

**Skim Pit Closure Report  
for the  
Cowles “P” Lease Site  
Washington County, Colorado  
COGCC Remediation # 9053**

**Prepared for:**

Mr. Terry Pape  
HRM Resources, LLC  
410 17<sup>th</sup> 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 conduct sampling during skim pit closure activities at the Cowles “P” Lease, an active oil well site located in the SE¼ NW¼ Section 25, T3S, R52W, Washington County, Colorado. Remediation activities were conducted in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Rules.

A Form 27 Remediation Work Plan was submitted to the COGCC for this site. The Form 27 is 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 four 400-bbl storage tanks. The skim pit was closed and associated impacted soil was excavated and sent to the Denver Arapahoe Disposal landfill in Aurora, Colorado for disposal or placed in an on-site landfarm cell for treatment. Closure of the skim pit was performed by JayHawk Grading, Inc.

This report provides the documentation of activities conducted on June 25<sup>th</sup> and October 12<sup>th</sup>, 2015.

## **2.0 REMEDIATION ACTIVITIES**

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

Excavation of the unlined skim pit was conducted by Jayhawk. Impacted soils were excavated and trucked to the Denver Arapahoe Disposal Landfill for disposal or placed in an on-site landfarm cell for treatment. The most impacted soil (about 255 yards) was sent to the landfill. 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.

### **2.1 Skim Pit Closure Activities**

Closure of the unlined skim pit was conducted on June 25<sup>th</sup>, 2015. First, the metal cage covering the pit was removed and dismantled. The scrap metal was transported off-site for recycling. A total of approximately 555 yards of soil was excavated with about 255 yards sent to the landfill and 300 yards placed in the on-site cell for treatment. Appendix C contains a summary of the landfill gatehouse tickets.

Petroleum-contaminated soil was excavated to an approximate depth of 24 feet. Confirmation samples were then collected to assess whether compliance with the COGCC Table 910-1 standards had been achieved. Figure 1 provides the approximate limits of the excavation and the locations of the confirmation samples for the skim pit. The laboratory report is included in Appendix D.

Five confirmation samples were collected from the sidewalls and base of the skim pit excavation on June 25<sup>th</sup>, 2015 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 ranges), and BTEX compounds (benzene, toluene, ethylbenzene, and xylenes).

Table 1 provides the confirmation sample results. Figure 1 provides the limits of the excavation and the locations of the confirmation samples. All results for confirmation samples Cowles-C-1, Cowles C-2, Cowles-C-4, and Cowles-C-5 are below the standards except for pH. For sample Cowles-C-3 (the north wall which is shared with the adjacent evaporation pit), the combined TPH exceeded the COGCC standard at 12,483 mg/kg. This wall cannot be excavated further without undermining the adjacent evaporation pit.

**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)
Cowles-C-1 (bottom – 24')	<b>9.54</b>	3.6	0.47	All ND	<0.5	<4.0	<4.0
Cowles -C-2 (west – 12')	<b>9.59</b>	3.9	0.70	All ND	<0.5	6.4	4.2
Cowles -C-3 (north – 12')	<b>9.19</b>	4.7	0.50	All ND	<b>83</b>	<b>9,300</b>	<b>3,100</b>
Cowles -C-4 (east – 12')	<b>9.54</b>	4.0	0.49	All ND	<0.5	<4.0	<4.0
Cowles -C-5 (south – 12')	<b>9.30</b>	3.0	0.58	All ND	<0.5	<4.0	<4.0
Table 910-1 Standard	6-9	<12	<4.0		500 <sup>1</sup>	500 <sup>1</sup>	500 <sup>1</sup>

<sup>1</sup>The standard is 500 mg/kg for the combined TEPH/TVPH results  
 Bold values exceed standards ND = Not detected

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.

## 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**  
**COGCC Form 27 and COAs**

FORM: 27 Rev 6/99

State of Colorado Oil and Gas Conservation Commission



FOR OGCC USE ONLY MAR 30 2015 COGCC OGCC Employee: [ ] Spill [ ] Complaint [ ] Inspection [ ] NOAV Tracking No:

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 [x] 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: 05-121-05397 County: Washington Facility Name: Cowles Facility Number: 407591-117590 Well Name: Cowles 1 Well Number: 1 Location: (QtrQtr, Sec, Twp, Rng, Meridian): SENW Sec. 25, T3S, R52W, 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 [x] 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):

Table with 3 columns: Impacted Media (check), Extent of Impact, How Determined. Rows for Soils, Vegetation, Groundwater, Surface Water.

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document): A site inspection was conducted to assess the quantities of impacted soil and plan for the removal of the skim pit. Describe how source is to be removed: Excess oil will be removed from the skim pit. The metal cage will be removed and recycled. Impacted soils beneath the skim pit will be excavated. Oily soils will be transported to Waste Management Denver-Aurora Disposal Site (DADS) for disposal. 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.: Impacted soil will be disposed of at the DADS landfill or landfarmed on site. The skim pit will be replaced with one or more enclosed tanks. 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.



Tracking Number: 2086929  
Name of Operator: HRM Resources II, LLC  
OGCC Operator No: 10548  
Received Date: 3/30/2015  
Well Name & No: Cowles I  
Facility Name & No: \_\_\_\_\_

Page 2  
**REMEDIATION WORKPLAN (Cont.)**

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.):

Oily soils will be disposed of at Denver Arapahoe Disposal (DADS) landfill. Other 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: [Signature] Title: NE EPS II Date: 5/6/2015

Mr. Hutson,

Please find attached the conditionally approved Form 27 (Remediation #9053) for the Cowles 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 #9053 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-foot 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). 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 #9053 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](mailto:rob.young@state.co.us) | [www.colorado.gov/cogcc](http://www.colorado.gov/cogcc)

Cc: Rem #9053 - Conditions of Approval

**APPENDIX B**  
**Photographs**



**Skim pit prior to cleanup**



**North wall shared with evaporation pit**



**Partially excavated skim pit**



**Excavation of impacted soil**



**Excavation of skim pit south wall**



**North (shared) wall after excavation**



**North (shared) wall after excavation**



**Bottom after excavation**



**Landfarm cell**



**Landfarmed material**



**Landfarm cell berms**



**Landfarm cell**

**APPENDIX C**  
**Landfill Gatehouse Tickets**

Service Location: 306-15549 HRM Resources II Lic: 410 17th St 1100: Denver Co 80202-4424

Date	Ticket	Description	Quantity	U/M	F
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194163 <i>lip</i>			
		<b>Ticket Total</b>			
08/19/15	2438284	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard	17.00	YDS	
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194161 <i>lip</i>	17.00	YDS	
		<b>Ticket Total</b>			
08/19/15	2438286	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard	17.00	YDS	
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194162 <i>lip</i>	17.00	YDS	
		<b>Ticket Total</b>			
08/19/15	2438290	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard	17.00	YDS	
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194159 <i>lip</i>	17.00	YDS	
		<b>Ticket Total</b>			
08/19/15	2438323	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard	17.00	YDS	
		Profile # 120980co Generator hrm resources ii, llc Manifest# 197057 <i>cow</i>	17.00	YDS	
		<b>Ticket Total</b> <i>S/B #194057</i>			
08/19/15	2438325	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard	17.00	YDS	
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194058 <i>cow</i>	17.00	YDS	
		<b>Ticket Total</b>			
08/19/15	2438335	Vehicle#: 1 Cont. Soil - petroleum	17.00	YDS	

9-11-15 @ 10:05 called about typo - they sd they just bill off of their ticket # - so



DENVER ARAPAHOE DISPOSAL SITE  
 PO BOX 43350  
 PHOENIX, AZ 85080

Customer:  
 Online WM ezPay ID:  
 Invoice Date:  
 Invoice Number:  
 Account Number:  
 Due Date:

Service Location: 306-15549 HRM Resources II Lic: 410 17th St 1100: Denver Co 80202-4424				
Date	Ticket	Description	Quantity	U/M
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc <i>Cow</i>		
		Manifest# 194059		
		<b>Ticket Total</b>		
08/19/15	2438346	Vehicle#: 1		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc <i>Cow</i>		
		Manifest# 194061		
		<b>Ticket Total</b>		
08/19/15	2438352	Vehicle#: 1		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc <i>Cow</i>		
		Manifest# 194060		
		<b>Ticket Total</b>		
08/19/15	2438382	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc <i>Cow</i>		
		Manifest# 194062		
		<b>Ticket Total</b>		
08/19/15	2438385	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources II, llc <i>Lip</i>		
		Manifest# 194166		
		<b>Ticket Total</b>		
08/19/15	2438386	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc <i>Lip</i>		
		Manifest# 194167		

0000198-00000003-0001865

**Service Location: 306-15549 HRM Resources II Lic: 410 17th St 1100: Denver Co 80202-4424**

Date	Ticket	Description	Quantity	U/M
<b>Ticket Total</b>				
08/19/15	243B406	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194069		
<b>Ticket Total</b>				
08/19/15	243B408	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194063		
<b>Ticket Total</b>				
08/19/15	243B412	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194064		
<b>Ticket Total</b>				
08/19/15	243B416	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194065		
<b>Ticket Total</b>				
08/19/15	243B427	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194066		
<b>Ticket Total</b>				
08/19/15	243B429	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS



DENVER ARAPAHOE DISPOSAL SITE  
 PO BOX 43350  
 PHOENIX, AZ 85080

Customer:  
 Online WM ezPay ID:  
 Invoice Date:  
 Invoice Number:  
 Account Number:  
 Due Date:

Service Location: 306-15549 HRM Resources II, LLC: 410 17th St 1100: Denver Co 80202-4424				
Date	Ticket	Description	Quantity	U/M
		Profile # 120980co Generator hrm resources ii, llc Manifest# 194067 <b>Ticket Total</b>		
08/19/15	2438436	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194070 <b>Ticket Total</b>	17.00    17.00 17.00	YDS YDS YDS YDS
08/19/15	2438444	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194071 <b>Ticket Total</b>	17.00    17.00	YDS YDS YDS YDS
08/20/15	2438872	Vehicle#: 2 Manifest # 120980co Profile # 120980co Generator hrm resources ii, llc <b>Ticket Total</b>	50.00	ECH
08/20/15	2438898	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194236 <b>Ticket Total</b>	17.00    17.00	YDS YDS YDS YDS
08/20/15	2438934	Vehicle#: 1 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard Profile # 120980co Generator hrm resources ii, llc Manifest# 194234 <b>Ticket Total</b>	17.00    17.00	YDS YDS YDS YDS
08/20/15	2438936	Vehicle#: 2 Cont. Soil - petroleum Haz-substance response fee yards Environmental fee - yard Fuel surcharge per yard	17.00    17.00	YD: YD YD YD

0000198-0000004-0001867



DENVER ARAPAHOE DISPOSAL SITE  
 PO BOX 43350  
 PHOENIX, AZ 85080

Customer:  
 Online WM ezPay ID:  
 Invoice Date:  
 Invoice Number:  
 Account Number:  
 Due Date:

Service Location: 306-15549 HRM Resources li Llc: 410 17th St 1100: Denver Co 80202-4424				
Date	Ticket	Description	Quantity	U/M
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194068		
		<b>Ticket Total</b>		
08/20/15	2439040	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194237		
		<b>Ticket Total</b>		
08/20/15	2439043	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194210		
		<b>Ticket Total</b>		
08/20/15	2439044	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YDS
		Environmental fee - yard	17.00	YDS
		Fuel surcharge per yard	17.00	YDS
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194216		
		<b>Ticket Total</b>		
08/20/15	2439045	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	YDS
		Haz-substance response fee yards		YD
		Environmental fee - yard	17.00	YD
		Fuel surcharge per yard	17.00	YD
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194213		
		<b>Ticket Total</b>		
08/20/15	2439048	Vehicle#: 2		
		Cont. Soil - petroleum	17.00	Y
		Haz-substance response fee yards		Y
		Environmental fee - yard	17.00	Y
		Fuel surcharge per yard	17.00	Y
		Profile # 120980co		
		Generator hrm resources ii, llc		
		Manifest# 194211		

0000198-0000005-0001868

**From everyday collection to environmental protection,  
 Think Green. Think Waste Management.**  
 FOR CHANGE OF ADDRESS OR ANY SERVICE ISSUES CONTACT NUMBER ON PAGE

**Appendix D**  
**Lab Report**



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

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

## Report Summary

Thursday July 09, 2015

Report Number: L773729

Samples Received: 06/26/15

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.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



**YOUR LAB OF CHOICE**

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

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

July 09, 2015

Date Received : June 26, 2015  
 Description :  
 Sample ID : COWLES-C-1  
 Collected By : DK Nicholson  
 Collection Date : 06/25/15 11:10

ESC Sample # : L773729-01  
 Site ID :  
 Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.54	0.100	su	9045D	06/30/15	1
Sodium Adsorption Ratio	3.6			Calc.	07/01/15	1
Specific Conductance	470		umhos/cm	9050AMod	06/27/15	1
Benzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Toluene	BDL	0.025	mg/kg	8021	07/07/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	07/07/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	07/07/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.8		% Rec.	8015	07/07/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	07/07/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	BDL	4.0	mg/kg	8015	07/02/15	1
C28-C40 Oil Range	BDL	4.0	mg/kg	8015	07/02/15	1
Surrogate Recovery						
o-Terphenyl	95.3		% Rec.	8015	07/02/15	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: 07/09/15 10:50 Printed: 07/09/15 12:57  
 L773729-01 (PH) - 9.54 at 21.4c



**YOUR LAB OF CHOICE**

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

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

July 09, 2015

Date Received : June 26, 2015  
 Description :

ESC Sample # : L773729-02

Sample ID : COWLES-C-2

Site ID :

Collected By : DK Nicholson  
 Collection Date : 06/25/15 11:20

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.59	0.100	su	9045D	06/30/15	1
Sodium Adsorption Ratio	3.9			Calc.	07/01/15	1
Specific Conductance	700		umhos/cm	9050AMod	06/27/15	1
Benzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Toluene	BDL	0.025	mg/kg	8021	07/07/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	07/07/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	07/07/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.3		% Rec.	8015	07/07/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	07/07/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	6.4	4.0	mg/kg	8015	07/02/15	1
C28-C40 Oil Range	4.2	4.0	mg/kg	8015	07/02/15	1
Surrogate Recovery						
o-Terphenyl	96.1		% Rec.	8015	07/02/15	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: 07/09/15 10:50 Printed: 07/09/15 12:57  
 L773729-02 (PH) - 9.59 at 21.4c



**YOUR LAB OF CHOICE**

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

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

July 09, 2015

Date Received : June 26, 2015  
 Description :

ESC Sample # : L773729-03

Sample ID : COWLES-C-3

Site ID :

Collected By : DK Nicholson  
 Collection Date : 06/25/15 11:25

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.19	0.100	su	9045D	06/30/15	1
Sodium Adsorption Ratio	4.7			Calc.	07/01/15	1
Specific Conductance	500		umhos/cm	9050AMod	06/27/15	1
Benzene	0.0027	0.0025	mg/kg	8021	07/07/15	5
Toluene	BDL	0.025	mg/kg	8021	07/07/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Total Xylene	0.41	0.0075	mg/kg	8021	07/07/15	5
TPH (GC/FID) Low Fraction	83.	5.0	mg/kg	8015	07/09/15	50
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	104.		% Rec.	8015	07/09/15	1
a,a,a-Trifluorotoluene(PID)	82.4		% Rec.	8021	07/07/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	9300	200	mg/kg	8015	07/02/15	50
C28-C40 Oil Range	3100	200	mg/kg	8015	07/02/15	50
Surrogate Recovery						
o-Terphenyl	31.2		% Rec.	8015	07/02/15	50

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: 07/09/15 10:50 Printed: 07/09/15 12:57  
 L773729-03 (PH) - 9.19 at 22.0c



**YOUR LAB OF CHOICE**

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

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

July 09, 2015

Date Received : June 26, 2015  
 Description :

ESC Sample # : L773729-04

Sample ID : COWLES-C-4

Site ID :

Collected By : DK Nicholson  
 Collection Date : 06/25/15 11:35

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.54	0.100	su	9045D	06/30/15	1
Sodium Adsorption Ratio	4.0			Calc.	07/01/15	1
Specific Conductance	490		umhos/cm	9050AMod	06/27/15	1
Benzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Toluene	BDL	0.025	mg/kg	8021	07/07/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	07/07/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	07/09/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	103.		% Rec.	8015	07/09/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	07/07/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	BDL	4.0	mg/kg	8015	07/02/15	1
C28-C40 Oil Range	BDL	4.0	mg/kg	8015	07/02/15	1
Surrogate Recovery						
o-Terphenyl	89.2		% Rec.	8015	07/02/15	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: 07/09/15 10:50 Printed: 07/09/15 12:57  
 L773729-04 (PH) - 9.54 at 21.4c



**YOUR LAB OF CHOICE**

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

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

July 09, 2015

Date Received : June 26, 2015  
 Description :  
 Sample ID : COWLES-C-5  
 Collected By : DK Nicholson  
 Collection Date : 06/25/15 11:40

ESC Sample # : L773729-05  
 Site ID :  
 Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
pH	9.30	0.100	su	9045D	06/30/15	1
Sodium Adsorption Ratio	3.0			Calc.	07/01/15	1
Specific Conductance	580		umhos/cm	9050AMod	06/27/15	1
Benzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Toluene	BDL	0.025	mg/kg	8021	07/07/15	5
Ethylbenzene	BDL	0.0025	mg/kg	8021	07/07/15	5
Total Xylene	BDL	0.0075	mg/kg	8021	07/07/15	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	8015	07/07/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.6		% Rec.	8015	07/07/15	1
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	07/07/15	1
Diesel and Oil Ranges						
C10-C28 Diesel Range	BDL	4.0	mg/kg	8015	07/02/15	1
C28-C40 Oil Range	BDL	4.0	mg/kg	8015	07/02/15	1
Surrogate Recovery						
o-Terphenyl	91.5		% Rec.	8015	07/02/15	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: 07/09/15 10:50 Printed: 07/09/15 12:57  
 L773729-05 (PH) - 9.30 at 21.3c

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L773729-03	WG799199	SAMP	o-Terphenyl	R3047445	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.



**YOUR LAB OF CHOICE**

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

Quality Assurance Report  
 Level II

L773729

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 09, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Specific Conductance	1.50	umhos/cm			WG798850	06/27/15 12:14
C10-C28 Diesel Range	< 4	mg/kg			WG799199	07/02/15 17:05
C28-C40 Oil Range	< 4	mg/kg			WG799199	07/02/15 17:05
o-Terphenyl		% Rec.	102.0	50-150	WG799199	07/02/15 17:05
Benzene	< .0005	mg/kg			WG800722	07/07/15 11:03
Ethylbenzene	< .0005	mg/kg			WG800722	07/07/15 11:03
Toluene	< .005	mg/kg			WG800722	07/07/15 11:03
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG800722	07/07/15 11:03
Total Xylene	< .0015	mg/kg			WG800722	07/07/15 11:03
a,a,a-Trifluorotoluene(FID)		% Rec.	97.20	59-128	WG800722	07/07/15 11:03
a,a,a-Trifluorotoluene(PID)		% Rec.	103.0	54-144	WG800722	07/07/15 11:03
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG800783	07/08/15 17:11
a,a,a-Trifluorotoluene(FID)		% Rec.	104.0	59-128	WG800783	07/08/15 17:11
a,a,a-Trifluorotoluene(PID)		% Rec.	97.40	54-144	WG800783	07/08/15 17:11

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Specific Conductance	umhos/cm	81.0	83.0	2.44	20	L773457-01	WG798850
Specific Conductance	umhos/cm	580.	580.	0.516	20	L773729-05	WG798850
pH	su	8.69	8.71	0.230	1	L773607-01	WG799099
pH	su	8.69	8.69	0.00	1	L773887-05	WG799099

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Specific Conductance	umhos/cm	534	540.	101.	85-115	WG798850
pH	su	5.63	5.62	99.8	98.2-101.8	WG799099
C10-C28 Diesel Range	mg/kg	60	44.2	73.6	50-100	WG799199
o-Terphenyl				106.0	50-150	WG799199
Benzene	mg/kg	.05	0.0434	86.8	70-130	WG800722
Ethylbenzene	mg/kg	.05	0.0472	94.4	70-130	WG800722
Toluene	mg/kg	.05	0.0457	91.4	70-130	WG800722
Total Xylene	mg/kg	.15	0.145	96.4	70-130	WG800722
a,a,a-Trifluorotoluene(FID)				97.20	59-128	WG800722
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG800722
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.05	91.7	63.5-137	WG800722
a,a,a-Trifluorotoluene(FID)				94.90	59-128	WG800722
a,a,a-Trifluorotoluene(PID)				109.0	54-144	WG800722
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.55	101.	63.5-137	WG800783
a,a,a-Trifluorotoluene(FID)				104.0	59-128	WG800783
a,a,a-Trifluorotoluene(PID)				112.0	54-144	WG800783

\* 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  
 Dave Nicholson  
 410 17th Street, Suite 1100

Denver, CO 80202

Quality Assurance Report  
 Level II

L773729

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 09, 2015

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Specific Conductance	umhos/	540.	540.	101.	85-115	0.0	20	WG798850
pH	su	5.62	5.62	100.	98.2-101.8	0.00	20	WG799099
C10-C28 Diesel Range o-Terphenyl	mg/kg	43.8	44.2	73.0 109.0	50-100 50-150	0.930	20	WG799199 WG799199
Benzene	mg/kg	0.0408	0.0434	82.0	70-130	6.30	20	WG800722
Ethylbenzene	mg/kg	0.0436	0.0472	87.0	70-130	7.96	20	WG800722
Toluene	mg/kg	0.0420	0.0457	84.0	70-130	8.38	20	WG800722
Total Xylene	mg/kg	0.133	0.145	88.0	70-130	8.42	20	WG800722
a,a,a-Trifluorotoluene(FID)				96.80	59-128			WG800722
a,a,a-Trifluorotoluene(PID)				101.0	54-144			WG800722
TPH (GC/FID) Low Fraction	mg/kg	4.92	5.05	89.0	63.5-137	2.57	20	WG800722
a,a,a-Trifluorotoluene(FID)				94.80	59-128			WG800722
a,a,a-Trifluorotoluene(PID)				110.0	54-144			WG800722
TPH (GC/FID) Low Fraction	mg/kg	6.16	5.55	112.	63.5-137	10.4	20	WG800783
a,a,a-Trifluorotoluene(FID)				106.0	59-128			WG800783
a,a,a-Trifluorotoluene(PID)				113.0	54-144			WG800783

Analyte	Units	MS Res	Matrix Spike			Limit	Ref Samp	Batch
			Ref Res	TV	% Rec			
C10-C28 Diesel Range o-Terphenyl	mg/kg	44.9	0.471	60	74.0 106.0	50-100 50-150	L773729-01	WG799199 WG799199
Benzene	mg/kg	0.180	0.000223	.05	72.0	49.7-127	L773729-05	WG800722
Ethylbenzene	mg/kg	0.183	0.0	.05	73.0	40.8-141	L773729-05	WG800722
Toluene	mg/kg	0.181	0.000485	.05	72.0	49.8-132	L773729-05	WG800722
Total Xylene	mg/kg	0.553	0.000722	.15	74.0	41.2-140	L773729-05	WG800722
a,a,a-Trifluorotoluene(FID)					95.40	59-128		WG800722
a,a,a-Trifluorotoluene(PID)					99.60	54-144		WG800722
TPH (GC/FID) Low Fraction	mg/kg	16.1	0.110	5.5	58.0	28.5-138	L773729-05	WG800722
a,a,a-Trifluorotoluene(FID)					80.00	59-128		WG800722
a,a,a-Trifluorotoluene(PID)					107.0	54-144		WG800722
TPH (GC/FID) Low Fraction	mg/kg	22.7	0.0	5.5	83.0	28.5-138	L773898-12	WG800783
a,a,a-Trifluorotoluene(FID)					102.0	59-128		WG800783
a,a,a-Trifluorotoluene(PID)					111.0	54-144		WG800783

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
C10-C28 Diesel Range o-Terphenyl	mg/kg	49.7	44.9	82.1 108.0	50-100 50-150	10.2	20	L773729-01	WG799199 WG799199
Benzene	mg/kg	0.185	0.180	74.1	49.7-127	2.76	23.5	L773729-05	WG800722
Ethylbenzene	mg/kg	0.188	0.183	75.1	40.8-141	2.79	23.8	L773729-05	WG800722
Toluene	mg/kg	0.186	0.181	74.2	49.8-132	2.84	23.5	L773729-05	WG800722
Total Xylene	mg/kg	0.565	0.553	75.2	41.2-140	2.07	23.7	L773729-05	WG800722
a,a,a-Trifluorotoluene(FID)				96.20	59-128				WG800722
a,a,a-Trifluorotoluene(PID)				100.0	54-144				WG800722

\* 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  
 Dave Nicholson  
 410 17th Street, Suite 1100  
 Denver, CO 80202

Quality Assurance Report  
 Level II  
 L773729

12065 Lebanon Rd.  
 Mt. Juliet, TN 37122  
 (615) 758-5858  
 1-800-767-5859  
 Fax (615) 758-5859  
 Tax I.D. 62-0814289  
 Est. 1970

July 09, 2015

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
TPH (GC/FID) Low Fraction	mg/kg	15.6	16.1	56.3	28.5-138	3.10	23.6	L773729-05		WG800722
a,a,a-Trifluorotoluene(FID)				82.00	59-128					WG800722
a,a,a-Trifluorotoluene(PID)				107.0	54-144					WG800722
TPH (GC/FID) Low Fraction	mg/kg	24.3	22.7	88.5	28.5-138	6.78	23.6	L773898-12		WG800783
a,a,a-Trifluorotoluene(FID)				101.0	59-128					WG800783
a,a,a-Trifluorotoluene(PID)				112.0	54-144					WG800783

Batch number /Run number / Sample number cross reference

WG798850: R3046435: L773729-01 02 03 04 05  
 WG799099: R3047014: L773729-01 02 03 04 05  
 WG799293: R3047101: L773729-01 02 03 04 05  
 WG799199: R3047445: L773729-01 02 03 04 05  
 WG800722: R3048268: L773729-01 02 03 04 05  
 WG800783: R3048520: L773729-03 04

\* \* 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**

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

Denver, CO 80202

Quality Assurance Report  
Level II

L773729

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 09, 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.