@state.co.us | www.colorado.gov/cogcc

Cc: Rem #9064 - Conditions of Approval Correspondence

APPENDIX B

Photographs



Skim pit prior to cleanup



Excavation of skim pit materials



Skim pit after removal of metal cage



Partially excavated skim pit



Excavation of skim pit west wall



West wall after excavation



Excavation of skim pit bottom



Excavation of skim pit east wall



Skim pit excavation in April 2015

APPENDIX C
Landfill Gatehouse Tickets

| Date | Profile # | Manifest # | Ticket # | Material | Facility | Tons / Tonnes | Material Quantity | Material Unit |
|------------|-----------|------------|----------|---|---|------------------|----------------------|------------------|
| 11/19/2014 | 116678CO | 116284 | 2269879 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116264 | 2269804 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116262 | 2269802 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116263 | 2269799 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116258 | 2269639 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116259 | 2269637 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116256 | 2269635 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY | Colorado Landfills - Denver Arapahoe | 0.00 | 18.00 | CYD |

12/16/2014

| Date | Profile # | Manifest # | Ticket # | Material | Facility | Tons / Tonnes | Material Quantity | Material Unit |
|------------|-----------|------------|----------|---|---|------------------|----------------------|------------------|
| 11/19/2014 | 116678CO | 116260 | 2269521 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/19/2014 | 116678CO | 116254 | 2269488 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116250 | 2269285 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116249 | 2269282 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116248 | 2269238 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116246 | 2269222 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116247 | 2269207 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY | Colorado Landfills - Denver Arapahoe | 0.00 | 18.00 | CYD |

<https://account.wmsolutions.com/profile/transaction-history/id/279037/type/0> 12/16/2014

| Date | Profile # | Manifest # | Ticket # | Material | Facility | Tons / Tonnes | Material Quantity | Material Unit |
|------------|-----------|------------|----------|---|---|------------------|----------------------|------------------|
| 11/18/2014 | 116678CO | 116239 | 2268916 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116238 | 2268914 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116236 | 2268836 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116237 | 2268787 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116235 | 2268732 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116234 | 2268692 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116233 | 2268666 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY | Colorado Landfills - Denver Arapahoe | 0.00 | 18.00 | CYD |

| Date | Profile # | Manifest # | Ticket # | Material | Facility | Tons / Tonnes | Material Quantity | Material Unit |
|------------|-----------|------------|----------|--|---|------------------|----------------------|------------------|
| 11/18/2014 | 116678CO | 116232 | 2268631 | ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Disposal (DADS) Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116231 | 2268624 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/18/2014 | 116678CO | 116230 | 2268620 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 116229 | 2268468 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 116228 | 2268447 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 116226 | 2268437 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |

| Date | Profile # | Manifest # | Ticket # | Material | Facility | Tons / Tonnes | Material Quantity | Material Unit |
|------------|-----------|------------|----------|---|---|------------------|----------------------|------------------|
| 11/17/2014 | 116678CO | 116227 | 2268424 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 116225 | 2268637 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 116224 | 2268166 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 1116223 | 2268164 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 116222 | 2268141 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 105594 | 2267920 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 105593 | 2267910 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY | Colorado Landfills - Denver Arapahoe | 0.00 | 18.00 | CYD |

| Date | Profile # | Manifest # | Ticket # | Material | Facility | Tons / Tonnes | Material Quantity | Material Unit |
|------------|-----------|------------|----------|---|---|------------------|----------------------|------------------|
| | | | | ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Disposal (DADS) | | | |
| 11/17/2014 | 116678CO | 105592 | 2267901 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |
| 11/17/2014 | 116678CO | 105591 | 2267900 | E&P EXEMPT HYDROCARBON BEARING SOIL~KELLY ENVIRONMENTAL LLC~RITCHIE EXPLORATION INC~116678CO | Colorado Landfills - Denver Arapahoe Disposal (DADS) | 0.00 | 18.00 | CYD |

APPENDIX D

Laboratory Reports



12065 Lebanon Rd.
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(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Dave Nicholson
Ritchie Exploration, Inc.- Wichita, KS
8100 E. 22th St. North
Wichita, KS 67226

Report Summary

Monday November 24, 2014

Report Number: L734322

Samples Received: 11/19/14

Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
8100 E. 22th St. North
Wichita, KS 67226

November 24, 2014

Date Received : November 19, 2014
Description :

Sample ID : WRIGHT DE-C-1

Collected By :
Collection Date : 11/17/14 13:30

ESC Sample # : L734322-01

Site ID :

Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 9.3 | | su | 9045D | 11/20/14 | 1 |
| Sodium Adsorption Ratio | 2.7 | | | Calc. | 11/23/14 | 1 |
| Specific Conductance | 570 | | umhos/cm | 9050AMod | 11/20/14 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 11/22/14 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 11/22/14 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 11/22/14 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 94.1 | | % Rec. | 8015 | 11/22/14 | 5 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 11/22/14 | 5 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | BDL | 4.0 | mg/kg | 8015 | 11/21/14 | 1 |
| C28-C40 Oil Range | BDL | 4.0 | mg/kg | 8015 | 11/21/14 | 1 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 66.3 | | % Rec. | 8015 | 11/21/14 | 1 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.
This report shall not be reproduced, except in full, without the written approval from ESC.
.
Reported: 11/24/14 12:16 Printed: 11/24/14 12:16
L734322-01 (PH) - 9.3@21.5c



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REPORT OF ANALYSIS

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
8100 E. 22th St. North
Wichita, KS 67226

November 24, 2014

Date Received : November 19, 2014
Description :

Sample ID : WRIGHT DE-C-2

Collected By :
Collection Date : 11/17/14 13:50

ESC Sample # : L734322-02

Site ID :

Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 9.7 | | su | 9045D | 11/20/14 | 1 |
| Sodium Adsorption Ratio | 3.9 | | | Calc. | 11/23/14 | 1 |
| Specific Conductance | 1000 | | umhos/cm | 9050AMod | 11/20/14 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 11/22/14 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 11/22/14 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 11/22/14 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 93.8 | | % Rec. | 8015 | 11/22/14 | 5 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 11/22/14 | 5 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | 670 | 20. | mg/kg | 8015 | 11/21/14 | 5 |
| C28-C40 Oil Range | 480 | 20. | mg/kg | 8015 | 11/21/14 | 5 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 63.0 | | % Rec. | 8015 | 11/21/14 | 5 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Reported: 11/24/14 12:16 Printed: 11/24/14 12:16
L734322-02 (DRORLA) - Dilution due to matrix
L734322-02 (PH) - 9.7@21.2c



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REPORT OF ANALYSIS

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
8100 E. 22th St. North
Wichita, KS 67226

November 24, 2014

Date Received : November 19, 2014
Description :

Sample ID : WRIGHT DE-C-3

Collected By :
Collection Date : 11/17/14 13:55

ESC Sample # : L734322-03

Site ID :

Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 8.3 | | su | 9045D | 11/20/14 | 1 |
| Sodium Adsorption Ratio | 1.4 | | | Calc. | 11/23/14 | 1 |
| Specific Conductance | 780 | | umhos/cm | 9050AMod | 11/20/14 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 11/22/14 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 11/22/14 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 11/22/14 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 94.1 | | % Rec. | 8015 | 11/22/14 | 5 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 11/22/14 | 5 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | 220 | 200 | mg/kg | 8015 | 11/21/14 | 50 |
| C28-C40 Oil Range | 240 | 200 | mg/kg | 8015 | 11/21/14 | 50 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 60.2 | | % Rec. | 8015 | 11/21/14 | 50 |

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Reported: 11/24/14 12:16 Printed: 11/24/14 12:16
L734322-03 (DRORLA) - Dilution due to matrix
L734322-03 (PH) - 8.3@21.3c



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REPORT OF ANALYSIS

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
8100 E. 22th St. North
Wichita, KS 67226

November 24, 2014

Date Received : November 19, 2014
Description :

Sample ID : WRIGHT DE-C-4

Collected By :
Collection Date : 11/17/14 14:00

ESC Sample # : L734322-04

Site ID :

Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 8.6 | | su | 9045D | 11/20/14 | 1 |
| Sodium Adsorption Ratio | 2.8 | | | Calc. | 11/23/14 | 1 |
| Specific Conductance | 870 | | umhos/cm | 9050AMod | 11/20/14 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 11/22/14 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 11/22/14 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 11/22/14 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 93.6 | | % Rec. | 8015 | 11/22/14 | 5 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 11/22/14 | 5 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | 830 | 200 | mg/kg | 8015 | 11/21/14 | 50 |
| C28-C40 Oil Range | 960 | 200 | mg/kg | 8015 | 11/21/14 | 50 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 0.00 | | % Rec. | 8015 | 11/21/14 | 50 |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 11/24/14 12:16 Printed: 11/24/14 12:16
L734322-04 (PH) - 8.6@21.5c



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REPORT OF ANALYSIS

Dave Nicholson
Ritchie Exploration, Inc.- Wichita,
8100 E. 22th St. North
Wichita, KS 67226

November 24, 2014

Date Received : November 19, 2014
Description :

Sample ID : WRIGHT DE-C-5

Collected By :
Collection Date : 11/17/14 14:10

ESC Sample # : L734322-05

Site ID :

Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 9.3 | | su | 9045D | 11/20/14 | 1 |
| Sodium Adsorption Ratio | 2.0 | | | Calc. | 11/23/14 | 1 |
| Specific Conductance | 570 | | umhos/cm | 9050AMod | 11/20/14 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 11/22/14 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 11/22/14 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 11/22/14 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 11/22/14 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 93.8 | | % Rec. | 8015 | 11/22/14 | 5 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 11/22/14 | 5 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | BDL | 4.0 | mg/kg | 8015 | 11/21/14 | 1 |
| C28-C40 Oil Range | BDL | 4.0 | mg/kg | 8015 | 11/21/14 | 1 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 67.3 | | % Rec. | 8015 | 11/21/14 | 1 |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 11/24/14 12:16 Printed: 11/24/14 12:16
L734322-05 (PH) - 9.3@21.3c

Attachment A
List of Analytes with QC Qualifiers

| Sample Number | Work Group | Sample Type | Analyte | Run ID | Qualifier |
|------------------|---------------|----------------|-------------|-----------|-----------|
| L734322-03 | WG755517 | SAMP | o-Terphenyl | R3005926 | J7 |
| L734322-04 | WG755517 | SAMP | o-Terphenyl | R3005945 | J7 |

Attachment B
Explanation of QC Qualifier Codes

| Qualifier | Meaning |
|-----------|---|
| J7 | Surrogate recovery cannot be used for control limit evaluation due to dilution. |

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
11/24/14 at 12:16:47

TSR Signing Reports: 134
R4 - Rush: Three Day

Sample: L734322-01 Account: RITEXPWKS Received: 11/19/14 09:00 Due Date: 11/24/14 00:00 RPT Date: 11/24/14 12:16
Sample: L734322-02 Account: RITEXPWKS Received: 11/19/14 09:00 Due Date: 11/24/14 00:00 RPT Date: 11/24/14 12:16
Sample: L734322-03 Account: RITEXPWKS Received: 11/19/14 09:00 Due Date: 11/24/14 00:00 RPT Date: 11/24/14 12:16
Sample: L734322-04 Account: RITEXPWKS Received: 11/19/14 09:00 Due Date: 11/24/14 00:00 RPT Date: 11/24/14 12:16
Sample: L734322-05 Account: RITEXPWKS Received: 11/19/14 09:00 Due Date: 11/24/14 00:00 RPT Date: 11/24/14 12:16



YOUR LAB OF CHOICE

Ritchie Exploration, Inc.- Wichita, KS
Dave Nicholson
8100 E. 22th St. North

Wichita, KS 67226

Quality Assurance Report
Level II

L734322

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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

November 24, 2014

| Analyte | Result | Laboratory Blank | | Limit | Batch | Date Analyzed |
|-----------------------------|---------|------------------|-------|--------|----------|----------------|
| | | Units | % Rec | | | |
| Specific Conductance | 1.70 | umhos/cm | | | WG755535 | 11/20/14 15:27 |
| C10-C28 Diesel Range | < 4 | mg/kg | | | WG755517 | 11/20/14 21:34 |
| C28-C40 Oil Range | < 4 | mg/kg | | | WG755517 | 11/20/14 21:34 |
| o-Terphenyl | | % Rec. | 78.10 | 50-150 | WG755517 | 11/20/14 21:34 |
| Benzene | < .0005 | mg/kg | | | WG756179 | 11/22/14 19:49 |
| Ethylbenzene | < .0005 | mg/kg | | | WG756179 | 11/22/14 19:49 |
| Toluene | < .005 | mg/kg | | | WG756179 | 11/22/14 19:49 |
| TPH (GC/FID) Low Fraction | < .1 | mg/kg | | | WG756179 | 11/22/14 19:49 |
| Total Xylene | < .0015 | mg/kg | | | WG756179 | 11/22/14 19:49 |
| a,a,a-Trifluorotoluene(FID) | | % Rec. | 94.50 | 59-128 | WG756179 | 11/22/14 19:49 |
| a,a,a-Trifluorotoluene(PID) | | % Rec. | 102.0 | 54-144 | WG756179 | 11/22/14 19:49 |

| Analyte | Units | Result | Duplicate | | Limit | Ref Samp | Batch |
|----------------------|----------|--------|-----------|-------|-------|------------|----------|
| | | | Duplicate | RPD | | | |
| pH | su | 9.10 | 9.10 | 0.329 | 1 | L733849-01 | WG755563 |
| pH | su | 7.90 | 7.90 | 0.127 | 1 | L734429-05 | WG755563 |
| Specific Conductance | umhos/cm | 120. | 120. | 1.65 | 20 | L733863-01 | WG755535 |
| Specific Conductance | umhos/cm | 570. | 570. | 0.175 | 20 | L734322-05 | WG755535 |

| Analyte | Units | Laboratory Control Sample | | % Rec | Limit | Batch |
|-----------------------------|----------|---------------------------|--------|-------|------------|----------|
| | | Known Val | Result | | | |
| pH | su | 5.9 | 5.90 | 100. | 98.3-101.7 | WG755563 |
| Specific Conductance | umhos/cm | 759 | 780. | 103. | 85-115 | WG755535 |
| Benzene | mg/kg | .05 | 0.0486 | 97.1 | 70-130 | WG756179 |
| Ethylbenzene | mg/kg | .05 | 0.0468 | 93.6 | 70-130 | WG756179 |
| Toluene | mg/kg | .05 | 0.0477 | 95.4 | 70-130 | WG756179 |
| Total Xylene | mg/kg | .15 | 0.141 | 93.8 | 70-130 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | 94.00 | 59-128 | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | 101.0 | 54-144 | WG756179 |
| TPH (GC/FID) Low Fraction | mg/kg | 5.5 | 5.00 | 91.0 | 63.5-137 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | 102.0 | 59-128 | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | 112.0 | 54-144 | WG756179 |

| Analyte | Units | Laboratory Control Sample Duplicate | | | Limit | RPD | Limit | Batch |
|-----------------------------|--------|-------------------------------------|--------|-------|------------|------|-------|----------|
| | | Result | Ref | %Rec | | | | |
| pH | su | 5.90 | 5.90 | 100. | 98.3-101.7 | 0.0 | 20 | WG755563 |
| Specific Conductance | umhos/ | 780. | 780. | 103. | 85-115 | 0.0 | 20 | WG755535 |
| Benzene | mg/kg | 0.0472 | 0.0486 | 94.0 | 70-130 | 2.81 | 20 | WG756179 |
| Ethylbenzene | mg/kg | 0.0459 | 0.0468 | 92.0 | 70-130 | 2.01 | 20 | WG756179 |
| Toluene | mg/kg | 0.0462 | 0.0477 | 92.0 | 70-130 | 3.24 | 20 | WG756179 |
| Total Xylene | mg/kg | 0.138 | 0.141 | 92.0 | 70-130 | 1.66 | 20 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | 94.10 | 59-128 | | | WG756179 |

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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November 24, 2014

| Analyte | Units | Laboratory Control Sample Duplicate | | | Limit | RPD | Limit | Batch |
|-----------------------------|-------|-------------------------------------|------|-------|----------|------|-------|----------|
| | | Result | Ref | %Rec | | | | |
| a,a,a-Trifluorotoluene(PID) | | | | 101.0 | 54-144 | | | |
| TPH (GC/FID) Low Fraction | mg/kg | 5.07 | 5.00 | 92.0 | 63.5-137 | 1.31 | 20 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | 101.0 | 59-128 | | | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | 112.0 | 54-144 | | | WG756179 |

| Analyte | Units | Matrix Spike | | | % Rec | Limit | Ref Samp | Batch |
|-----------------------------|-------|--------------|----------|-----|-------|----------|------------|----------|
| | | MS Res | Ref Res | TV | | | | |
| Benzene | mg/kg | 0.223 | 0.000501 | .05 | 89.0 | 49.7-127 | L734322-01 | WG756179 |
| Ethylbenzene | mg/kg | 0.230 | 0.000508 | .05 | 92.0 | 40.8-141 | L734322-01 | WG756179 |
| Toluene | mg/kg | 0.234 | 0.00109 | .05 | 93.0 | 49.8-132 | L734322-01 | WG756179 |
| Total Xylene | mg/kg | 0.681 | 0.00224 | .15 | 90.0 | 41.2-140 | L734322-01 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | | 94.50 | 59-128 | | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | | 101.0 | 54-144 | | WG756179 |
| TPH (GC/FID) Low Fraction | mg/kg | 21.2 | 0.0 | 5.5 | 77.0 | 28.5-138 | L734322-01 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | | 99.00 | 59-128 | | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | | 110.0 | 54-144 | | WG756179 |

| Analyte | Units | Matrix Spike Duplicate | | | Limit | RPD | Limit | Ref Samp | Batch |
|-----------------------------|-------|------------------------|-------|-------|----------|------|-------|------------|----------|
| | | MSD | Ref | %Rec | | | | | |
| Benzene | mg/kg | 0.230 | 0.223 | 91.8 | 49.7-127 | 3.03 | 23.5 | L734322-01 | WG756179 |
| Ethylbenzene | mg/kg | 0.236 | 0.230 | 94.1 | 40.8-141 | 2.54 | 23.8 | L734322-01 | WG756179 |
| Toluene | mg/kg | 0.237 | 0.234 | 94.5 | 49.8-132 | 1.47 | 23.5 | L734322-01 | WG756179 |
| Total Xylene | mg/kg | 0.695 | 0.681 | 92.3 | 41.2-140 | 1.98 | 23.7 | L734322-01 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | 94.00 | 59-128 | | | | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | 101.0 | 54-144 | | | | WG756179 |
| TPH (GC/FID) Low Fraction | mg/kg | 23.3 | 21.2 | 84.8 | 28.5-138 | 9.29 | 23.6 | L734322-01 | WG756179 |
| a,a,a-Trifluorotoluene(FID) | | | | 99.70 | 59-128 | | | | WG756179 |
| a,a,a-Trifluorotoluene(PID) | | | | 111.0 | 54-144 | | | | WG756179 |

Batch number /Run number / Sample number cross reference

WG755563: R3005609: L734322-01 02 03 04 05
WG755535: R3005656: L734322-01 02 03 04 05
WG755517: R3005926 R3005945: L734322-01 02 03 04 05
WG756179: R3006071: L734322-01 02 03 04 05
WG755505: R3006125: L734322-01 02 03 04 05

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Ritchie Exploration, Inc.- Wichita, KS
Dave Nicholson
8100 E. 22th St. North

Wichita, KS 67226

Quality Assurance Report
Level II

L734322

12065 Lebanon Rd.
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Tax I.D. 62-0814289

Est. 1970

November 24, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



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Dave Nicholson
HRM Resources, LLC - Denver, CO
410 17th Street, Suite 1100
Denver, CO 80202

Report Summary

Wednesday May 06, 2015

Report Number: L761605

Samples Received: 04/25/15

Client Project:

Description: Wright DE

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Pam Langford , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

Dave Nicholson
HRM Resources, LLC - Denver, CO
410 17th Street, Suite 1100
Denver, CO 80202

May 06, 2015

Date Received : April 25, 2015
Description : Wright DE
Sample ID : WRIGHT DE-C-6 7FT
Collected By : DK Nicholson
Collection Date : 04/24/15 12:40

ESC Sample # : L761605-01

Site ID :

Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 8.4 | 0.10 | su | 9045D | 04/29/15 | 1 |
| Sodium Adsorption Ratio | 14. | | | Calc. | 05/06/15 | 1 |
| Specific Conductance | 1100 | | umhos/cm | 9050AMod | 04/29/15 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 05/01/15 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 05/01/15 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 05/01/15 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 05/01/15 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 05/01/15 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 97.0 | | % Rec. | 8015 | 05/01/15 | 1 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 05/01/15 | 1 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | 58. | 40. | mg/kg | 8015 | 04/28/15 | 10 |
| C28-C40 Oil Range | 89. | 40. | mg/kg | 8015 | 04/28/15 | 10 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 56.1 | | % Rec. | 8015 | 04/28/15 | 10 |

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/06/15 09:19 Printed: 05/06/15 09:19
L761605-01 (PH) - 8.4 AT 21.1C



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REPORT OF ANALYSIS

Dave Nicholson
 HRM Resources, LLC - Denver, CO
 410 17th Street, Suite 1100
 Denver, CO 80202

May 06, 2015

Date Received : April 25, 2015
 Description : Wright DE
 Sample ID : WRIGHT DE-C-7 7FT
 Collected By : DK Nicholson
 Collection Date : 04/24/15 12:50

ESC Sample # : L761605-02
 Site ID :
 Project # :

| Parameter | Result | Det. Limit | Units | Method | Date | Dil. |
|-----------------------------|--------|------------|----------|----------|----------|------|
| pH | 8.1 | 0.10 | su | 9045D | 04/29/15 | 1 |
| Sodium Adsorption Ratio | 19. | | | Calc. | 05/06/15 | 1 |
| Specific Conductance | 1600 | | umhos/cm | 9050AMod | 04/30/15 | 1 |
| Benzene | BDL | 0.0025 | mg/kg | 8021 | 05/02/15 | 5 |
| Toluene | BDL | 0.025 | mg/kg | 8021 | 05/02/15 | 5 |
| Ethylbenzene | BDL | 0.0025 | mg/kg | 8021 | 05/02/15 | 5 |
| Total Xylene | BDL | 0.0075 | mg/kg | 8021 | 05/02/15 | 5 |
| TPH (GC/FID) Low Fraction | BDL | 0.50 | mg/kg | 8015 | 05/02/15 | 5 |
| Surrogate Recovery-% | | | | | | |
| a,a,a-Trifluorotoluene(FID) | 97.1 | | % Rec. | 8015 | 05/02/15 | 1 |
| a,a,a-Trifluorotoluene(PID) | 101. | | % Rec. | 8021 | 05/02/15 | 1 |
| Diesel and Oil Ranges | | | | | | |
| C10-C28 Diesel Range | 450 | 40. | mg/kg | 8015 | 04/28/15 | 10 |
| C28-C40 Oil Range | 580 | 40. | mg/kg | 8015 | 04/28/15 | 10 |
| Surrogate Recovery | | | | | | |
| o-Terphenyl | 64.8 | | % Rec. | 8015 | 04/28/15 | 10 |

BDL - Below Detection Limit
 Det. Limit - Practical Quantitation Limit(PQL)
 Note:
 The reported analytical results relate only to the sample submitted.
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 .
 Reported: 05/06/15 09:19 Printed: 05/06/15 09:19
 L761605-02 (PH) - 8.1 AT 20.2C



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Quality Assurance Report
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May 06, 2015

| Analyte | Result | Laboratory Blank | | Limit | Batch | Date Analyzed |
|-----------------------------|---------|------------------|-------|--------|----------|----------------|
| | | Units | % Rec | | | |
| C10-C28 Diesel Range | < 4 | mg/kg | | | WG785377 | 04/28/15 16:48 |
| C28-C40 Oil Range | < 4 | mg/kg | | | WG785377 | 04/28/15 16:48 |
| o-Terphenyl | | % Rec. | 81.20 | 50-150 | WG785377 | 04/28/15 16:48 |
| Specific Conductance | 1.14 | umhos/cm | | | WG785055 | 04/29/15 16:19 |
| Specific Conductance | 0.960 | umhos/cm | | | WG785852 | 04/30/15 15:36 |
| Benzene | < .0005 | mg/kg | | | WG785984 | 05/01/15 21:31 |
| Ethylbenzene | < .0005 | mg/kg | | | WG785984 | 05/01/15 21:31 |
| Toluene | < .005 | mg/kg | | | WG785984 | 05/01/15 21:31 |
| TPH (GC/FID) Low Fraction | < .1 | mg/kg | | | WG785984 | 05/01/15 21:31 |
| Total Xylene | < .0015 | mg/kg | | | WG785984 | 05/01/15 21:31 |
| a,a,a-Trifluorotoluene(FID) | | % Rec. | 98.00 | 59-128 | WG785984 | 05/01/15 21:31 |
| a,a,a-Trifluorotoluene(PID) | | % Rec. | 103.0 | 54-144 | WG785984 | 05/01/15 21:31 |

| Analyte | Units | Result | Duplicate | | RPD | Limit | Ref Samp | Batch |
|----------------------|----------|--------|-----------|--|-------|-------|------------|----------|
| | | | Duplicate | | | | | |
| pH | su | 6.10 | 6.10 | | 0.164 | 1 | L761592-01 | WG785344 |
| pH | su | 8.60 | 8.60 | | 0.116 | 1 | L761839-09 | WG785344 |
| Specific Conductance | umhos/cm | 45000 | 45000 | | 0.222 | 20 | L761544-01 | WG785055 |
| Specific Conductance | umhos/cm | 1100 | 1100 | | 0.905 | 20 | L761605-01 | WG785055 |
| Specific Conductance | umhos/cm | 5200 | 5100 | | 2.33 | 20 | L761624-06 | WG785852 |

| Analyte | Units | Laboratory Control Sample | | % Rec | Limit | Batch |
|-----------------------------|----------|---------------------------|--------|-------|------------|----------|
| | | Known Val | Result | | | |
| C10-C28 Diesel Range | mg/kg | 60 | 38.4 | 64.0 | 50-100 | WG785377 |
| o-Terphenyl | | | | 81.60 | 50-150 | WG785377 |
| pH | su | 7.84 | 7.79 | 99.4 | 98.3-101.7 | WG785344 |
| Specific Conductance | umhos/cm | 534 | 539. | 101. | 85-115 | WG785055 |
| Specific Conductance | umhos/cm | 534 | 548. | 103. | 85-115 | WG785852 |
| Benzene | mg/kg | .05 | 0.0451 | 90.3 | 70-130 | WG785984 |
| Ethylbenzene | mg/kg | .05 | 0.0467 | 93.4 | 70-130 | WG785984 |
| Toluene | mg/kg | .05 | 0.0466 | 93.3 | 70-130 | WG785984 |
| Total Xylene | mg/kg | .15 | 0.143 | 95.1 | 70-130 | WG785984 |
| a,a,a-Trifluorotoluene(PID) | | | | 101.0 | 54-144 | WG785984 |
| TPH (GC/FID) Low Fraction | mg/kg | 5.5 | 4.00 | 72.6 | 63.5-137 | WG785984 |
| a,a,a-Trifluorotoluene(FID) | | | | 98.00 | 59-128 | WG785984 |

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

HRM Resources, LLC - Denver, CO
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Quality Assurance Report
 Level II
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 Est. 1970

May 06, 2015

| Analyte | Units | Laboratory Control Sample Duplicate | | | Limit | RPD | Limit | Batch |
|-----------------------------|--------|-------------------------------------|--------|-------|------------|--------|-------|----------|
| | | Result | Ref | %Rec | | | | |
| C10-C28 Diesel Range | mg/kg | 38.7 | 38.4 | 64.0 | 50-100 | 0.790 | 20 | WG785377 |
| o-Terphenyl | | | | 83.40 | 50-150 | | | WG785377 |
| pH | su | 7.79 | 7.79 | 99.0 | 98.3-101.7 | 0.0 | 20 | WG785344 |
| Specific Conductance | umhos/ | 539. | 539. | 101. | 85-115 | 0.0 | 20 | WG785055 |
| Specific Conductance | umhos/ | 546. | 548. | 102. | 85-115 | 0.366 | 20 | WG785852 |
| Benzene | mg/kg | 0.0458 | 0.0451 | 92.0 | 70-130 | 1.51 | 20 | WG785984 |
| Ethylbenzene | mg/kg | 0.0468 | 0.0467 | 94.0 | 70-130 | 0.150 | 20 | WG785984 |
| Toluene | mg/kg | 0.0463 | 0.0466 | 93.0 | 70-130 | 0.660 | 20 | WG785984 |
| Total Xylene | mg/kg | 0.142 | 0.143 | 95.0 | 70-130 | 0.260 | 20 | WG785984 |
| a,a,a-Trifluorotoluene(PID) | | | | 101.0 | 54-144 | | | WG785984 |
| TPH (GC/FID) Low Fraction | mg/kg | 3.99 | 4.00 | 73.0 | 63.5-137 | 0.0500 | 20 | WG785984 |
| a,a,a-Trifluorotoluene(FID) | | | | 98.00 | 59-128 | | | WG785984 |

| Analyte | Units | Matrix Spike | | | % Rec | Limit | Ref Samp | Batch |
|-----------------------------|-------|--------------|----------|-----|-------|----------|------------|----------|
| | | MS Res | Ref Res | TV | | | | |
| Benzene | mg/kg | 0.203 | 0.000275 | .05 | 81.0 | 49.7-127 | L761605-01 | WG785984 |
| Ethylbenzene | mg/kg | 0.175 | 0.000381 | .05 | 70.0 | 40.8-141 | L761605-01 | WG785984 |
| Toluene | mg/kg | 0.193 | 0.00138 | .05 | 76.0 | 49.8-132 | L761605-01 | WG785984 |
| Total Xylene | mg/kg | 0.525 | 0.00211 | .15 | 70.0 | 41.2-140 | L761605-01 | WG785984 |
| a,a,a-Trifluorotoluene(PID) | | | | | 99.90 | 54-144 | | WG785984 |
| TPH (GC/FID) Low Fraction | mg/kg | 13.6 | 0.100 | 5.5 | 49.0 | 28.5-138 | L761605-01 | WG785984 |
| a,a,a-Trifluorotoluene(FID) | | | | | 96.40 | 59-128 | | WG785984 |

| Analyte | Units | Matrix Spike Duplicate | | | Limit | RPD | Limit | Ref Samp | Batch |
|-----------------------------|-------|------------------------|-------|-------|----------|------|-------|------------|----------|
| | | MSD | Ref | %Rec | | | | | |
| Benzene | mg/kg | 0.198 | 0.203 | 79.0 | 49.7-127 | 2.44 | 23.5 | L761605-01 | WG785984 |
| Ethylbenzene | mg/kg | 0.165 | 0.175 | 66.0 | 40.8-141 | 5.82 | 23.8 | L761605-01 | WG785984 |
| Toluene | mg/kg | 0.185 | 0.193 | 73.6 | 49.8-132 | 3.76 | 23.5 | L761605-01 | WG785984 |
| Total Xylene | mg/kg | 0.496 | 0.525 | 65.8 | 41.2-140 | 5.80 | 23.7 | L761605-01 | WG785984 |
| a,a,a-Trifluorotoluene(PID) | | | | 99.70 | 54-144 | | | | WG785984 |
| TPH (GC/FID) Low Fraction | mg/kg | 13.8 | 13.6 | 49.7 | 28.5-138 | 1.09 | 23.6 | L761605-01 | WG785984 |
| a,a,a-Trifluorotoluene(FID) | | | | 95.60 | 59-128 | | | | WG785984 |

Batch number /Run number / Sample number cross reference

WG785377: R3033629: L761605-01 02
 WG785344: R3033845: L761605-01 02
 WG785055: R3034039: L761605-01
 WG785852: R3034197: L761605-02
 WG785984: R3035048: L761605-01 02
 WG786006: R3035175: L761605-01 02

* * Calculations are performed prior to rounding of reported values.
 * Performance of this Analyte is outside of established criteria.
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Est. 1970

May 06, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.