Nicholson GeoSolutions LLC
3433 East Lake Drive
Centennial, CO 80121

June 21, 2018

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

Subject: Anderson No. 1 Landfarm Removal and Footprint Sampling Results
COGCC Remediation #9050

Dear Terry:

Nicholson GeoSolutions LLC was retained by HRM Resources II LLC (HRM) to conduct soil sampling of the landfarm footprint on the Anderson No. 1 lease, Washington County, Colorado. The landfarm material was removed and sent to the Denver Arapahoe Disposal (DADS) Landfill in Aurora, Colorado during May and early June 2018 by Jayhawk Grading, Inc. A total of 561 yards of impacted material was sent to the landfill. Appendix A provides the landfill gatehouse summaries.

Sampling of the landfarm footprint was initially conducted at four locations on June 6th, 2018. The locations of the footprint samples are shown on Figure 1. All footprint samples were analyzed for Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil range), BTEX (benzene, toluene, ethylbenzene, and xylenes), sodium adsorption ratio (SAR), pH, and conductivity to evaluate compliance with the COGCC Table 910-1 standards.

Table 1 provides a summary of the analytical results for the initial footprint samples. The laboratory report is contained in Appendix B. Three of the four initial samples slightl exceeded the standard for TPH. In response to these results, the landfarm areas that failed were ripped and regraded and three additional footprint samples collected from the same locations as the initial samples on June 13th, 2018. Table 2 provides the analytical results for these samples. All results were below the COGCC standards for and no further action is required at this site.

Nicholson GeoSolutions LLC

David K. Nicholson, P.G.
Principal Geologist

Table 1 Anderson No. 1 Landfarm Footprint Sample Results – June 6, 2018

	Table 910-1 Standards	Anderson-1	Anderson-2	Anderson-3	Anderson-4
TVPH – gasoline range	500[1]	**<0.1**	<0.1	**<0.1**	**<0.1**
TEPH – diesel and motor oil range		**530**	213.8	**514**	**603**
benzene	0.17	<0.0005	0.00131	<0.0005	0.000566
toluene	85	<0.005	<0.005	<0.005	<0.005
ethylbenzene	100	<0.0005	<0.0005	<0.0005	<0.0005
xylenes	175	<0.0015	<0.0015	<0.0015	<0.0015
pH	6-9	8.27	7.97	8.40	8.61
Specific Conductivity	<4 mmhos/cm	0.60	2.40	0.951	1.35
SAR	<12	3.04	4.43	5.47	**12.1**

[1]The standard is 500 for the combined total of TVPH and TEPH All units in mg/kg except where indicated

Table 2 Anderson No. 1 Additional Footprint Sample Results – June 13, 2018

	Table 910-1 Standards	Anderson-1	Anderson-3	Anderson-4
TVPH – gasoline range	500[1]	<0.1	<0.1	<0.1
TEPH – diesel and motor oil range		169.3	139.3	61.7
benzene	0.17	<0.0005	<0.0005	<0.0005
toluene	85	<0.005	<0.005	<0.005
ethylbenzene	100	<0.0005	<0.0005	<0.0005
xylenes	175	<0.0015	<0.0015	<0.0015
pH	6-9 units	7.81	7.64	7.74
Specific Conductivity	<4 mmhos/cm	0.766	1.03	0.728
SAR	<12	2.47	4.32	1.16

[1]The standard is 500 for the combined total of TVPH and TEPH All units in mg/kg except where indicated


1 ANDERSON
4
3
2
1
0.09
ac.
Legend
Landfarm Footprint Sample
Landfarm Cell (0.09 ac)
0
25
50
Feet
1 " = 50 '
GeoSolutions
NICHOLSON
HRM Resources II, LLC
Anderson No. 1
Landfarm Footprint
Sampling
Figure 1
May
2018

APPENDIX A
Landfill Gatehouse Summaries

App A_Anderson
HRM Resources II LLC

Ticket Date	Ticket ID	Cust Code	MAS Unique ID	Manifest	Profile	Truck	Material	Material Description	Origin	Rate Unit	Rate Qty	Yards
5/10/2018	3115565	0015549	150419453005	468896	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/10/2018	3115567	0015549	150419453005	468897	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/10/2018	3115646	0015549	150419453005	468899	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/11/2018	3116227	0015549	150419453005	468903	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/18/2018	3122237	0015549	150419453005	446419	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/18/2018	3122255	0015549	150419453005	446417	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/10/2018	3122442	0015549	150419453005	468902	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON 1	CYD	17	17
5/18/2018	3122542	0015549	150419453005	446464	120980CO	1	ContSoilPet-Cubic Yards	Cont. Soil - Petroleum	ANDERSON #1	CYD	17	17
												136

Customer Summary Report (legal)
Criteria: 05/20/2018 12:00 AMto06/16/2018 11:59 PM
Business Unit Name: S04012 - Denver Arapahoe Disposal (USA)
User: SLA
Date: Jun 21 2018, 12:15:06 PM
Operation Type: All
Customer Name: HRMRESOURCESIILLC(HRM RESOURCES II LLC)
Ticket Type: All
Customer Type: All
PMT Category: All

Ticket Date	Ticket ID	Cust Code	MAS Uniqu	Customer	Generator	Manifest	Profile	Truck	Material	Mat. Desc.	Origin	Rt.	Qty	Yards
6/5/2018	3136003	15549	419453005	HRM RESOU	125-HRMR	446376	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136008	15549	419453005	HRM RESOU	125-HRMR	446377	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136011	15549	419453005	HRM RESOU	125-HRMR	446378	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136014	15549	419453005	HRM RESOU	125-HRMR	446379	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136018	15549	419453005	HRM RESOU	125-HRMR	446382	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136143	15549	419453005	HRM RESOU	125-HRMR	446413	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136147	15549	419453005	HRM RESOU	125-HRMR	446414	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136154	15549	419453005	HRM RESOU	125-HRMR	446415	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136159	15549	419453005	HRM RESOU	125-HRMR	446383	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136163	15549	419453005	HRM RESOU	125-HRMR	446416	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136169	15549	419453005	HRM RESOU	125-HRMR	446381	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136175	15549	419453005	HRM RESOU	125-HRMR	446380	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136273	15549	419453005	HRM RESOU	125-HRMR	446388	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136280	15549	419453005	HRM RESOU	125-HRMR	446386	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136284	15549	419453005	HRM RESOU	125-HRMR	446395	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136288	15549	419453005	HRM RESOU	125-HRMR	446389	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136289	15549	419453005	HRM RESOU	125-HRMR	446387	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136293	15549	419453005	HRM RESOU	125-HRMR	446391	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136296	15549	419453005	HRM RESOU	125-HRMR	446385	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136298	15549	419453005	HRM RESOU	125-HRMR	4463693	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136299	15549	419453005	HRM RESOU	125-HRMR	446390	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136302	15549	419453005	HRM RESOU	125-HRMR	446384	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3136306	15549	419453005	HRM RESOU	125-HRMR	446394	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/5/2018	3137039	15549	419453005	HRM RESOU	125-HRMR	446392	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
6/6/2018	3137245	15549	419453005	HRM RESOU	125-HRMR	446381	120980CO	1	ContSoilPet	Cont. Soil -	ANDERSON #		17	17.0
														425

APPENDIX B
Laboratory Reports

ANALYTICAL REPORT

June 11, 2018

HRM Resources, LLC - Denver, CO

Sample Delivery Group:	L999863
Samples Received:	06/07/2018
Project Number:	
Description:	HRM Landfarm Sampling

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.

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LIPPLEMANN P-1 L999863-01 Solid

Collected by: David Cox | Collected date/time: 06/06/18 10:30 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 15:53	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 17:42	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	10	06/07/18 23:12	06/08/18 18:05	MTJ

COWLES P-1 L999863-02 Solid

Collected by: David Cox | Collected date/time: 06/06/18 11:30 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:03	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 18:05	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	1	06/07/18 23:12	06/08/18 15:29	MTJ

COWLES P-4 L999863-03 Solid

Collected by: David Cox | Collected date/time: 06/06/18 11:35 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:07	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 18:27	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	5	06/07/18 23:12	06/08/18 17:27	MTJ

ANDERSON-1 L999863-04 Solid

Collected by: David Cox | Collected date/time: 06/06/18 12:45 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:10	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 18:49	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	10	06/07/18 23:12	06/08/18 18:17	MTJ

ANDERSON-2 L999863-05 Solid

Collected by: David Cox | Collected date/time: 06/06/18 12:50 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:13	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 19:12	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	5	06/07/18 23:12	06/08/18 17:14	MTJ

ANDERSON-3 L999863-06 Solid

Collected by: David Cox | Collected date/time: 06/06/18 13:00 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:17	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 19:34	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	5	06/07/18 23:12	06/08/18 17:39	MTJ

ANDERSON-4 L999863-07 Solid

Collected by: David Cox | Collected date/time: 06/06/18 13:05 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:20	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 19:56	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	10	06/07/18 23:12	06/08/18 17:52	MTJ

BARFKNECHT-1 L999863-08 Solid

Collected by: David Cox | Collected date/time: 06/06/18 13:35 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:23	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 20:18	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	1	06/07/18 23:12	06/08/18 17:01	MTJ

BARFKNECHT-2 L999863-09 Solid

Collected by: David Cox | Collected date/time: 06/06/18 13:45 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:27	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 20:41	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	1	06/07/18 23:12	06/08/18 15:43	MTJ

BARFKNECHT-3 L999863-10 Solid

Collected by: David Cox | Collected date/time: 06/06/18 13:50 | Received date/time: 06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:30	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 21:03	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	1	06/07/18 23:12	06/08/18 15:57	MTJ

BARFKNECHT-4 L999863-11 Solid

Collected by	Collected date/time	Received date/time
David Cox	06/06/18 14:00	06/07/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1121485	1	06/08/18 14:04	06/09/18 16:34	WBD
Wet Chemistry by Method 9045D	WG1121586	1	06/08/18 09:29	06/08/18 10:45	MLW
Wet Chemistry by Method 9050AMod	WG1121617	1	06/08/18 09:43	06/08/18 11:23	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1121817	1	06/07/18 22:30	06/08/18 21:25	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1121510	1	06/07/18 23:12	06/08/18 16:11	MTJ

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.04		1	06/09/2018 16:10	WG1121485

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.27	T8	1	06/08/2018 10:45	WG1121586

Sample Narrative:

L999863-04 WG1121586: 8.27 at 21.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	600		10.0	1	06/08/2018 11:23	WG1121617

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	06/08/2018 18:49	WG1121817
Toluene	ND		0.00500	1	06/08/2018 18:49	WG1121817
Ethylbenzene	ND		0.000500	1	06/08/2018 18:49	WG1121817
Total Xylene	ND		0.00150	1	06/08/2018 18:49	WG1121817
TPH (GC/FID) Low Fraction	ND		0.100	1	06/08/2018 18:49	WG1121817
(S) a,a,a-Trifluorotoluene(FID)	*88.4*		*77.0-120*		*06/08/2018 18:49*	WG1121817
(S) a,a,a-Trifluorotoluene(PID)	*89.4*		*75.0-128*		*06/08/2018 18:49*	WG1121817

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	211		40.0	10	06/08/2018 18:17	WG1121510
C28-C40 Oil Range	319		40.0	10	06/08/2018 18:17	WG1121510
(S) o-Terphenyl	*52.8*		*18.0-148*		*06/08/2018 18:17*	WG1121510

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.43		1	06/09/2018 16:13	WG1121485

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
pH	7.97	T8	1	06/08/2018 10:45	WG1121586

Sample Narrative:

L999863-05 WG1121586: 7.97 at 22C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	2400		10.0	1	06/08/2018 11:23	WG1121617

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Benzene	0.00131		0.000500	1	06/08/2018 19:12	WG1121817
Toluene	ND		0.00500	1	06/08/2018 19:12	WG1121817
Ethylbenzene	ND		0.000500	1	06/08/2018 19:12	WG1121817
Total Xylene	ND		0.00150	1	06/08/2018 19:12	WG1121817
TPH (GC/FID) Low Fraction	ND		0.100	1	06/08/2018 19:12	WG1121817
(S) a,a,a-Trifluorotoluene(FID)	*86.4*		*77.0-120*		*06/08/2018 19:12*	WG1121817
(S) a,a,a-Trifluorotoluene(PID)	*87.8*		*75.0-128*		*06/08/2018 19:12*	WG1121817

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
C10-C28 Diesel Range	92.8		20.0	5	06/08/2018 17:14	WG1121510
C28-C40 Oil Range	121		20.0	5	06/08/2018 17:14	WG1121510
(S) o-Terphenyl	*50.5*		*18.0-148*		*06/08/2018 17:14*	WG1121510

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.47		1	06/09/2018 16:17	WG1121485

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.40	T8	1	06/08/2018 10:45	WG1121586

Sample Narrative:

L999863-06 WG1121586: 8.4 at 21.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	951		10.0	1	06/08/2018 11:23	WG1121617

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	06/08/2018 19:34	WG1121817
Toluene	ND		0.00500	1	06/08/2018 19:34	WG1121817
Ethylbenzene	ND	J3 J6	0.000500	1	06/08/2018 19:34	WG1121817
Total Xylene	ND	J3 J6	0.00150	1	06/08/2018 19:34	WG1121817
TPH (GC/FID) Low Fraction	ND		0.100	1	06/08/2018 19:34	WG1121817
(S) a,a,a-Trifluorotoluene(FID)	*88.2*		*77.0-120*		*06/08/2018 19:34*	WG1121817
(S) a,a,a-Trifluorotoluene(PID)	*89.3*		*75.0-128*		*06/08/2018 19:34*	WG1121817

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	281		20.0	5	06/08/2018 17:39	WG1121510
C28-C40 Oil Range	233		20.0	5	06/08/2018 17:39	WG1121510
(S) o-Terphenyl	*56.5*		*18.0-148*		*06/08/2018 17:39*	WG1121510

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.1		1	06/09/2018 16:20	WG1121485

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.61	T8	1	06/08/2018 10:45	WG1121586

Sample Narrative:

L999863-07 WG1121586: 8.61 at 22.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1350		10.0	1	06/08/2018 11:23	WG1121617

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000566		0.000500	1	06/08/2018 19:56	WG1121817
Toluene	ND		0.00500	1	06/08/2018 19:56	WG1121817
Ethylbenzene	ND		0.000500	1	06/08/2018 19:56	WG1121817
Total Xylene	ND		0.00150	1	06/08/2018 19:56	WG1121817
TPH (GC/FID) Low Fraction	ND		0.100	1	06/08/2018 19:56	WG1121817
(S) a,a,a-Trifluorotoluene(FID)	*88.4*		*77.0-120*		*06/08/2018 19:56*	WG1121817
(S) a,a,a-Trifluorotoluene(PID)	*89.8*		*75.0-128*		*06/08/2018 19:56*	WG1121817

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	263		40.0	10	06/08/2018 17:52	WG1121510
C28-C40 Oil Range	340		40.0	10	06/08/2018 17:52	WG1121510
(S) o-Terphenyl	*70.3*		*18.0-148*		*06/08/2018 17:52*	WG1121510

L999504-01 Original Sample (OS) • Duplicate (DUP)

(OS) L999504-01 06/08/18 10:45 • (DUP) R3316472-3 06/08/18 10:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	4.88	4.90	1	0.409		1

Sample Narrative:

OS: 4.88 at 22.8C

DUP: 4.9 at 22.3C

L999863-10 Original Sample (OS) • Duplicate (DUP)

(OS) L999863-10 06/08/18 10:45 • (DUP) R3316472-4 06/08/18 10:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.82	8.85	1	0.340		1

Sample Narrative:

OS: 8.82 at 21.9C

DUP: 8.85 at 21.9C

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

(LCS) R3316472-1 06/08/18 10:45 • (LCSD) R3316472-2 06/08/18 10:45

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	su	su	su	%	%	%			%	%
pH	10.0	9.96	9.97	99.6	99.7	99.0-101			0.100	1

Sample Narrative:

LCS: 9.96 at 20.5C

LCSD: 9.97 at 20.6C

Method Blank (MB)

(MB) R3316456-1 06/08/18 11:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	U		10.0	10.0

L999790-01 Original Sample (OS) • Duplicate (DUP)

(OS) L999790-01 06/08/18 11:23 • (DUP) R3316456-4 06/08/18 11:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	519	520	1	0.192		20

L999863-07 Original Sample (OS) • Duplicate (DUP)

(OS) L999863-07 06/08/18 11:23 • (DUP) R3316456-5 06/08/18 11:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	1350	1350	1	0.743		20

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

(LCS) R3316456-2 06/08/18 11:23 • (LCSD) R3316456-3 06/08/18 11:23

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	umhos/cm	umhos/cm	umhos/cm	%	%	%			%	%
Specific Conductance	877	876	875	99.9	99.8	85.0-115			0.114	20

Method Blank (MB)

(MB) R3316721-5 06/08/18 13:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		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)	*96.7*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*98.5*			*75.0-128*

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

(LCS) R3316721-1 06/08/18 11:44 • (LCSD) R3316721-2 06/08/18 12:06

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	0.0480	0.0488	96.0	97.5	71.0-121			1.61	20
Toluene	0.0500	0.0495	0.0496	99.1	99.1	72.0-120			0.0949	20
Ethylbenzene	0.0500	0.0491	0.0499	98.3	99.7	76.0-121			1.49	20
Total Xylene	0.150	0.148	0.150	98.9	100	75.0-124			1.21	20
(S) a,a,a-Trifluorotoluene(FID)				*97.6*	*97.1*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*96.7*	*97.0*	*75.0-128*				

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

(LCS) R3316721-3 06/08/18 12:28 • (LCSD) R3316721-4 06/08/18 12:51

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	5.78	5.75	105	104	70.0-136			0.579	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*108*	*108*	*75.0-128*				

L999863-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L999863-06 06/08/18 19:34 • (MS) R3316721-6 06/08/18 21:47 • (MSD) R3316721-7 06/08/18 22:10

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	0.0201	0.0187	40.2	37.3	1	10.0-146			7.54	29
Toluene	0.0500	ND	0.0111	0.0136	20.7	25.7	1	10.0-143			20.1	30
Ethylbenzene	0.0500	ND	0.00496	0.00779	9.93	15.6	1	10.0-147	J6	J3	44.3	31
Total Xylene	0.150	ND	0.0123	0.0196	7.86	12.7	1	10.0-149	J6	J3 J6	45.7	30
(S) a,a,a-Trifluorotoluene(FID)					*87.4*	*87.4*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*87.9*	*88.9*		*75.0-128*				

L999863-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L999863-06 06/08/18 19:34 • (MS) R3316721-8 06/08/18 22:32 • (MSD) R3316721-9 06/08/18 22:54

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	2.25	2.16	40.8	39.4	1	10.0-147			3.64	30
(S) a,a,a-Trifluorotoluene(FID)					*86.6*	*88.5*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*90.2*	*93.5*		*75.0-128*				

Method Blank (MB)

(MB) R3316537-1 06/08/18 12:59

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	*74.8*			*18.0-148*

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

(LCS) R3316537-3 06/08/18 13:40 • (LCSD) R3316537-2 06/08/18 13:26

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	50.0	30.7	30.0	61.4	60.0	50.0-150			2.26	20
(S) o-Terphenyl				*69.9*	*71.1*	*18.0-148*				

L999790-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L999790-01 06/08/18 14:07 • (MS) R3316537-4 06/08/18 14:21 • (MSD) R3316537-5 06/08/18 14:35

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	50.0	ND	35.2	37.3	70.3	74.6	1	50.0-150			5.92	20
(S) o-Terphenyl					*76.3*	*85.3*		*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
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.
T8	Sample(s) received past/too close to holding time expiration.

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

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

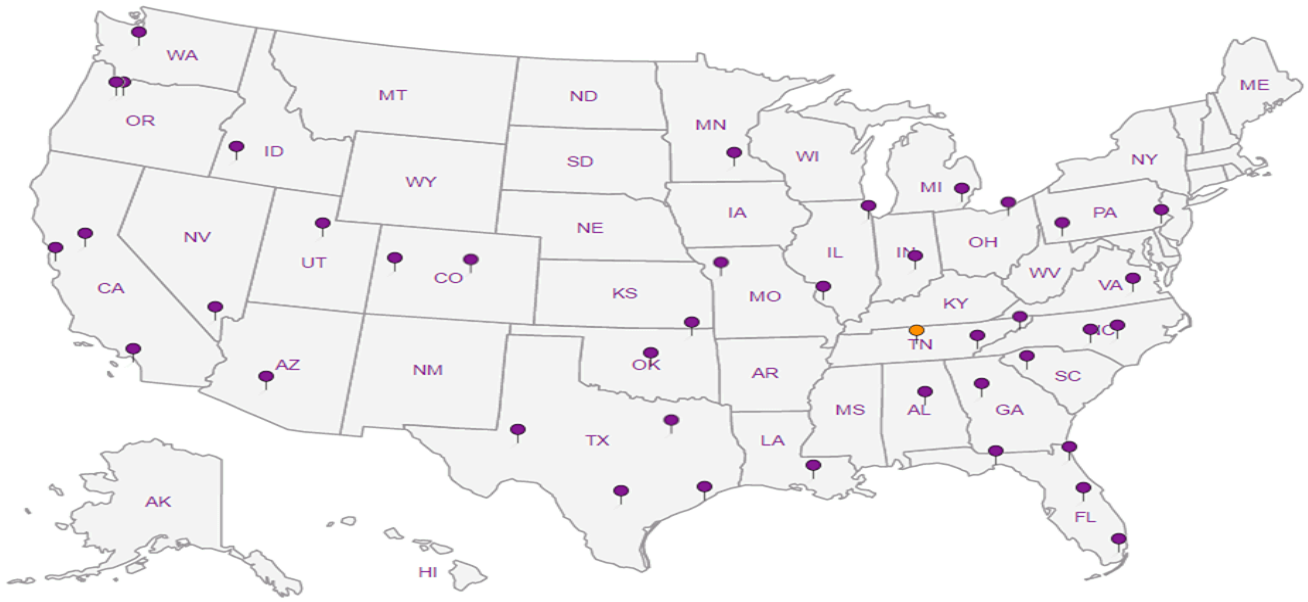
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater 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.



Company Name/Address:
Nicholson GeoSolutions. LLC.
3433 E. Lake Dr.
Centennial, CO 80121

Billing Information:
Terry Pape
HRM Resources II, LLC
410 17th Street, Suite 1600
Denver, CO 80202
Email To: patisalotech@gmail.com

Report to:
Dave Nicholson + Dave Cox
Email To: dknicholson@q.com

Project Description: HRM Landfarm Sampling
City/State Collected:

Phone: 303-601-2023
Fax:
Client Project #
Lab Project #

Collected by (print): D. COX
Site/Facility ID #
P.O. #

Collected by (signature):
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
X Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ___Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

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YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 999863
Table # G069
Acctnum: HRMRESDCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TEPH(8015)Diesel & Oil Range (1) 4oz Clear-No Pres	BTEX/TVPH (1) 4oz Clear - No Pres	SAR (1) 4oz Clear - No Pres	SPCON, pH (1) 4oz Clear - No Pres	Rem./Contaminant	Sample # (lab only)
Lippleman P-1	G	SS		6-6-18	1030	4	X	X	X	X		-01
Cowles P-1	G	SS			1130	4	X	X	X	X		-02
Cowles P-4	G	SS			1135	4	X	X	X	X		-03
Anderson-1	G	SS			1245	4	X	X	X	X		-04
Anderson-2	G	SS			1250	4	X	X	X	X		-05
Anderson-3	G	SS			1300	4	X	X	X	X		-06
Anderson-4	G	SS			1305	4	X	X	X	X		-07
		SS				2						
		SS				2						
		SS				2						

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ____

pH ____ Temp ____
Flow ____ Other ____

Remarks:

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	6-6-18	1730	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Eric Hawk

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ____
Temp: 0.5 °C Bottles Received: 42
Date: 6/7/18 Time: 0845

Condition: (lab use only)
COC Seal Intact: ✓ Y ___N ___NA
pH Checked: NCF:

Company Name/Address:
Nicholson GeoSolutions. LLC.
3433 E. Lake Dr.
Centennial, CO 80121

Billing Information:
Terry Pape
HRM Resources II, LLC
410 17th Street, Suite 1600
Denver, CO 80202

Report to: Dave Nicholson + Dave Cox
Email To: palisadestech@gmail.com dknicholson@q.com

Project Description: HRM Landfarm Sampling
City/State Collected:

Phone: 303-601-2023
Fax:
Client Project #
Lab Project #

Collected by (print): D. Cox
Collected by (signature):
Immediately Packed on Ice N ___ Y X
Site/Facility ID #
P.O. #

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
X Two Day 50%
___ Three Day 25%
Date Results Needed
Email? ___No ___Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TEPH(8015)Diesel & Oil Range (1) 4oz Clear-No Pres	BTEX/TVPH (1) 4oz Clear - No Pres	SAR (1) 4oz Clear - No Pres	SPCON, pH (1) 4oz Clear - No Pres	Rem./Contaminant	Sample # (lab only)
Barfknecht-1	G	SS		6-6-18	1335	4	X	X	X	X		-08
Barfknecht-2	G	SS			1345	4	X	X	X	X		-09
Barfknecht-3	G	SS			1350	4	X	X	X	X		-10
Barfknecht-4	G	SS			1400	4	X	X	X	X		-11
		SS				2						
		SS				2						
		SS				2						
		SS				2						
		SS				2						
		SS				2						

Chain of Custody Page 2 of 2

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12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 979863
Table #
Acctnum: HRMRESDCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ____

Remarks:

pH ____ Temp ____
Flow ____ Other ____
Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	6-6-18	1730	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Eric

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ____
Temp: 0.3 °C Bottles Received: 42
Date: 6/7/18 Time: 0845

Condition: (lab use only)
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client: HRMRESDCO	SDG#	999863
Cooler Received/Opened On: 6/7/18	Temperature:	0.2°
Received By: Eric Struck		
Signature:		

Receipt Check List	NP	Yes	No
	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

ANALYTICAL REPORT

June 15, 2018

HRM Resources, LLC - Denver, CO

Sample Delivery Group:	L1001547
Samples Received:	06/14/2018
Project Number:	
Description:	HRM Landfarm Sampling

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.

MARICK- S-23 L1001547-01 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 13:40 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:33	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 15:22	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	5	06/14/18 16:07	06/14/18 22:13	DMW

MARICK-LFF-3 L1001547-02 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 13:50 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:36	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 15:43	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 23:48	DMW

MARICK-LFF-4 L1001547-03 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 13:55 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:39	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 16:04	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/15/18 00:02	DMW

MARICK-LFF-5 L1001547-04 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 14:00 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:41	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 16:25	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/15/18 00:15	DMW

MARICK-LFF-6 L1001547-05 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 14:10 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:44	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 16:46	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 23:35	DMW

MARICK-LFF-7 L1001547-06 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 14:15 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:46	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 17:08	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 23:35	DMW
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	5	06/14/18 16:07	06/14/18 22:27	DMW

MARICK-LFF-8 L1001547-07 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 14:25 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA

MARICK-LFF-9 L1001547-08 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 14:30 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA

MARICK-LFF-10 L1001547-09 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 14:40 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:49	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA

LIPPLEMAN-LFF-1 L1001547-10 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 15:05 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:52	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 17:29	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	1	06/14/18 16:07	06/14/18 22:00	DMW

HERZBERG-LFF-1 L1001547-11 Solid

Collected by: D. Cox | Collected date/time: 06/13/18 15:25 | Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 12:54	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 17:50	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 22:41	DMW

ANDERSON-LFF-1 L1001547-12 Solid

Collected by: D. Cox
Collected date/time: 06/13/18 15:45
Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 13:02	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 18:11	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 23:21	DMW

ANDERSON-LFF-3 L1001547-13 Solid

Collected by: D. Cox
Collected date/time: 06/13/18 15:50
Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 13:05	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 18:32	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 22:54	DMW

ANDERSON-LFF-4 L1001547-14 Solid

Collected by: D. Cox
Collected date/time: 06/13/18 16:00
Received date/time: 06/14/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1124553	1	06/14/18 11:46	06/15/18 13:07	WBD
Wet Chemistry by Method 9045D	WG1124591	1	06/14/18 16:00	06/15/18 09:00	AJG
Wet Chemistry by Method 9050AMod	WG1124605	1	06/14/18 15:33	06/14/18 16:11	MJA
Volatile Organic Compounds (GC) by Method 8015/8021	WG1124518	1	06/14/18 13:24	06/14/18 18:53	RAS
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1124902	10	06/14/18 16:07	06/14/18 23:08	DMW

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.47		1	06/15/2018 13:02	WG1124553

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.81	T8	1	06/15/2018 09:00	WG1124591

Sample Narrative:

L1001547-12 WG1124591: 7.81 at 22.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	766		10.0	1	06/14/2018 16:11	WG1124605

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	06/14/2018 18:11	WG1124518
Toluene	ND		0.00500	1	06/14/2018 18:11	WG1124518
Ethylbenzene	ND		0.000500	1	06/14/2018 18:11	WG1124518
Total Xylene	ND		0.00150	1	06/14/2018 18:11	WG1124518
TPH (GC/FID) Low Fraction	ND		0.100	1	06/14/2018 18:11	WG1124518
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*77.0-120*		*06/14/2018 18:11*	WG1124518
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*06/14/2018 18:11*	WG1124518

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	71.9		40.0	10	06/14/2018 23:21	WG1124902
C28-C40 Oil Range	97.4		40.0	10	06/14/2018 23:21	WG1124902
(S) o-Terphenyl	*6.89*		*18.0-148*		*06/14/2018 23:21*	WG1124902

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.32		1	06/15/2018 13:05	WG1124553

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.64	T8	1	06/15/2018 09:00	WG1124591

Sample Narrative:

L1001547-13 WG1124591: 7.64 at 22.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1030		10.0	1	06/14/2018 16:11	WG1124605

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	06/14/2018 18:32	WG1124518
Toluene	ND		0.00500	1	06/14/2018 18:32	WG1124518
Ethylbenzene	ND		0.000500	1	06/14/2018 18:32	WG1124518
Total Xylene	ND		0.00150	1	06/14/2018 18:32	WG1124518
TPH (GC/FID) Low Fraction	ND		0.100	1	06/14/2018 18:32	WG1124518
(S) a,a,a-Trifluorotoluene(FID)	*92.2*		*77.0-120*		*06/14/2018 18:32*	WG1124518
(S) a,a,a-Trifluorotoluene(PID)	*97.2*		*75.0-128*		*06/14/2018 18:32*	WG1124518

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	54.9		40.0	10	06/14/2018 22:54	WG1124902
C28-C40 Oil Range	84.4		40.0	10	06/14/2018 22:54	WG1124902
(S) o-Terphenyl	*75.5*		*18.0-148*		*06/14/2018 22:54*	WG1124902

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.16		1	06/15/2018 13:07	WG1124553

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	su				
pH	7.74	T8	1	06/15/2018 09:00	WG1124591

Sample Narrative:

L1001547-14 WG1124591: 7.74 at 22.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	umhos/cm		umhos/cm			
Specific Conductance	728		10.0	1	06/14/2018 16:11	WG1124605

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Benzene	ND		0.000500	1	06/14/2018 18:53	WG1124518
Toluene	ND		0.00500	1	06/14/2018 18:53	WG1124518
Ethylbenzene	ND		0.000500	1	06/14/2018 18:53	WG1124518
Total Xylene	ND		0.00150	1	06/14/2018 18:53	WG1124518
TPH (GC/FID) Low Fraction	ND		0.100	1	06/14/2018 18:53	WG1124518
(S) a,a,a-Trifluorotoluene(FID)	*98.1*		*77.0-120*		*06/14/2018 18:53*	WG1124518
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*06/14/2018 18:53*	WG1124518

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
C10-C28 Diesel Range	ND		40.0	10	06/14/2018 23:08	WG1124902
C28-C40 Oil Range	61.7		40.0	10	06/14/2018 23:08	WG1124902
(S) o-Terphenyl	*67.1*		*18.0-148*		*06/14/2018 23:08*	WG1124902

Sample Narrative:

L1001547-14 WG1124902: sample diluted due to viscosity.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

L1001547-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1001547-14 06/15/18 09:00 • (DUP) R3318185-4 06/15/18 09:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.74	7.70	1	0.518		1

Sample Narrative:

OS: 7.74 at 22.3C

DUP: 7.7 at 22.2C

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

(LCS) R3318185-1 06/15/18 09:00 • (LCSD) R3318185-2 06/15/18 09:00

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	su	su	su	%	%	%			%	%
pH	10.0	9.99	9.98	99.9	99.8	99.0-101			0.100	1

Sample Narrative:

LCS: 9.99 at 20.2C

LCSD: 9.98 at 20.3C

Method Blank (MB)

(MB) R3318001-1 06/14/18 16:11

Analyte	MB Result umhos/cm	MB Qualifier	MB MDL umhos/cm	MB RDL umhos/cm
Specific Conductance	U		10.0	10.0

L1001547-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1001547-01 06/14/18 16:11 • (DUP) R3318001-4 06/14/18 16:11

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1010	1010	1	0.000		20

L1001547-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1001547-11 06/14/18 16:11 • (DUP) R3318001-5 06/14/18 16:11

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	593	591	1	0.338		20

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

(LCS) R3318001-2 06/14/18 16:11 • (LCSD) R3318001-3 06/14/18 16:11

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCSD Result umhos/cm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Specific Conductance	559	557	555	99.6	99.3	85.0-115			0.360	20

Method Blank (MB)

(MB) R3318054-5 06/14/18 12:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000376	J	0.000150	0.00500
Ethylbenzene	0.000114	J	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)	*101*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*104*			*75.0-128*

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

(LCS) R3318054-1 06/14/18 10:32 • (LCSD) R3318054-2 06/14/18 10:53

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	0.0475	0.0478	94.9	95.6	71.0-121			0.642	20
Toluene	0.0500	0.0478	0.0479	95.7	95.8	72.0-120			0.107	20
Ethylbenzene	0.0500	0.0527	0.0531	105	106	76.0-121			0.640	20
Total Xylene	0.150	0.161	0.161	107	107	75.0-124			0.0622	20
(S) a,a,a-Trifluorotoluene(FID)				*99.9*	*100*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*103*	*104*	*75.0-128*				

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

(LCS) R3318054-3 06/14/18 11:14 • (LCSD) R3318054-4 06/14/18 11:35

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	5.66	5.54	103	101	70.0-136			1.98	20
(S) a,a,a-Trifluorotoluene(FID)				*93.4*	*94.5*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*113*	*113*	*75.0-128*				

L1001268-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1001268-01 06/14/18 13:12 • (MS) R3318054-6 06/14/18 19:14 • (MSD) R3318054-7 06/14/18 19:36

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0662	0.0221	1.06	1.14	62.6	67.4	25	10.0-146			7.22	29
Toluene	0.0662	0.0151	1.06	1.14	62.9	67.8	25	10.0-143			7.38	30
Ethylbenzene	0.0662	0.0225	1.22	1.32	72.5	78.4	25	10.0-147			7.64	31
Total Xylene	0.199	0.144	3.81	4.12	73.7	80.0	25	10.0-149			7.89	30
(S) a,a,a-Trifluorotoluene(FID)					*102*	*101*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*105*	*105*		*75.0-128*				

L1001268-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1001268-01 06/14/18 13:12 • (MS) R3318054-8 06/14/18 19:57 • (MSD) R3318054-9 06/14/18 20:18

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	7.28	2.64	79.9	79.0	42.4	42.0	25	10.0-147			1.10	30
(S) a,a,a-Trifluorotoluene(FID)					*99.4*	*99.0*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*108*	*108*		*75.0-128*				

Method Blank (MB)

(MB) R3318073-1 06/14/18 21:19

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	*64.1*			*18.0-148*

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

(LCS) R3318073-2 06/14/18 21:33 • (LCSD) R3318073-3 06/14/18 21:46

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	50.0	36.0	38.4	72.0	76.9	50.0-150			6.59	20
(S) o-Terphenyl				*68.9*	*74.9*	*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

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

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

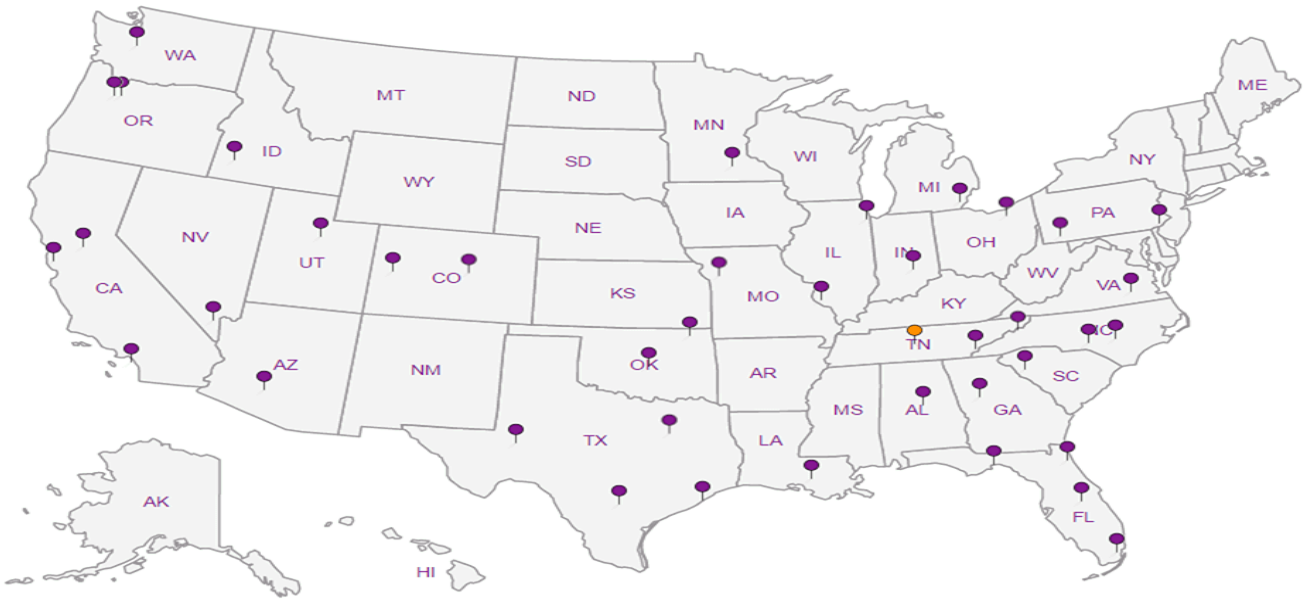
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater 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.



Company Name/Address:
Nicholson GeoSolutions. LLC.
3433 E. Lake Dr.
Centennial, CO 80121

Billing Information:
Terry Pape
HRM Resources II, LLC
410 17th Street, Suite 1600
Denver, CO 80202

Report to: Dave Nicholson & Dave Cox
Email To: palisadestrche@gmail.com
dknicholson@q.com

Project Description: HRM Landfarm Sampling
City/State Collected:

Phone: 303-601-2023
Fax:
Client Project #
Lab Project #

Collected by (print): D. COX
Site/Facility ID #
P.O. #

Collected by (signature):
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
X Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed: 6-15-18 COB
Email? ___No X Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

ESC LABORATORIES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 4001547
Table A138
Acctnum: HRMRESDCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TEPH(8015)Diesel & Oil Range (1) 4oz Clear-No Pres	BTEX/TVPH (1) 4oz Clear - No Pres	SAR (1) 4oz Clear - No Pres	SPCON, pH (1) 4oz Clear - No Pres	Rem./Contaminant	Sample # (lab only)
Marick S-23	G	SS		6-13-18	1340	4	X	X	X	X		-01
Marick-LFF-3		SS			1350	4	X	X	X	X		-02
Marick-LFF-4		SS			1355	4	X	X	X	X		-03
Marick-LFF-5		SS			1400	4	X	X	X	X		-04
Marick-LFF-6		SS			1410	4	X	X	X	X		-05
Marick-LFF-7		SS			1415	4	X	X	X	X		-06
Marick-LFF-8		SS			1425	1				X		-07
Marick-LFF-9		SS			1430	1				X		-08
Marick-LFF-10		SS			1440	2			X	X		-09
Livpleman-LFF-1	V	SS		V	1505	4						-10

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____
Flow _____ Other _____

Remarks: 4361 6133 6577

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	6-13-18	1830	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
Temp: 2.3 °C Bottles Received: 48
Date: 6/14/18 Time: 845

Hold #
Condition: (lab use only) OK
COC Seal Intact: ___ Y ___ N ✓ NA
pH Checked: NCF:

Company Name/Address:
Nicholson GeoSolutions. LLC.
3433 E. Lake Dr.
Centennial, CO 80121

Billing Information:
Terry Pape
HRM Resources II, LLC
410 17th Street, Suite 1600
Denver, CO 80202

Report to: Dave Nicholson & Dave Cox
Email To: palisadestech@gmail.com
dknicholson@q.com

Project Description: HRM Landfarm Sampling
City/State Collected:

Phone: 303-601-2023
Fax:
Client Project #
Lab Project #

Collected by (print): D. Cox
Site/Facility ID #
P.O. #

Collected by (signature):
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
X Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed: 6-15-18

Email? ___No X Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 2 of 2

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # L1001547
Table #
Acctnum: HRMRESDCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TEPH(8015)Diesel & Oil Range (1) 4oz Clear-No Pres	BTEX/TVPH (1) 4oz Clear - No Pres	SAR (1) 4oz Clear - No Pres	SPCON, pH (1) 4oz Clear - No Pres	Rem./Contaminant	Sample # (lab only)
Herzberg-LFF-1	G	SS		6-13-18	1525	4	X	X	X	X		
Anderson-LFF-1		SS			1545	4	X	X	X	X		-11
Anderson-LFF-3		SS			1550	4	X	X	X	X		-12
Anderson-LFF-4		SS			1600	4	X	X	X	X		-13
		SS				2						-14
		SS				2						
		SS				2						
		SS				2						
		SS				2						
		SS				2						
		SS				2						

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: 4361 6933 6577

pH ____ Temp ____
Flow ____ Other ____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	6-17-18	1830	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ____
Temp: 2.3 °C Bottles Received: 18
Date: 6/14/18 Time: 845

Condition: (lab use only) OK
COC Seal Intact: ___Y ___N ___NA
pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client: HRMRESDCO	SDG#	400547
Cooler Received/Opened On: 6/4/18	Temperature:	2.3
Received By: Kelsey Stephenson		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	-		
COC Signed / Accurate?		-	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			