

**Skim Pit Closure Report
for the
State No. 2-30 Lease
Adams County, Colorado
COGCC Remediation #9854**

Pit #104698

Prepared for:

Mr. Terry Pape
HRM Resources II, LLC
410 17th Street, Suite 1600
Denver, CO 80202



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

October 2016

1.0 INTRODUCTION

Nicholson GeoSolutions LLC was retained by HRM Resources II, LLC to conduct sampling during skim pit closure at the State No. 2-30 Lease, an active oil well site located in the SE¹/₄ NW¹/₄ Section 30, T2S, R62W, Adams County, Colorado. Remediation activities were conducted in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Rules.

The site consists of a wellhead, one unlined skim pit, a separator, and a tank battery with two 400-bbl storage tanks. The skim pit was excavated and associated impacted soil was stockpiled on site for treatment. Closure of the skim pit is being performed by Jayhawk Grading, Inc.

This report provides the results of documentation and sampling activities conducted by Nicholson GeoSolutions on October 3rd, 2016.

2.0 DOCUMENTATION AND SAMPLING ACTIVITIES

The following sections discuss the documentation and sampling activities conducted by Nicholson GeoSolutions. Photographs that document skim pit at the time of sampling are included in Appendix A.

2.1 Sampling Activities

Impacted soils were excavated and stockpiled on site pending land treatment. Excavation of the unlined skim pit was conducted by Jayhawk. The metal cage was removed from the site and recycled. Petroleum-contaminated soil was excavated to an approximate depth of 40 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 B.

Five confirmation samples were collected on October 3rd, 2016 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). Table 1 provides the confirmation sample results.

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)
S230-C-1 (east wall – 20')	8.47	12.5	1.29	All ND	<0.1	4.68 J	<4.0
S230-C-2 (north wall – 20')	8.44	7.08	1.35	All ND	<0.1	<4.0 UJ	<4.0
S230-C-3 (west wall – 20')	9.29	11.6	1.23	All ND	<0.1	<4.0 UJ	<4.0
S230-C-4 (south wall – 20')	8.80	56.7	2.18	All ND	<0.1	5.44 J	<4.0
S230-C-5 (bottom – 40')	7.89	7.99	3.03	All ok	0.203	150 J	51.6
Table 910-1 Standard	6-9	<12	<4.0	Various	500 ¹	500 ¹	500 ¹

Bold values exceed standards

¹The standard is 500 mg/kg for the combined TEPH/TVPH results ND = Not detected

J = estimated concentration UJ = estimated detection limit

All confirmation sample results were below the COGCC standards except for pH for sample S230-C-3 and SAR for samples S230-C-1 and S230-C-4.

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.

For lab report L864048, all laboratory control sample (LCS), surrogate, laboratory duplicate, and matrix spike/matrix spike duplicate (MS/MSD) recoveries were within the laboratory control limits, except for the MS/MSD results for BTEX (RPD ranged from 34.7% to 37.5%), and TEPH-diesel (MS = 13.4%). The RPD between the LCS and LCSD was also high for TEPH-diesel range at 26.5%. BTEX and TEPH results were qualified as estimated “J” for positive results and not detected at an estimated detection limit “UJ” for non-detect results.

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



GeoSolutions
NICHOLSON

Legend

- Skim Pit (39.848461, -104.370016)
- Confirmation Sample Location
- Limits of Skim Pit Excavation

0 37.5 75 Feet 1" = 75'

HRM Resources, LLC

State 2-30
Lease Skim
Pit Closure

Figure 1
October
2016

APPENDIX A

Photographs



Skim pit prior to excavation



Excavation of impacted soil



Impacted soil beneath skim pit



Excavation near the limits of long-reach



Final skim pit excavation looking east



Final skim pit excavation looking southwest



Final skim pit excavation looking south



Final skim pit excavation and overburden soil

APPENDIX B
Laboratory Report

HRM Resources, LLC - Denver, CO

Sample Delivery Group: L864048

Samples Received: 10/05/2016

Project Number:

Description: State 2-30

Report To: Dave Nicholson
410 17th St., Ste. 1600
Denver, CO 80202

Entire Report Reviewed By:



Mark W. Beasley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



¹Cp: Cover Page	1
²Tc: Table of Contents	2
³Ss: Sample Summary	3
⁴Cn: Case Narrative	4
⁵Sr: Sample Results	5
S230-C-1 L864048-01	5
S230-C-2 L864048-02	6
S230-C-3 L864048-03	7
S230-C-4 L864048-04	8
S230-C-5 L864048-05	9
⁶Qc: Quality Control Summary	10
Wet Chemistry by Method 9045D	10
Wet Chemistry by Method 9050AMod	11
Volatile Organic Compounds (GC) by Method 8015/8021	12
Semi-Volatile Organic Compounds (GC) by Method 8015	14
⁷Gl: Glossary of Terms	15
⁸Al: Accreditations & Locations	16
⁹Sc: Chain of Custody	17





S230-C-1 L864048-01 Solid

Collected by
D. Nicholson

Collected date/time
10/03/16 14:30

Received date/time
10/05/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG914705	1	10/07/16 09:32	10/11/16 03:12	LTB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG915441	1	10/08/16 21:05	10/10/16 23:18	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG915478	1	10/10/16 22:00	10/11/16 04:16	BMB
Wet Chemistry by Method 9045D	WG914330	1	10/10/16 13:12	10/10/16 16:22	MHM
Wet Chemistry by Method 9050AMod	WG914497	1	10/07/16 00:40	10/07/16 00:40	JLJ

¹ Cp

² Tc

³ Ss

⁴ Cn

S230-C-2 L864048-02 Solid

Collected by
D. Nicholson

Collected date/time
10/03/16 14:40

Received date/time
10/05/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG914705	1	10/07/16 09:32	10/11/16 03:14	LTB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG915441	1	10/08/16 21:05	10/10/16 23:34	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG915478	1	10/08/16 13:29	10/11/16 04:58	BMB
Wet Chemistry by Method 9045D	WG914330	1	10/10/16 13:12	10/10/16 16:22	MHM
Wet Chemistry by Method 9050AMod	WG914497	1	10/07/16 00:40	10/07/16 00:40	JLJ

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

S230-C-3 L864048-03 Solid

Collected by
D. Nicholson

Collected date/time
10/03/16 14:50

Received date/time
10/05/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG914705	1	10/07/16 09:32	10/11/16 03:17	LTB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG915441	1	10/08/16 21:05	10/10/16 23:51	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG915478	1	10/08/16 13:29	10/11/16 05:19	BMB
Wet Chemistry by Method 9045D	WG914330	1	10/10/16 13:12	10/10/16 16:22	MHM
Wet Chemistry by Method 9050AMod	WG914497	1	10/07/16 00:40	10/07/16 00:40	JLJ

⁹ Sc

S230-C-4 L864048-04 Solid

Collected by
D. Nicholson

Collected date/time
10/03/16 15:00

Received date/time
10/05/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG914705	1	10/07/16 09:32	10/11/16 03:20	LTB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG915441	1	10/08/16 21:05	10/11/16 00:08	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG915478	1	10/10/16 22:00	10/11/16 05:40	BMB
Wet Chemistry by Method 9045D	WG914330	1	10/10/16 13:12	10/10/16 16:22	MHM
Wet Chemistry by Method 9050AMod	WG914497	1	10/07/16 00:40	10/07/16 00:40	JLJ

S230-C-5 L864048-05 Solid

Collected by
D. Nicholson

Collected date/time
10/03/16 15:10

Received date/time
10/05/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG914705	1	10/07/16 09:32	10/11/16 03:23	LTB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG915441	1	10/08/16 21:05	10/11/16 00:25	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG915478	1	10/08/16 13:29	10/11/16 06:01	BMB
Wet Chemistry by Method 9045D	WG914330	1	10/10/16 13:12	10/10/16 16:22	MHM
Wet Chemistry by Method 9050AMod	WG914497	1	10/07/16 00:40	10/07/16 00:40	JLJ



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Technical Service Representative

Sample Handling and Receiving

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

ESC Sample ID	Project Sample ID	Method
L864048-01	S230-C-1	9045D
L864048-02	S230-C-2	9045D
L864048-03	S230-C-3	9045D
L864048-04	S230-C-4	9045D
L864048-05	S230-C-5	9045D

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.5		1	10/11/2016 03:12	WG914705

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.47		1	10/10/2016 16:22	WG914330

Sample Narrative:

9045D L864048-01 WG914330: 8.47 at 20.0c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		1	10/07/2016 00:40	WG914497

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND	J3	0.000500	1	10/11/2016 04:16	WG915478
Toluene	ND	J3	0.00500	1	10/11/2016 04:16	WG915478
Ethylbenzene	ND	J3	0.000500	1	10/11/2016 04:16	WG915478
Total Xylene	ND	J3	0.00150	1	10/11/2016 04:16	WG915478
TPH (GC/FID) Low Fraction	ND		0.100	1	10/11/2016 04:16	WG915478
(S) a,a,a-Trifluorotoluene(FID)	104		59.0-128		10/11/2016 04:16	WG915478
(S) a,a,a-Trifluorotoluene(PID)	106		54.0-144		10/11/2016 04:16	WG915478

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.68	J3	4.00	1	10/10/2016 23:18	WG915441
C28-C40 Oil Range	ND		4.00	1	10/10/2016 23:18	WG915441
(S) o-Terphenyl	110		50.0-150		10/10/2016 23:18	WG915441



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	7.08		1	10/11/2016 03:14	WG914705

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.44		1	10/10/2016 16:22	WG914330

Sample Narrative:

9045D L864048-02 WG914330: 8.44 at 20.6c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		1	10/07/2016 00:40	WG914497

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	10/11/2016 04:58	WG915478
Toluene	ND		0.00500	1	10/11/2016 04:58	WG915478
Ethylbenzene	ND		0.000500	1	10/11/2016 04:58	WG915478
Total Xylene	ND		0.00150	1	10/11/2016 04:58	WG915478
TPH (GC/FID) Low Fraction	ND		0.100	1	10/11/2016 04:58	WG915478
(S) a,a,a-Trifluorotoluene(FID)	105		59.0-128		10/11/2016 04:58	WG915478
(S) a,a,a-Trifluorotoluene(PID)	105		54.0-144		10/11/2016 04:58	WG915478

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	4.00	1	10/10/2016 23:34	WG915441
C28-C40 Oil Range	ND		4.00	1	10/10/2016 23:34	WG915441
(S) o-Terphenyl	107		50.0-150		10/10/2016 23:34	WG915441



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	11.6		1	10/11/2016 03:17	WG914705

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.29		1	10/10/2016 16:22	WG914330

Sample Narrative:

9045D L864048-03 WG914330: 9.29 at 20.5c

Wet Chemistry by Method 9050AMod

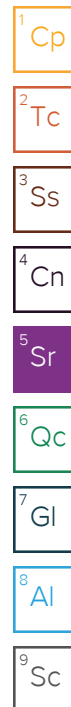
Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		1	10/07/2016 00:40	WG914497

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	10/11/2016 05:19	WG915478
Toluene	ND		0.00500	1	10/11/2016 05:19	WG915478
Ethylbenzene	ND		0.000500	1	10/11/2016 05:19	WG915478
Total Xylene	ND		0.00150	1	10/11/2016 05:19	WG915478
TPH (GC/FID) Low Fraction	ND		0.100	1	10/11/2016 05:19	WG915478
(S) a,a,a-Trifluorotoluene(FID)	104		59.0-128		10/11/2016 05:19	WG915478
(S) a,a,a-Trifluorotoluene(PID)	105		54.0-144		10/11/2016 05:19	WG915478

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J3	4.00	1	10/10/2016 23:51	WG915441
C28-C40 Oil Range	ND		4.00	1	10/10/2016 23:51	WG915441
(S) o-Terphenyl	99.4		50.0-150		10/10/2016 23:51	WG915441





Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	56.7		1	10/11/2016 03:20	WG914705

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.80		1	10/10/2016 16:22	WG914330

Sample Narrative:

9045D L864048-04 WG914330: 8.80 at 20.6c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	2180		1	10/07/2016 00:40	WG914497

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	10/11/2016 05:40	WG915478
Toluene	ND		0.00500	1	10/11/2016 05:40	WG915478
Ethylbenzene	ND		0.000500	1	10/11/2016 05:40	WG915478
Total Xylene	ND		0.00150	1	10/11/2016 05:40	WG915478
TPH (GC/FID) Low Fraction	ND		0.100	1	10/11/2016 05:40	WG915478
(S) a,a,a-Trifluorotoluene(FID)	104		59.0-128		10/11/2016 05:40	WG915478
(S) a,a,a-Trifluorotoluene(PID)	105		54.0-144		10/11/2016 05:40	WG915478

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.44	J3	4.00	1	10/11/2016 00:08	WG915441
C28-C40 Oil Range	ND		4.00	1	10/11/2016 00:08	WG915441
(S) o-Terphenyl	102		50.0-150		10/11/2016 00:08	WG915441

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	7.99		1	10/11/2016 03:23	WG914705

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.89		1	10/10/2016 16:22	WG914330

Sample Narrative:

9045D L864048-05 WG914330: 7.89 at 20.4c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		1	10/07/2016 00:40	WG914497

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	10/11/2016 06:01	WG915478
Toluene	ND		0.00500	1	10/11/2016 06:01	WG915478
Ethylbenzene	ND		0.000500	1	10/11/2016 06:01	WG915478
Total Xylene	0.00202		0.00150	1	10/11/2016 06:01	WG915478
TPH (GC/FID) Low Fraction	0.203		0.100	1	10/11/2016 06:01	WG915478
(S) a,a,a-Trifluorotoluene(FID)	105		59.0-128		10/11/2016 06:01	WG915478
(S) a,a,a-Trifluorotoluene(PID)	105		54.0-144		10/11/2016 06:01	WG915478

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	150	J3 J6	4.00	1	10/11/2016 00:25	WG915441
C28-C40 Oil Range	51.6		4.00	1	10/11/2016 00:25	WG915441
(S) o-Terphenyl	75.7		50.0-150		10/11/2016 00:25	WG915441



L863996-01 Original Sample (OS) • Duplicate (DUP)

(OS) L863996-01 10/10/16 16:22 • (DUP) WG914330-3 10/10/16 16:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.83	9.81	1	0.204		1

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

L864126-16 Original Sample (OS) • Duplicate (DUP)

(OS) L864126-16 10/10/16 16:22 • (DUP) WG914330-4 10/10/16 16:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.71	7.69	1	0.260		1

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG914330-1 10/10/16 16:22 • (LCSD) WG914330-2 10/10/16 16:22

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	su	su	su	%	%	%			%	%
pH	6.11	6.03	6.04	98.7	98.9	98.4-102			0.166	1

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) WG914497-1 10/07/16 00:40				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	0.960			

L863996-01 Original Sample (OS) • Duplicate (DUP)

(OS) L863996-01 10/07/16 00:40 • (DUP) WG914497-4 10/07/16 00:40						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	2050	2050	1	0.146		20

L864126-02 Original Sample (OS) • Duplicate (DUP)

(OS) L864126-02 10/07/16 00:40 • (DUP) WG914497-5 10/07/16 00:40						
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	594	610	1	2.66		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG914497-2 10/07/16 00:40 • (LCSD) WG914497-3 10/07/16 00:40									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD
Analyte	umhos/cm	umhos/cm	umhos/cm	%	%	%			RPD Limits
Specific Conductance	542	548	546	101	101	90.0-110			0.366 20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3169645-5 10/11/16 00:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000161	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID) 105			59.0-128	
(S) a,a,a-Trifluorotoluene(PID) 105			54.0-144	

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3169645-1 10/10/16 22:53 • (LCSD) R3169645-2 10/10/16 23:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0398	0.0420	79.5	84.0	70.0-130			5.48	20
Toluene	0.0500	0.0419	0.0440	83.7	88.1	70.0-130			5.07	20
Ethylbenzene	0.0500	0.0422	0.0445	84.4	89.0	70.0-130			5.31	20
Total Xylene	0.150	0.133	0.140	89.0	93.4	70.0-130			4.82	20
(S) a,a,a-Trifluorotoluene(FID)				104	104	59.0-128				
(S) a,a,a-Trifluorotoluene(PID)				108	108	54.0-144				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3169645-3 10/10/16 23:35 • (LCSD) R3169645-4 10/10/16 23:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.27	6.50	114	118	63.5-137			3.57	20
(S) a,a,a-Trifluorotoluene(FID)				109	107	59.0-128				
(S) a,a,a-Trifluorotoluene(PID)				112	112	54.0-144				

L864048-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L864048-01 10/11/16 04:16 • (MS) R3169645-6 10/11/16 02:31 • (MSD) R3169645-7 10/11/16 02:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	ND	0.0470	0.0322	93.8	64.1	1	49.7-127		J3	37.5	23.5
Toluene	0.0500	ND	0.0490	0.0339	97.6	67.4	1	49.8-132		J3	36.4	23.5
Ethylbenzene	0.0500	ND	0.0468	0.0330	93.6	66.0	1	40.8-141		J3	34.7	23.8
Total Xylene	0.150	ND	0.147	0.103	97.8	68.3	1	41.2-140		J3	35.3	23.7
(S) a,a,a-Trifluorotoluene(FID)					104	104		59.0-128				



L864048-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L864048-01 10/11/16 04:16 • (MS) R3169645-6 10/11/16 02:31 • (MSD) R3169645-7 10/11/16 02:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(PID)					107	107		54.0-144				

L864048-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L864048-01 10/11/16 04:16 • (MS) R3169645-8 10/11/16 03:13 • (MSD) R3169645-9 10/11/16 03:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	4.42	4.09	80.4	74.3	1	28.5-138			7.94	23.6
(S) a,a,a-Trifluorotoluene(FID)					102	98.9		59.0-128				
(S) a,a,a-Trifluorotoluene(PID)					107	106		54.0-144				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3169430-1 10/10/16 10:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	120			50.0-150

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3169430-2 10/10/16 10:49 • (LCSD) R3169430-3 10/10/16 11:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	60.0	38.6	50.3	64.3	83.9	50.0-150		J3	26.5	20
(S) o-Terphenyl				122	122	50.0-150				

L864048-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L864048-05 10/11/16 00:25 • (MS) R3169430-4 10/11/16 00:41 • (MSD) R3169430-5 10/11/16 00:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	60.0	150	158	184	13.4	57.3	1	50.0-150	J6		15.4	20
(S) o-Terphenyl					86.0	82.2		50.0-150				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

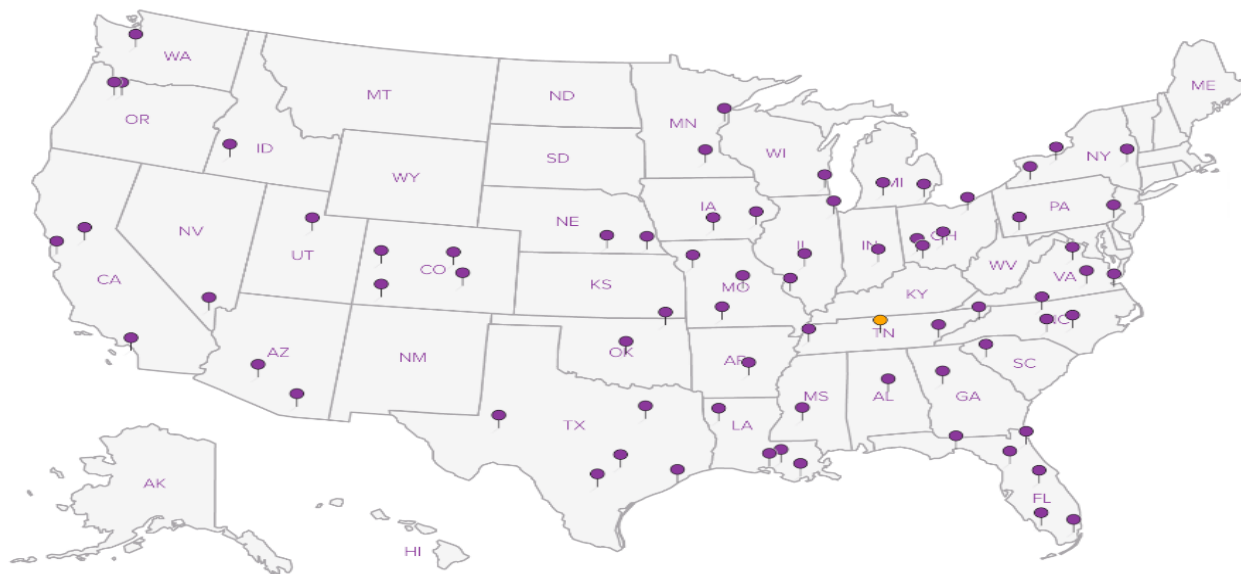
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

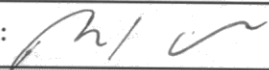


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YOUR LAB OF CHOICE

Cooler Receipt Form

Client: H K M R E S D C O	SDG#	664046		
Cooler Received/Opened On: 10/5/16	Temperature Upon Receipt:	3.6 °c		
Received By: Richard Hughes				
Signature: 				
Receipt Check List		Yes	No	N/A
Were custody seals on outside of cooler and intact?				<input checked="" type="checkbox"/>
Were custody papers properly filled out?		<input checked="" type="checkbox"/>		
Did all bottles arrive in good condition?		<input checked="" type="checkbox"/>		
Were correct bottles used for the analyses requested?		<input checked="" type="checkbox"/>		
Was sufficient amount of sample sent in each bottle?				<input checked="" type="checkbox"/>
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)				<input checked="" type="checkbox"/>
If applicable, was an observable VOA headspace present?				<input checked="" type="checkbox"/>
Non Conformance Generated. (If yes see attached NCF)				