October 29, 2018

#5E27499-BG2

NMOCD District 2
Mr. Mike Bratcher
811 S. First St.
Artesia, New Mexico 88210

SUBJECT: Remediation Closure Report for the Iron Duke #002H Release (2RP-4956), Artesia, Eddy County, New Mexico

Dear Mr. Bratcher:

On behalf of Marathon Oil Permian, LLC (Marathon), Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes the delineation and proposed remediation for a release of liquids related to oil and gas production activities at the Iron Duke #002H site. The site is in Unit I, Section 9, Township 18S, Range 26E, Eddy County, New Mexico, on Private land. Figure 1 illustrates the vicinity and site location on an USGS 7.5 minute quadrangle map.

Table 1 summarizes information regarding the release.

Table 1: Release Information and Closure Criteria			
Name	Iron Duke #002H	Company	Marathon Oil Permian, LLC
API Number	30-015-39761	Location	32.761522° -104.378899°
Incident Number	2RP-4956		
Estimated Date of Release	August 18, 2018	Date Reported to NMOCD	August 31, 2018
Land Owner	Private	Reported To	NMOCD District 2
Source of Release	Ball valve on the load line failed		
Released Volume	10 bbls	Released Material	Produced water
Recovered Volume	Unknown	Net Release	Unknown
NMOCD Closure Criteria	51-100 feet to groundwater		
SMA Response Dates	August 22, 2018		

1.0 Background

On August 18, 2018, a release was discovered at the Iron Duke #002H site due to the ball valve on the load line failing. Initial response activities were conducted by Marathon Oil Permian, LLC, and included isolating the source of the release and hydrovacing free standing fluid. Figure 1 illustrates the vicinity and site location, Figure 2 illustrates the release location. The C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The Iron Duke #002H is located approximately five (5) miles southeast of Artesia, New Mexico on privately-owned land.

As summarized in Table 2 and illustrated in Figure 1b, depth to groundwater in the area is estimated to be fifty-five (55) feet below grade surface (bgs). There are several known water sources within ½-mile of the location, according to the New Mexico Office of the State Engineer (NMOSE) online water well database (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 8/20/2018). One NMOSE well shows water at a depth of 32 feet bgs, but upon further investigation this was found to be invalid. The well was drilled as an Artesian well in 1927, at which point the water level within the well bore was 32 feet. The water level then subsided, and the well was re-drilled to a depth of 863 feet bgs. The strongest depth to groundwater data was found from the many monitoring wells drilled for the dairy on which this well is located. Several monitoring wells were drilled for the New Mexico Environment Department Ground Water Quality Bureau discharge permit for the dairy (DP 796). These wells were permitted under NMOCD RA 11682 and have been included in Appendix B. The nearest of these monitoring wells (MW-9) is located 750 feet to the west and encountered water at 57 feet bgs. The nearest significant watercourse is an unnamed pond, located approximately 4,085 feet to the south.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for groundwater depth of between 51-100 feet bgs. Table 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

3.0 Release Characterization Activities and Findings

On August 22, 2018, SMA personnel arrived on site in response to the release associated with Iron Duke #002H. SMA performed site delineation activities by collecting soil samples around the release site and throughout the visibly stained area. Soil samples were field-screened for chloride using an electrical conductivity (EC) meter.

A total of three (3) sample locations (L1-L3) were investigated using a hand-auger, to depths up to one (1) foot bgs. A total of four (4) samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D. Table 3 itemizes the samples and field-screening results as well as identifying any variances from the typical specification of two samples per boring. Locations for all samples are depicted on Figure 2.

Laboratory samples were collected in accordance with the sampling protocol included in Appendix C. Samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix D).

4.0 Soil Remediation Summary

On September 21, 2018 SMA personnel arrived on site to guide excavation and removal of contaminated soil. The impacted area was excavated to approximately one (1) foot bgs. SMA guided the excavation by collecting composite soil samples for field screening for chloride using an EC. To clearly demonstrate the vertical extent of the release, SMA guided the delineation an additional foot below the excavation at location L3 and collected a sample for laboratory analysis.

The release area was excavated to the NMOCD Closure Criteria as demonstrated in the attached Table 3. Confirmation samples were collected from the excavation and were composed of four sidewall (SW1-SW4) and four base (CS1-CS4) 5-point composite samples, each representing less than 200 ft^2 of exposed excavation area. The confirmation samples were collected from within the excavation in accordance with the sampling protocol included in Appendix C. Approximately 100 cubic yards of contaminated soil were removed and replaced with clean backfill material in order to return the surface to previous contours. The contaminated soil was transported for disposal at R360 Landfill near Hobbs, NM, an NMOCD permitted disposal facility.

5.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization, regulatory liaison, and preparing this remediation plan. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Austin Weyant at 575-689-8801 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Heather Patterson
Staff Scientist

Reviewed by:

Shawna Chubbuck
Senior Scientist

ATTACHMENTS:

Figures:

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Site and Sample Location Map

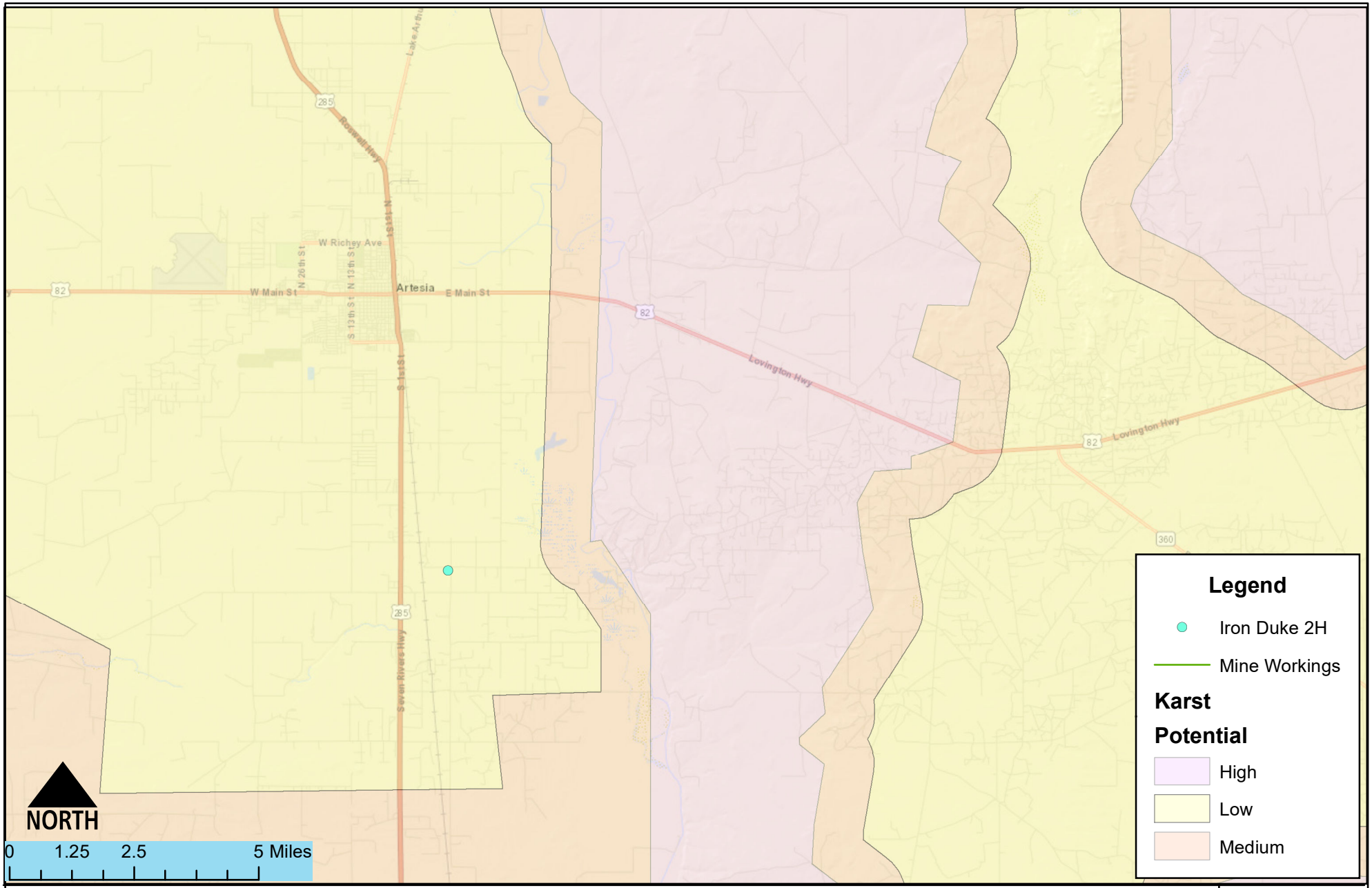
Tables:

Table 2: NMOCD Closure Criteria Justification
Table 3: Summary of Sample Results

Appendices:

Appendix A: Form C141
Appendix B: NMOSE Wells Report
Appendix C: Sampling Protocol, Field Notes, and Photo Documentation
Appendix D: Laboratory Analytical Reports

FIGURES



Vicinity and Subsurface Protection Map
Iron Duke #2H - Marathon
S 9-T18S-R26E, New Mexico

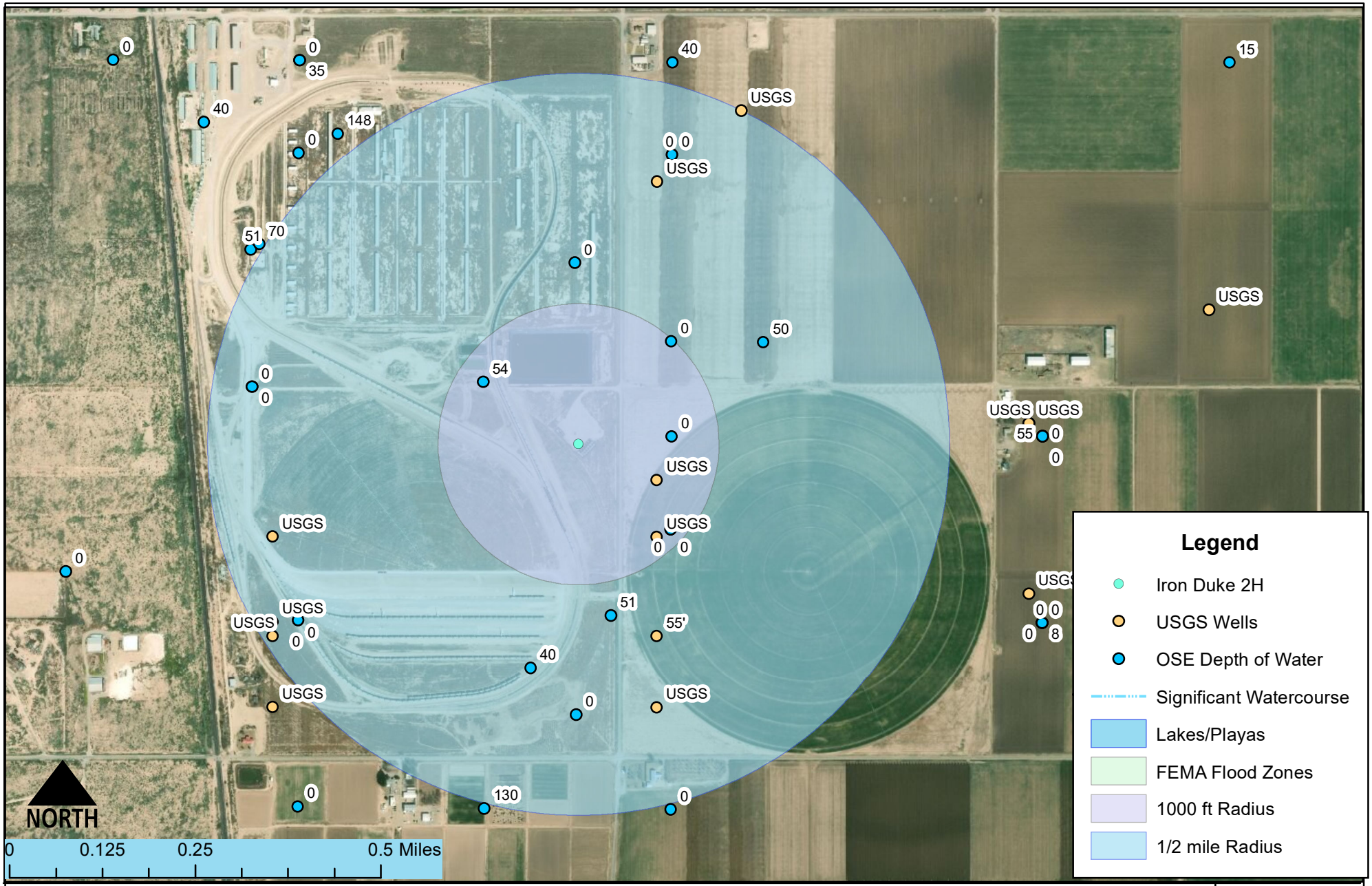
Figure 1a

Date Saved: 10/3/2018

Revisions
By: Date: Descr:
By: Date: Descr:

Drawn Heather Patterson
Checked
Approved

SMA
201 South Halagueña Street
Carlsbad, New Mexico 88221
(575) 689-7040
www.soudermiller.com
Serving the Southwest & Rocky Mountains



Well Head and Surface Water Protection Map
Iron Duke #2H - Marathon
S 9-T18S-R26E, New Mexico

Figure 1b

Date Saved: 10/3/2018

Revisions
By: Date: Descr:
By: Date: Descr:

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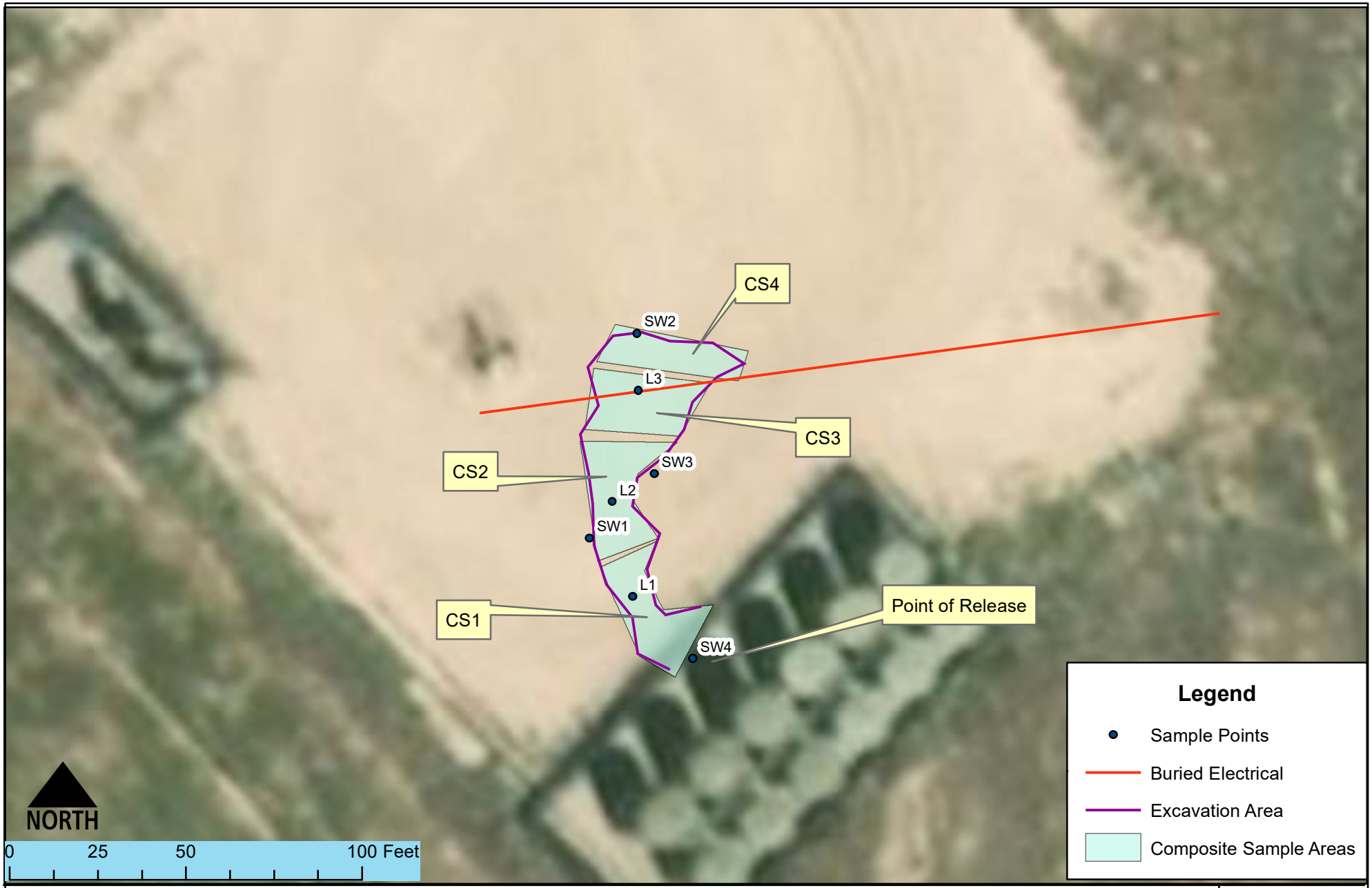

Site and Sample Location Map
Iron Duke #2H - Marathon
S 9-T18S-R26E, New Mexico

Figure 2

Date Saved: 10/3/2018

Revisions
By: Date: Descr:
By: Date: Descr:

Drawn Heather Patterson
Checked
Approved

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TABLES

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	55	NMOSE/USGS
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	750	Figure 1b
Hortizontal Distance to Nearest Significant Watercourse (ft)	4085	Topo Maps

Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC)						
Depth to Groundwater		**Closure Criteria (units in mg/kg)**				
		Chloride *numerical limit or background, whichever is greater	**TPH**	**GRO + DRO**	**BTEX**	**Benzene**
< 50' BGS		600	100		50	10
51' to 100'	X	10000	2500	1000	50	10
>100'		20000	2500	1000	50	10
Surface Water	**yes or no**	**if yes, then**				
<300' from continuously flowing watercourse or other significant watercourse?	no	600	100		50	10
<200' from lakebed, sinkhole or playa lake?	no					
<500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	no					
<1000' from fresh water well or spring?	no					
Human and Other Areas						
<300' from an occupied permanent residence, school, hospital, institution or church?	no					
within incorporated municipal boundaries or within a defined municipal fresh water well field?	no					
<100' from wetland?	no					
within area overlying a subsurface mine	no					
within an unstable area?	no					
within a 100-year floodplain?	no					

Table 3:
Summary of Sample Results

Marathon Oil Permian, LLC
Iron Duke #002H (2RP-4956)

Initial Sampling Event and Vertical Delineation

Sample ID	Sample Date	Depth (feet bgs)	Action Taken	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	GRO + DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria				50	10			1000		2500	10,000
L1	8/22/2018	0.5	Excavated	<0.217	<0.024	<4.8	170	170	<50	170	1500
L2	8/22/2018	0.5	Excavated	<0.221	<0.025	<4.9	<.96	<14.5	<48	<62.5	**13,000**
	8/22/2018	1	In-situ	--	--	--	--	--	--	--	430
L3	8/22/2018	0.5	Excavated	<0.221	<0.025	<4.9	14	14	<50	14	1,200
	9/21/2018	2	In-situ	<0.23	<0.024	<4.8	<9.9	<15	<50	<65	56

Closure Sampling Event

Sample ID	Sample Date	Depth (feet bgs)	Action Taken	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	GRO + DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria				50	10			1000		2500	10,000
CS1	9/21/2018	1	In-situ	<0.23	<0.025	<5.0	23	23	<46	23	1400
CS2	9/21/2018	1	In-situ	<0.23	<0.024	<4.8	21	21	<45	21	1,200
CS3	9/21/2018	1	In-situ	<0.23	<0.025	<5.0	<9.6	<15	<48	<63	900
CS4	9/21/2018	1	In-situ	<0.23	<0.023	<4.6	<9.7	<15	<49	<64	1,100
SW1	9/21/2018	0-1	In-situ	<0.23	<0.025	<4.9	48	48	110	158	1100
SW2	9/21/2018	0-1	In-situ	<0.23	<0.024	<4.8	35	35	<48	35	1,700
SW3	9/21/2018	0-1	In-situ	<0.23	<0.023	<4.7	68	68	110	178	440
SW4	9/21/2018	0-1	In-situ	<0.23	<0.024	<4.8	55	55	<49	55	2,300

"--" = Not Analyzed

APPENDIX A
FORM C141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NMAP1825439764
District RP	2RP-4956
Facility ID	N/A
Application ID	pMAP1824764582

Release Notification

Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 258462
Contact Name Callie Karrigan	Contact Telephone 575-297-0956
Contact email cnkarrigan@marathonoil.com	Incident # *(assigned by OCD)*
Contact mailing address 4111 Tidwell Road Carlsbad NM 88220	

Location of Release Source

Latitude 32.761522 Longitude -104.378899
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Iron Duke 002H	Site Type oil
Date Release Discovered 8/18/18	API# *(if applicable)* 30-015-39761

Unit Letter	Section	Township	Range	County
I	9	18S	26E	Eddy

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:* Ironhorse Permian Basin LLC)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release
At approximately 8:45 am 8/18/18, the Operator arrived onsite and observed pooling form produced water. The ball valve on the load line failed, releasing 10 bbls into the load out pot and onto the ground. Approximately a 20 ft x 20 ft area was affected. A vac truck immediately recovered standing fluids. The ball valve will be replaced and investigated.

State of New Mexico
Oil Conservation Division

Incident ID	NMAP1825439764
District RP	2RP-4956
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Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☐ The impacted area has been secured to protect human health and the environment.

☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:
Vac truck immediately recovered free standing liquids. Affected area has stabilized.

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Callie Karrigan Title: HES Professional

Signature: Callie Karrigan Date: 8/31/18

email: cnkarrigan@marathonoil.com Telephone: 575-297-0956

OCD Only

Received by: Date: 09/04/18

State of New Mexico
Oil Conservation Division

Incident ID	nMAP1825439764
District RP	2RP-4956
Facility ID	
Application ID	pMAP1824764582

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	55 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	nMAP1825439764
District RP	2RP-4956
Facility ID	
Application ID	pMAP1824764582

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: __Callie Karrigan_____ Title: _____HES Professional_____

Signature:_____*Callie Karrigan* _____ Date: ___10/12/2018_____

email: ___cnkarrigan@marathonoil.com_____ Telephone: ___575-297-0956_____

OCD Only

Received by: _____ Date**:** _____

State of New Mexico
Oil Conservation Division

Incident ID	nMAP1825439764
District RP	2RP-4956
Facility ID	
Application ID	pMAP1824764582

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____Callie Karrigan_____ Title: _____HES Professional_____

Signature: *Callie Karrigan* Date: __10/12/18_____

email: __cnkarrigan@marathonoil.com_____ Telephone: _____575-297-0956_____

OCD Only

Received by: _____ Date**:** _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date**:** _____

Printed Name: _____ Title: _____
__

APPENDIX B
NMOSE WELLS REPORT

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
RA 01144		RA	ED	1	1	3	10	18S	26E	558343	3625021*	186	697		
RA 11682 POD3		RA	ED	3	4	2	09	18S	26E	557934	3625136	247	70	54	16
RA 00010 CLW202760	O	RA	ED	3	1	3	10	18S	26E	558343	3624821*	278	863	32	831
RA 00010 CLW202772	O	RA	ED	3	1	3	10	18S	26E	558343	3624821*	278	863	32	831
RA 00010 CLW202817	O	RA	ED	3	1	3	10	18S	26E	558343	3624821*	278	863	32	831
RA 00010 CLW202829	O	RA	ED	3	1	3	10	18S	26E	558343	3624821*	278	863	32	831
RA 02877		RA	ED	3	1	3	10	18S	26E	558343	3624821*	278	150		
RA 11682 POD5		RA	ED	4	2	1	16	18S	26E	558214	3624632	399	66	51	15
RA 03789		RA	ED	4	3	1	10	18S	26E	558541	3625227*	433	114	50	64
RA 00010		RA	ED	1	3	3	10	18S	26E	558344	3624616*	452	863	32	831
RA 00010 A		RA	ED	1	3	3	10	18S	26E	558344	3624616*	452	863	32	831
RA 03326		RA	ED		4	4	09	18S	26E	558041	3624518*	523	75	40	35
RA 02048		RA	ED				09	18S	26E	557433	3625123*	729			
RA 11682 POD4		RA	ED	1	3	2	09	18S	26E	557447	3625432	816	85	70	15
RA 02959		RA	ED	1	1	1	10	18S	26E	558340	3625832*	824	136	40	96
RA 11682 POD1		RA	ED	4	4	4	09	18S	26E	557428	3625421	827	71	51	20
RA 11948 POD1		RA	ED	1	1	2	09	18S	26E	557615	3625672	841	220	148	72
RA 03421		RA	ED	1	2	2	16	18S	26E	557942	3624213*	842	665	130	535
RA 03756		RA	ED	1	1	4	10	18S	26E	559147	3625027*	990	148	55	93

Average Depth to Water: **55 feet**

Minimum Depth: **32 feet**

Maximum Depth: **148 feet**

Record Count: 19

UTMNAD83 Radius Search (in meters):

Easting (X): 558156.28 **Northing (Y):** 3625028.23 **Radius:** 1000

***UTM location was derived from PLSS - see Help**

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER): POD3	OSE FILE NUMBER(S): RA-11682
WELL OWNER NAME(S): Lakeside Dairy	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 49 E. Atoka Road	CITY: Artesia / STATE: NM / ZIP: 88210

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	45	45.30	N
LONGITUDE	104	22	53.34	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS: Monitoring Well MW-9, on dairy property at address and Lat. Long above.

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	¼	¼	¼		☐ NORTH ☐ SOUTH	☐ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1311	Lee Gebbert	Geoprojects International, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
6-5-2011	6-7-2011	70	74	~57

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 54.16

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY: None

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	50	8.5	PVC	Threaded	2		Blank
50	70	8.5	PVC	Threaded	2		0.01

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
57	68	11	Sandy silt, 10% gravel, tan/brown	2

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2011 AUG -8 A 11:00

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: Estimated while hand bailing

TOTAL ESTIMATED WELL YIELD (GPM): 2

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	RA-11182	POD NUMBER	3	TRN NUMBER	472997
LOCATION	18S.26E.09 243				PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	2	44	8.5	Cement/Bentonite (6%)		Tremie
	44	48	8.5	Bentonite Pellets		Pour inside auger
	48	71	8.5	10/20 Silica Sand		Pour inside auger

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	4	34	Sand, 25% fines, Brown	☐ YES ☑ NO
4	34	30	Silt, clayey, trace gravels, brown/tan/red	☐ YES ☑ NO
34	37	7	Gravel, 30% fines, gray/tan	☐ YES ☑ NO
37	41	4	Silty clay, very fine - fine sand, gray/green	☐ YES ☑ NO
41	48	7	Sand, fine - medium, rounded gravel, tan/gray	☐ YES ☑ NO
48	52	4	Gravel, 30% fines, semi cemented, gray	☐ YES ☑ NO
52	57	5	Silty Clay, 20% fine sand, brown	☐ YES ☑ NO
57	68	11	Sandy Silt, 10% gravel, tan.brown	☑ YES ☐ NO
68	70	2	Sand, medium - coarse, tan/brown	☑ YES ☐ NO
70	74	4	Gravel, 25% sand, tan/gray	☑ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST: METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☑ OTHER – SPECIFY: Monitoring Well - No test

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:
This well is a monitoring well for the purpose of groundwater monitoring only.

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2011 AUG -8 A 10:30

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

L. J. Hall — SIGNATURE OF DRILLER

7-13-11 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER RA-11682	POD NUMBER 3	TRN NUMBER 472997
LOCATION	18S.26E.9.243	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
POD5	RA-11682
WELL OWNER NAME(S)	PHONE (OPTIONAL)
Lakeside Dairy	
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
49 E. Atoka Road	Artesia / NM / 88210

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	45	28.88	N
LONGITUDE	104	22	42.69	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS
Monitoring Well MW-11, located on the west side of N. Lake Rd. 1/4 mile north of Dinkus Rd.

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
¼	¼	¼	¼		☐ NORTH ☐ SOUTH	☐ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1311	Lee Gebbert	Geoprojects International, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
6-8-2011	6-9-2011	66	69	~53

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 51.38

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY: None

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
0	46	8.5	PVC	Threaded	2		Blank
46	66	8.5	PVC	Threaded	2		0.01

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2011 AUG 18 A 11:51

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
53	58	5	Gravel, 30% fines, medium - coarse sand, saturated	2

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
Estimated while hand bailing	2

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	RA-11682	POD NUMBER	5	TRN NUMBER	472997
LOCATION	18S.26E.16.124				PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	2	40	8.5	Cement/Bentonite (6%)		Tremie
	40	44	8.5	Bentonite Pellets		Pour inside auger
	44	69	8.5	10/20 Silica Sand		Pour inside auger

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0	2	2	Sand, fine - Coarse, brown	☐ YES ☑ NO
2	53	51	Silty clay/clayey silt, 15% sands, brown/gray/tan	☐ YES ☑ NO
53	58	5	Gravel, 30% fines, gray	☑ YES ☐ NO
58	69	11	Silty clay, 10% very fine sand, gray	☐ YES ☑ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☑ OTHER – SPECIFY: Monitoring Well - No test

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

This well is a monitoring well for the purpose of groundwater monitoring only.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2011 AUG -8 A 11:11

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

J. J. Hall — SIGNATURE OF DRILLER

7-13-11 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	RA-11682	POD NUMBER	5	TRN NUMBER	472997
LOCATION	18S.26E.14.124			PAGE 2 OF 2	

APPENDIX C

SAMPLING PROTOCOL, FIELD NOTES, & PHOTO DOCUMENTATION

Sampling Protocol

Representatives from SMA chose the Judgmental Sampling Method as described in EPA's Final Sampling Guidance for SW-846, 2002 to adequately quantify contaminant concentrations on the Iron Duke #2H Location. The utility of this particular method functions on the sufficient knowledge of the contaminant, which we possess. This design is also useful when identifying the composition of a release, which we have documented. In addition, this sampling design was chosen for this project because of the locations uniform soil type and the several operational considerations that precluded the implementation of a different statistical design.

The soil samples were collected in laboratory supplied containers in accordance with this sampling protocol, immediately placed on ice and sent under standard chain-of-custody protocols to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico for analysis. A total of fourteen (14) samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D.

Sampling Analysis Field Quality Assurance Procedures

A unique sample numbering was used to identify each sample collected and designated for on-site and off-site laboratory analysis. The purpose of this numbering scheme was to provide a tracking system for the retrieval of analytical and field data on each sample. Sample identification numbers were recorded on sample labels or tags, field notes, chain-of-custody records (COC) and all other applicable documentation used during the project. Sample labels were affixed to all sample containers during sampling activities. Information was recorded on each sample container label at the time of sample collection. The information recorded on the labels were as follows: sample identification number; sample type (discrete or composite); site name and area/location number; analysis to be performed; type of chemical preservative present in container; date and time of sample collection; and sample collector's name and initials. All samples were packed in ice in an approved rigid body container, custody sealed signed and shipped to the appropriate laboratory via insured currier service.

COC procedures implemented for the project provided documentation of the handling of each sample from the time of collection until completion of laboratory analysis. A COC form serves as a legal record of possession of the sample. A sample is considered to be under custody if one or more of the following criteria are met: the sample is in the sampler's possession; the sample is in the sampler's view after being in possession; the sample was in the sampler's possession and then was placed into a locked area to prevent tampering; and/or the sample is in a designated secure area. Custody was documented throughout the project field sampling activities by a chain-of custody form initiated each day during which samples are collected. Container custody seals placed on either individual samples or on the rigid body container were used to ensure that no sample tampering occurs between the time the samples are placed into the containers and the time the containers are opened for analysis at the laboratory. Container custody seals were signed and dated by the individual responsible for completing the COC form contained within the container.

Photo Log

Photo Taken September 21, 2018

Facing southeast

32.761615°, -104.379232°

Photo Taken September 21, 2018

Facing south

32.761615°, -104.379232°

Field Screening

Location Name: Iron Duke **Date:** 9/21/18 HMP

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
SW1	11:55	1.28	23.4°		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
SW2	12:01	1.68	23.0		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
SW3	12:16	1.09	24.8°		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
SW4	12:23	2.05	23.4°		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
GS1	12:29	1.29	22.8		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
GS2	12:33	1.36	22.4		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
GS3	12:37	0.85	22.5°		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
GS4	12:43	1.29	22.7°		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
L3-2	12:54	0.46	22.8°		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry (Moist) Wet	

APPENDIX D

LABORATORY ANALYTICAL REPORTS

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 05, 2018

Austin Weyant
Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-7040
FAX

RE: Iron Duke OrderNo.: 1808F63

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 4 sample(s) on 8/24/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1808F63**
Date Reported: **9/5/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L1-0.5
Project: Iron Duke
Collection Date: 8/22/2018 9:56:00 AM
Lab ID: 1808F63-001 **Matrix:** SOIL **Received Date:** 8/24/2018 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	1500	75		mg/Kg	50	8/31/2018 1:00:08 PM	40066
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/28/2018 5:45:26 PM	40007
Surr: BFB	107	70-130		%Rec	1	8/28/2018 5:45:26 PM	40007
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	170	10		mg/Kg	1	8/28/2018 3:40:59 PM	40010
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/28/2018 3:40:59 PM	40010
Surr: DNOP	110	50.6-138		%Rec	1	8/28/2018 3:40:59 PM	40010
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.024		mg/Kg	1	8/28/2018 5:45:26 PM	40007
Toluene	ND	0.048		mg/Kg	1	8/28/2018 5:45:26 PM	40007
Ethylbenzene	ND	0.048		mg/Kg	1	8/28/2018 5:45:26 PM	40007
Xylenes, Total	ND	0.097		mg/Kg	1	8/28/2018 5:45:26 PM	40007
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	8/28/2018 5:45:26 PM	40007
Surr: Toluene-d8	97.5	70-130		%Rec	1	8/28/2018 5:45:26 PM	40007

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L2-0.5
Project: Iron Duke
Collection Date: 8/22/2018 10:05:00 AM
Lab ID: 1808F63-002 **Matrix:** SOIL **Received Date:** 8/24/2018 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	13000	750		mg/Kg	500	8/31/2018 1:12:33 PM	40066
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/28/2018 6:08:38 PM	40007
Surr: BFB	110	70-130		%Rec	1	8/28/2018 6:08:38 PM	40007
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/28/2018 4:05:37 PM	40010
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/28/2018 4:05:37 PM	40010
Surr: DNOP	100	50.6-138		%Rec	1	8/28/2018 4:05:37 PM	40010
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.025		mg/Kg	1	8/28/2018 6:08:38 PM	40007
Toluene	ND	0.049		mg/Kg	1	8/28/2018 6:08:38 PM	40007
Ethylbenzene	ND	0.049		mg/Kg	1	8/28/2018 6:08:38 PM	40007
Xylenes, Total	ND	0.098		mg/Kg	1	8/28/2018 6:08:38 PM	40007
Surr: 4-Bromofluorobenzene	123	70-130		%Rec	1	8/28/2018 6:08:38 PM	40007
Surr: Toluene-d8	97.6	70-130		%Rec	1	8/28/2018 6:08:38 PM	40007

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L2-1
Project: Iron Duke
Collection Date: 8/22/2018 10:11:00 AM
Lab ID: 1808F63-003 **Matrix:** SOIL **Received Date:** 8/24/2018 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	430	30		mg/Kg	20	8/30/2018 4:59:16 PM	40085

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3-0.5
Project: Iron Duke
Collection Date: 8/22/2018 10:20:00 AM
Lab ID: 1808F63-004 **Matrix:** SOIL
Received Date: 8/24/2018 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	1200	75		mg/Kg	50	8/31/2018 1:24:57 PM	40085
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/28/2018 6:31:52 PM	40007
Surr: BFB	105	70-130		%Rec	1	8/28/2018 6:31:52 PM	40007
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	14	10		mg/Kg	1	8/28/2018 4:30:09 PM	40010
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/28/2018 4:30:09 PM	40010
Surr: DNOP	104	50.6-138		%Rec	1	8/28/2018 4:30:09 PM	40010
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.025		mg/Kg	1	8/28/2018 6:31:52 PM	40007
Toluene	ND	0.049		mg/Kg	1	8/28/2018 6:31:52 PM	40007
Ethylbenzene	ND	0.049		mg/Kg	1	8/28/2018 6:31:52 PM	40007
Xylenes, Total	ND	0.098		mg/Kg	1	8/28/2018 6:31:52 PM	40007
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	8/28/2018 6:31:52 PM	40007
Surr: Toluene-d8	97.1	70-130		%Rec	1	8/28/2018 6:31:52 PM	40007

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808F63**

05-Sep-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**MB-40066**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**40066**	RunNo:	**53830**					
Prep Date:	**8/30/2018**	Analysis Date:	**8/30/2018**	SeqNo:	**1776658**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-40066**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**40066**	RunNo:	**53830**					
Prep Date:	**8/30/2018**	Analysis Date:	**8/30/2018**	SeqNo:	**1776659**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.9	90	110			

Sample ID	**MB-40085**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**40085**	RunNo:	**53830**					
Prep Date:	**8/30/2018**	Analysis Date:	**8/30/2018**	SeqNo:	**1776688**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-40085**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**40085**	RunNo:	**53830**					
Prep Date:	**8/30/2018**	Analysis Date:	**8/30/2018**	SeqNo:	**1776689**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808F63**

05-Sep-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**LCS-40010**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**40010**		RunNo:	**53750**				
Prep Date:	**8/27/2018**	Analysis Date:	**8/28/2018**		SeqNo:	**1773440**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.8	70	130			
Surr: DNOP	4.7		5.000		93.4	50.6	138			

Sample ID	**MB-40010**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**40010**		RunNo:	**53750**				
Prep Date:	**8/27/2018**	Analysis Date:	**8/28/2018**		SeqNo:	**1773441**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		100	50.6	138			

Sample ID	**MB-40034**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**40034**		RunNo:	**53774**				
Prep Date:	**8/28/2018**	Analysis Date:	**8/29/2018**		SeqNo:	**1774604**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		106	50.6	138			

Sample ID	**LCS-40034**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**40034**		RunNo:	**53774**				
Prep Date:	**8/28/2018**	Analysis Date:	**8/29/2018**		SeqNo:	**1774605**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.8		5.000		116	50.6	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808F63**

05-Sep-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**lcs-40007**	SampType:	**LCS4**		TestCode:	**EPA Method 8260B: Volatiles Short List**				
Client ID:	**BatchQC**	Batch ID:	**40007**		RunNo:	**53769**				
Prep Date:	**8/27/2018**	Analysis Date:	**8/28/2018**		SeqNo:	**1773977**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.49	0.025	0.5000	0	97.3	80	120			
Toluene	0.52	0.050	0.5000	0	104	80	120			
Ethylbenzene	0.54	0.050	0.5000	0	107	80	120			
Xylenes, Total	1.6	0.10	1.500	0	108	80	120			
Surr: 4-Bromofluorobenzene	0.57		0.5000		115	70	130			
Surr: Toluene-d8	0.48		0.5000		96.8	70	130			

Sample ID	**mb-40007**	SampType:	**MBLK**		TestCode:	**EPA Method 8260B: Volatiles Short List**				
Client ID:	**PBS**	Batch ID:	**40007**		RunNo:	**53769**				
Prep Date:	**8/27/2018**	Analysis Date:	**8/28/2018**		SeqNo:	**1773978**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130			
Surr: Toluene-d8	0.52		0.5000		103	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1808F63**

05-Sep-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**lcs-40007**	SampType:	**LCS**		TestCode:	**EPA Method 8015D Mod: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**40007**		RunNo:	**53769**				
Prep Date:	**8/27/2018**	Analysis Date:	**8/28/2018**		SeqNo:	**1773951**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	52	5.0	50.00	0	104	70	130			
Surr: BFB	510		500.0		102	70	130			

Sample ID	**mb-40007**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D Mod: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**40007**		RunNo:	**53769**				
Prep Date:	**8/27/2018**	Analysis Date:	**8/28/2018**		SeqNo:	**1773952**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	540		500.0		108	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: SMA-CARLSBAD Work Order Number: 1808F63 RcptNo: 1

Received By: **Jazzmine Burkhead** 8/24/2018 8:45:00 AM Jazzmine Burkhead

Completed By: **Michelle Garcia** 8/24/2018 2:55:39 PM Michelle Garcia

Reviewed By: ENM 8/24/18

Labeled by: SAB 08/24/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____
08/24/18 SAB

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.1	Good	Yes			

Chain-of-Custody Record

Client: SMA

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time: 5 day turn
☐ Standard ☒ Rush _____

Project Name: Don Duke

Project #:

Project Manager: Austin Wyant

Sampler: Heath Patton

On Ice: ☑ Yes ☐ No

Sample Temperature: 6.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1808F63	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F^-, Cl^-, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
8/22/18	9:56	Soil	L1-0.5	4 oz		001	X		X					X				
	10:05		L2-0.5			002	X		X					X				
	10:11		L2-1			003								X				
	10:20		L3-0.5			004	X		X					X				

Date: 8/23/18 Time: 1400 Relinquished by: [signature]
Received by: [signature] Date: 8/23/18 Time: 1412

Date: 8/23/18 Time: 1900 Relinquished by: [signature]
Received by: [signature] Date: 08/24/18 Time: 08:45

Remarks: Courier Marathon

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 05, 2018

Austin Weyant
Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-7040
FAX

RE: Iron Duke OrderNo.: 1809F19

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 9 sample(s) on 9/26/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW1
Project: Iron Duke
Collection Date: 9/21/2018 11:55:00 AM
Lab ID: 1809F19-001 **Matrix:** SOIL
Received Date: 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **SRM**	
Chloride	1100	30		mg/Kg	20	9/28/2018 8:05:48 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	48	10		mg/Kg	1	10/2/2018 5:01:03 PM	40665
Motor Oil Range Organics (MRO)	110	50		mg/Kg	1	10/2/2018 5:01:03 PM	40665
Surr: DNOP	116	50.6-138		%Rec	1	10/2/2018 5:01:03 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/28/2018 9:55:43 AM	40633
Surr: BFB	92.7	15-316		%Rec	1	9/28/2018 9:55:43 AM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/28/2018 9:55:43 AM	40633
Toluene	ND	0.049		mg/Kg	1	9/28/2018 9:55:43 AM	40633
Ethylbenzene	ND	0.049		mg/Kg	1	9/28/2018 9:55:43 AM	40633
Xylenes, Total	ND	0.099		mg/Kg	1	9/28/2018 9:55:43 AM	40633
Surr: 4-Bromofluorobenzene	93.3	80-120		%Rec	1	9/28/2018 9:55:43 AM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW2
Project: Iron Duke
Collection Date: 9/21/2018 12:01:00 PM
Lab ID: 1809F19-002 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	1700	75		mg/Kg	50	10/1/2018 6:05:14 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	35	9.6		mg/Kg	1	10/2/2018 6:07:19 PM	40665
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/2/2018 6:07:19 PM	40665
Surr: DNOP	120	50.6-138		%Rec	1	10/2/2018 6:07:19 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2018 11:06:31 AM	40633
Surr: BFB	92.4	15-316		%Rec	1	9/28/2018 11:06:31 AM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2018 11:06:31 AM	40633
Toluene	ND	0.048		mg/Kg	1	9/28/2018 11:06:31 AM	40633
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2018 11:06:31 AM	40633
Xylenes, Total	ND	0.097		mg/Kg	1	9/28/2018 11:06:31 AM	40633
Surr: 4-Bromofluorobenzene	90.3	80-120		%Rec	1	9/28/2018 11:06:31 AM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW3
Project: Iron Duke
Collection Date: 9/21/2018 12:16:00 PM
Lab ID: 1809F19-003 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	440	30		mg/Kg	20	10/1/2018 6:17:38 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	68	9.5		mg/Kg	1	10/2/2018 6:29:22 PM	40665
Motor Oil Range Organics (MRO)	110	48		mg/Kg	1	10/2/2018 6:29:22 PM	40665
Surr: DNOP	122	50.6-138		%Rec	1	10/2/2018 6:29:22 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/28/2018 12:16:43 PM	40633
Surr: BFB	92.6	15-316		%Rec	1	9/28/2018 12:16:43 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	9/28/2018 12:16:43 PM	40633
Toluene	ND	0.047		mg/Kg	1	9/28/2018 12:16:43 PM	40633
Ethylbenzene	ND	0.047		mg/Kg	1	9/28/2018 12:16:43 PM	40633
Xylenes, Total	ND	0.093		mg/Kg	1	9/28/2018 12:16:43 PM	40633
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	9/28/2018 12:16:43 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW4
Project: Iron Duke
Collection Date: 9/21/2018 12:23:00 PM
Lab ID: 1809F19-004 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	2300	75		mg/Kg	50	10/1/2018 6:30:03 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	55	9.8		mg/Kg	1	10/2/2018 6:51:29 PM	40665
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/2/2018 6:51:29 PM	40665
Surr: DNOP	122	50.6-138		%Rec	1	10/2/2018 6:51:29 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2018 12:39:59 PM	40633
Surr: BFB	90.9	15-316		%Rec	1	9/28/2018 12:39:59 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2018 12:39:59 PM	40633
Toluene	ND	0.048		mg/Kg	1	9/28/2018 12:39:59 PM	40633
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2018 12:39:59 PM	40633
Xylenes, Total	ND	0.096		mg/Kg	1	9/28/2018 12:39:59 PM	40633
Surr: 4-Bromofluorobenzene	91.9	80-120		%Rec	1	9/28/2018 12:39:59 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS1
Project: Iron Duke
Collection Date: 9/21/2018 12:29:00 PM
Lab ID: 1809F19-005 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	1400	75		mg/Kg	50	10/1/2018 6:42:27 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	23	9.2		mg/Kg	1	10/2/2018 7:13:39 PM	40665
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/2/2018 7:13:39 PM	40665
Surr: DNOP	123	50.6-138		%Rec	1	10/2/2018 7:13:39 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/28/2018 1:03:22 PM	40633
Surr: BFB	91.8	15-316		%Rec	1	9/28/2018 1:03:22 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/28/2018 1:03:22 PM	40633
Toluene	ND	0.050		mg/Kg	1	9/28/2018 1:03:22 PM	40633
Ethylbenzene	ND	0.050		mg/Kg	1	9/28/2018 1:03:22 PM	40633
Xylenes, Total	ND	0.10		mg/Kg	1	9/28/2018 1:03:22 PM	40633
Surr: 4-Bromofluorobenzene	91.6	80-120		%Rec	1	9/28/2018 1:03:22 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS2
Project: Iron Duke
Collection Date: 9/21/2018 12:33:00 PM
Lab ID: 1809F19-006 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	1200	75		mg/Kg	50	10/1/2018 6:54:52 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	21	9.1		mg/Kg	1	10/2/2018 7:35:48 PM	40665
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	10/2/2018 7:35:48 PM	40665
Surr: DNOP	124	50.6-138		%Rec	1	10/2/2018 7:35:48 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2018 1:26:38 PM	40633
Surr: BFB	91.8	15-316		%Rec	1	9/28/2018 1:26:38 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2018 1:26:38 PM	40633
Toluene	ND	0.048		mg/Kg	1	9/28/2018 1:26:38 PM	40633
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2018 1:26:38 PM	40633
Xylenes, Total	ND	0.095		mg/Kg	1	9/28/2018 1:26:38 PM	40633
Surr: 4-Bromofluorobenzene	91.1	80-120		%Rec	1	9/28/2018 1:26:38 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS3
Project: Iron Duke
Collection Date: 9/21/2018 12:37:00 PM
Lab ID: 1809F19-007 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	900	30		mg/Kg	20	10/1/2018 7:07:16 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/2/2018 7:57:47 PM	40665
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/2/2018 7:57:47 PM	40665
Surr: DNOP	140	50.6-138	S	%Rec	1	10/2/2018 7:57:47 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/28/2018 1:49:54 PM	40633
Surr: BFB	92.2	15-316		%Rec	1	9/28/2018 1:49:54 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	9/28/2018 1:49:54 PM	40633
Toluene	ND	0.050		mg/Kg	1	9/28/2018 1:49:54 PM	40633
Ethylbenzene	ND	0.050		mg/Kg	1	9/28/2018 1:49:54 PM	40633
Xylenes, Total	ND	0.10		mg/Kg	1	9/28/2018 1:49:54 PM	40633
Surr: 4-Bromofluorobenzene	93.1	80-120		%Rec	1	9/28/2018 1:49:54 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: CS4
Project: Iron Duke
Collection Date: 9/21/2018 12:43:00 PM
Lab ID: 1809F19-008 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	1100	75		mg/Kg	50	10/2/2018 6:32:53 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**lrm**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/2/2018 8:19:53 PM	40665
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/2/2018 8:19:53 PM	40665
Surr: DNOP	118	50.6-138		%Rec	1	10/2/2018 8:19:53 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/28/2018 2:13:13 PM	40633
Surr: BFB	91.7	15-316		%Rec	1	9/28/2018 2:13:13 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.023		mg/Kg	1	9/28/2018 2:13:13 PM	40633
Toluene	ND	0.046		mg/Kg	1	9/28/2018 2:13:13 PM	40633
Ethylbenzene	ND	0.046		mg/Kg	1	9/28/2018 2:13:13 PM	40633
Xylenes, Total	ND	0.093		mg/Kg	1	9/28/2018 2:13:13 PM	40633
Surr: 4-Bromofluorobenzene	92.4	80-120		%Rec	1	9/28/2018 2:13:13 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3-2
Project: Iron Duke
Collection Date: 9/21/2018 12:54:00 PM
Lab ID: 1809F19-009 **Matrix:** SOIL **Received Date:** 9/26/2018 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	56	30		mg/Kg	20	10/1/2018 7:32:05 PM	40664
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/2/2018 8:41:43 PM	40665
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	10/2/2018 8:41:43 PM	40665
Surr: DNOP	118	50.6-138		%Rec	1	10/2/2018 8:41:43 PM	40665
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2018 2:36:34 PM	40633
Surr: BFB	93.2	15-316		%Rec	1	9/28/2018 2:36:34 PM	40633
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/28/2018 2:36:34 PM	40633
Toluene	ND	0.048		mg/Kg	1	9/28/2018 2:36:34 PM	40633
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2018 2:36:34 PM	40633
Xylenes, Total	ND	0.096		mg/Kg	1	9/28/2018 2:36:34 PM	40633
Surr: 4-Bromofluorobenzene	92.6	80-120		%Rec	1	9/28/2018 2:36:34 PM	40633

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809F19**

05-Oct-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**MB-40664**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**40664**	RunNo:	**54545**					
Prep Date:	**9/28/2018**	Analysis Date:	**9/28/2018**	SeqNo:	**1808088**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	**LCS-40664**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**40664**	RunNo:	**54545**					
Prep Date:	**9/28/2018**	Analysis Date:	**9/28/2018**	SeqNo:	**1808089**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809F19**

05-Oct-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID **LCS-40665**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **40665**	RunNo: **54570**
Prep Date: **9/28/2018**	Analysis Date: **10/2/2018**	SeqNo: **1810169** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.7	70	130			
Surr: DNOP	5.7		5.000		115	50.6	138			

Sample ID **MB-40665**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **40665**	RunNo: **54570**
Prep Date: **9/28/2018**	Analysis Date: **10/2/2018**	SeqNo: **1810170** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		113	50.6	138			

Sample ID **1809F19-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SW1**	Batch ID: **40665**	RunNo: **54570**
Prep Date: **9/28/2018**	Analysis Date: **10/2/2018**	SeqNo: **1810172** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	66	9.7	48.59	48.02	36.6	53.5	126			S
Surr: DNOP	5.3		4.859		110	50.6	138			

Sample ID **1809F19-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SW1**	Batch ID: **40665**	RunNo: **54570**
Prep Date: **9/28/2018**	Analysis Date: **10/2/2018**	SeqNo: **1810173** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.1	45.66	48.02	3.62	53.5	126	27.9	21.7	RS
Surr: DNOP	5.0		4.566		110	50.6	138	0	0	

Sample ID **MB-40755**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **40755**	RunNo: **54604**
Prep Date: **10/2/2018**	Analysis Date: **10/3/2018**	SeqNo: **1812024** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		113	50.6	138			

Sample ID **LCS-40755**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **40755**	RunNo: **54604**
Prep Date: **10/2/2018**	Analysis Date: **10/3/2018**	SeqNo: **1812025** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809F19**

05-Oct-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**LCS-40755**	SampType:	**LCS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**
Client ID:	**LCSS**	Batch ID:	**40755**	RunNo:	**54604**
Prep Date:	**10/2/2018**	Analysis Date:	**10/3/2018**	SeqNo:	**1812025** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.5		5.000		110	50.6	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809F19**

05-Oct-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**MB-40633**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**40633**		RunNo:	**54524**				
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**		SeqNo:	**1807324**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.2	15	316			

Sample ID	**LCS-40633**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**40633**		RunNo:	**54524**				
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**		SeqNo:	**1807325**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	75.9	131			
Surr: BFB	1100		1000		106	15	316			

Sample ID	**1809F19-001AMS**	SampType:	**MS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**SW1**	Batch ID:	**40633**		RunNo:	**54524**				
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**		SeqNo:	**1807327**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	4.7	23.63	0	119	77.8	128			
Surr: BFB	1000		945.2		110	15	316			

Sample ID	**1809F19-001AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**SW1**	Batch ID:	**40633**		RunNo:	**54524**				
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**		SeqNo:	**1807328**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.7	23.45	0	117	77.8	128	2.45	20	
Surr: BFB	1000		938.1		111	15	316	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1809F19**

05-Oct-18

Client: Souder, Miller & Associates

Project: Iron Duke

Sample ID	**MB-40633**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**40633**	RunNo:	**54524**					
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**	SeqNo:	**1807339**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.0	80	120			

Sample ID	**LCS-40633**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**40633**	RunNo:	**54524**					
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**	SeqNo:	**1807340**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	90.3	77.3	128			
Toluene	0.94	0.050	1.000	0	94.1	79.2	125			
Ethylbenzene	0.92	0.050	1.000	0	92.5	80.7	127			
Xylenes, Total	2.8	0.10	3.000	0	93.5	81.6	129			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.0	80	120			

Sample ID	**1809F19-002AMS**	SampType:	**MS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**SW2**	Batch ID:	**40633**	RunNo:	**54524**					
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**	SeqNo:	**1807343**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.024	0.9479	0	102	68.5	133			
Toluene	1.0	0.047	0.9479	0.009363	108	75	130			
Ethylbenzene	1.0	0.047	0.9479	0	110	79.4	128			
Xylenes, Total	3.1	0.095	2.844	0.01564	109	77.3	131			
Surr: 4-Bromofluorobenzene	0.90		0.9479		95.0	80	120			

Sample ID	**1809F19-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**SW2**	Batch ID:	**40633**	RunNo:	**54524**					
Prep Date:	**9/27/2018**	Analysis Date:	**9/28/2018**	SeqNo:	**1807344**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.024	0.9506	0	105	68.5	133	3.04	20	
Toluene	1.1	0.048	0.9506	0.009363	111	75	130	2.91	20	
Ethylbenzene	1.1	0.048	0.9506	0	113	79.4	128	3.56	20	
Xylenes, Total	3.2	0.095	2.852	0.01564	113	77.3	131	3.58	20	
Surr: 4-Bromofluorobenzene	0.93		0.9506		97.5	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **SMA-CARLSBAD** Work Order Number: **1809F19** RcptNo: **1**

Received By: **Erin Melendrez** **9/26/2018 8:50:00 AM**

Completed By: **Ashley Gallegos** **9/26/2018 10:34:05 AM**

Reviewed By: ENM 9/27/18 labeled by: JAB 09/27/18

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: JAB 09/27/18

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes			

Chain-of-Custody Record

Client: SWA

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time: 5 days turn
☐ Standard ☐ Rush _____

Project Name: Don Duke

Project #:

Project Manager: Austin Weyant

Sampler: Heath Patterson

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.5-1.0(CF)=3.5

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Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1809F13	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F^-, Cl^-, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
9/24/18	11:55	Soil	SW1	402		-001	X		X					X								
	12:01		SW2			-002	X		X					X								
	12:16		SW3			-003	X		X					X								
	12:23		SW4			-004	X		X					X								
	12:29		CS1			-005	X		X					X								
	12:33		CS2			-006	X		X					X								
	12:37		CS3			-007	X		X					X								
	12:43		CS4			-008	X		X					X								
	12:54		C3-2			-009	X		X					X								

Date:	Time:	Relinquished by:	Received by:	Date	Time	Remarks:
				9/25/18	1400	Marathon
9/25/18	1800		Courier ENH 9/26/18	9/26/18	0850	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.