Souder, Miller & Associates♦201 S. Halagueno St.♦Carlsbad, NM 88220
(575) 689-8801

June 10, 2019

#5E27950-BG2

NMOCD District 1
1625 N. French Drive
Hobbs, New Mexico 88240

SUBJECT: Remediation Closure Report for the Flowmaster 24 34 15 SB #4H Release (1RP-5431), Lea County, New Mexico

To Whom it May Concern:

On behalf of Marathon Oil Permian LLC (Marathon), Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes the remediation of a release of liquids related to oil and gas production activities at the Flowmaster 24 34 15 SB #4H site. The site is in Unit D, Section 15, Township 24S, Range 34E, Lea 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 release information and Closure Criteria.

Table 1: Release Information and Closure Criteria			
Name	Flowmaster 24 34 15 SB #4H	Company	Marathon Oil Permian LLC
API Number	30-025-43666	Location	32.22385978° -103.46239037°
Incident Number	1RP-5431		
Estimated Date of Release	March 11, 2019	Date Reported to NMOCD	March 12, 2019
Land Owner	Private	Reported To	NMOCD District I
Source of Release	Above ground storage tank		
Released Volume	686 BBLS	Released Material	Produced Water
Recovered Volume	400 BBLS	Net Release	286 BBLS
NMOCD Closure Criteria	>100 feet to groundwater		
SMA Response Dates	March 14, 2019, May 29th and 30th 2019		

1.0 Background

On March 11, 2019, a release was discovered at the Flowmaster 24 34 15 SB #4H site due to a leak on an above ground storage tank. Initial response activities were conducted by Marathon, and included source elimination and containment. Site stabilization activities recovered approximately 400 barrels of fluid and a surface scrape removed approximately 20 cubic yards of contaminated caliche. Figures 1 & 2 illustrate the vicinity and site location, Figure 3 illustrates the release location. The C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The Flowmaster 24 34 15 SB #4H is located approximately seventeen (17) miles northwest of Jal, New Mexico on privately-owned land at an elevation of approximately 3,521 feet above mean sea level (amsl).

Based upon NMOSE (Appendix B), depth to groundwater in the area is estimated to be 420 feet below grade surface (bgs). There is one (1) known water source 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 5/6/2019). The nearest significant watercourse is an unnamed playa, located approximately 900 feet to the northeast. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area as described in 19.15.29.12.C(4) NMAC.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for a groundwater depth of greater than 100 feet bgs. The site has been restored to meet the standards of Table I of 19.15.29.12 NMAC.

Table 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

3.0 Release Characterization and Remediation Activities

On March 14, 2019, SMA personnel arrived on site in response to the release associated with Flowmaster 24 34 15 SB #4H. SMA performed site delineation activities by collecting soil samples around the release site and throughout the visibly stained area.

A total of six (6) sample locations (L1-L5) were investigated using a hand-auger, to depths up to 0.5 feet below the scraped surface. A total of six (6) samples were collected for laboratory analysis for total chloride using EPA Method 300.0. Results indicated elevated chloride concentrations in the areas of samples L1, L2 and L3. Locations L4 and L5 (north and northeast of release) were below Closure Criteria and reclamation standards.

On May 28, 2019, SMA returned to the site to oversee the excavation of contaminated soil. Upon arrival, it was noted that the area around sample locations L4 and L5 had been scraped by the operator to approximately 0.5 feet. SMA then guided the excavation activities by collecting soil samples for field screening. Samples were screened for chloride using an electrical conductivity (EC) meter. The walls and base were excavated until field screening results indicated that the NMOCD Closure Criteria would be met.

The area represented by BH1 (previously sample area L1) was excavated to four (4) feet bgs and accompanied by a complete vertical delineation of chlorides. This ensured that the top four feet of

impacted materials on the well pad met the reclamation requirement of 19.15.29.13(D)(1) NMAC. The areas represented by BH2, BH3 and BH4 were excavated to 1-foot bgs. Photos of the open excavation can be found in Appendix E.

The confirmation samples were collected from within the excavation in accordance with a systematic sampling approach as defined by SW846 using Gilbert, 1987 equation 5.2.3 for Stratified Random Sampling which is detailed in Appendix C. This systematic method meets the EPAs data quality assessment standards (DQA) for composite sampling, as defined by (Myers 1997). Confirmation samples were composed of five-point composites of the base (BH1-BH4) and walls (SW1-SW3).

A total of ten samples were collected for laboratory analysis for a variety of 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. 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).

Results show that the top four feet were remediated to meet the chloride standard of 19.15.29.13(D)(1) NMAC, and all other soil meets the Closure Criteria for this site. Figure 3 shows the extent of the excavation and sample locations. All field screening and laboratory results are summarized in Table 3. Laboratory reports are included in Appendix D.

Contaminated soils were removed and replaced with clean backfill material to return the surface to previous contours. The contaminated soil was transported and disposed of at an NMOCD permitted disposal facility.

4.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization; regulatory liaison; remediation; and preparing this closure report. 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 Heather Patterson at 575-200-5343 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Reviewed by:

Heather Patterson
Project Scientist

Shawna Chubbuck
Senior Scientist

ATTACHMENTS:

Figures:

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Surface Water Radius Map
Figure 3: Site and Sample Location Map

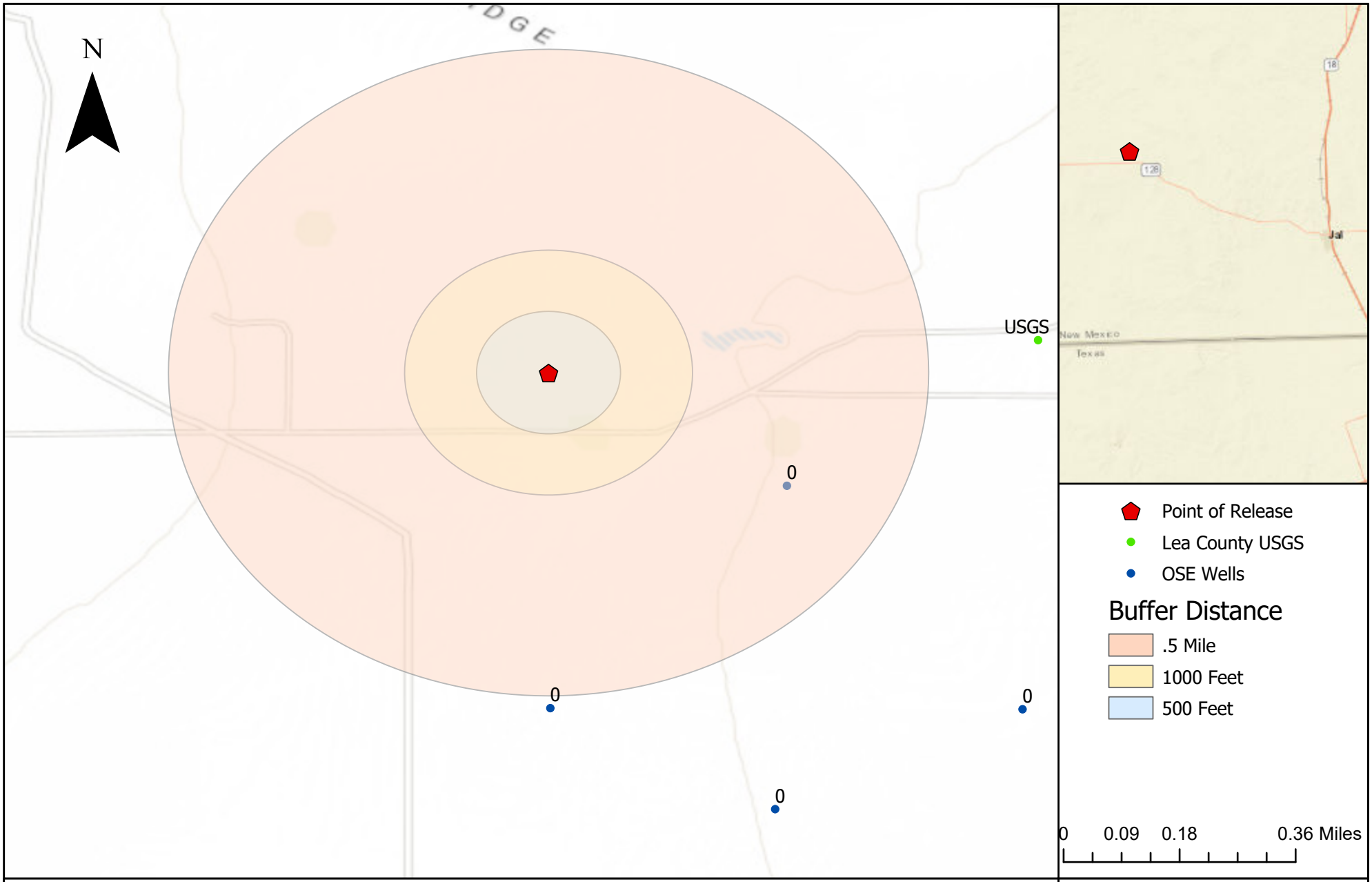
Tables:

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

Appendices:

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

FIGURES



Regional Vicinity & Wellhead Protection Map
Flowmaster 24 34 15 SB #4H- Marathon
Sec 23 T24S R34E, New Mexico

Figure 1

\\CBO10\Projects\5-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx

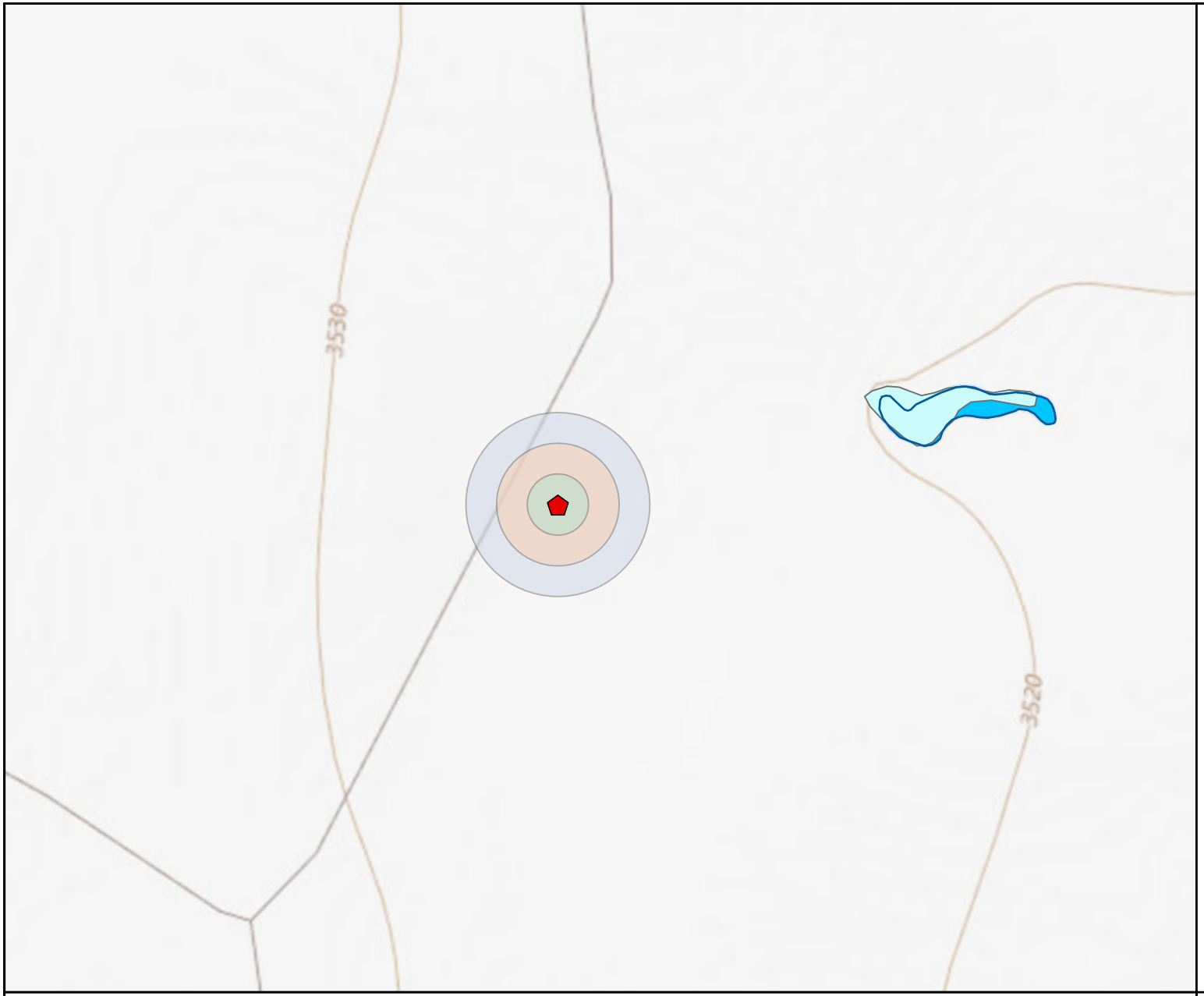
Date Saved: 3/25/2019

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

Drawn Heather Patterson
Date 3/25/2019
Checked _____
Approved _____

SMA

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains



Legend

- Point of Release
- Springs Seeps
- Streams Canals
- Rivers
- Flowlines SENM
- NM Wetlands
- Lakes Playas
- FEMA Flood Zones 2011

Buffer Distance

- 100 Feet
- 200 Feet
- 300 Feet

N

0 145 290 580 US Feet

Surface Water Protection Map
Flowmaster 24 34 15 SB #4H- Marathon
Sec 23 T24S R34E, New Mexico

Figure 2

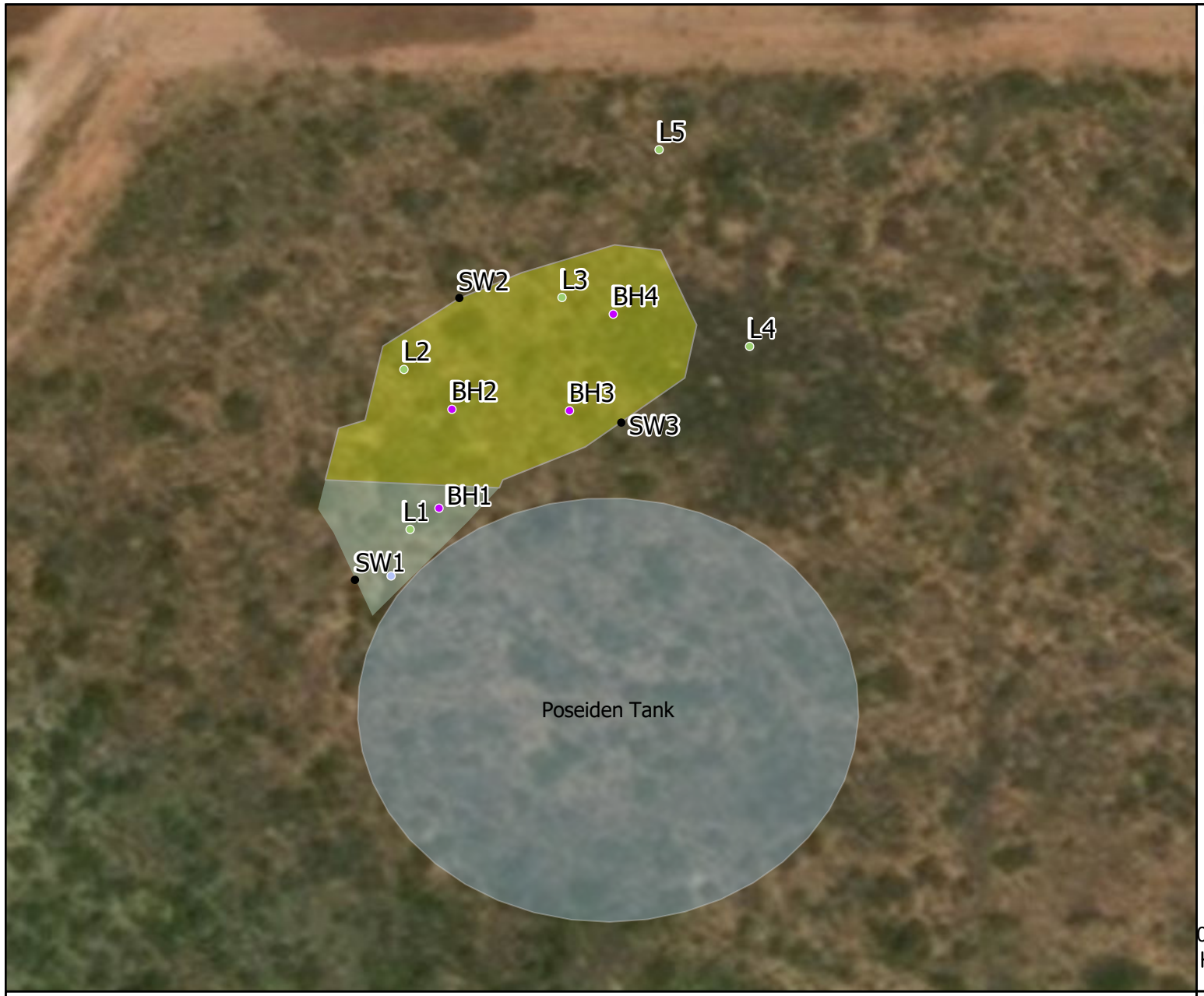
Date Saved: 3/25/2019

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

Drawn Heather Patterson
Date 3/25/2019
Checked
Approved

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains

\\CBO10\Projects\5-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx



Legend

- Initial Sample Locations
- Bottom Hole Locations
- Sidewall Locations
- 1' Excavation
- 4' Excavation
- Equipment

N

0 30.5 61 122 Feet

Site and Sample location Map
Flowmaster 24 34 15 SB #4H - Marathon Oil
S15-T24S-R34E, Lea County, New Mexico

Figure 3

Revisions

By:_____ Date:_____ Descr:_____
By:_____ Date:_____ Descr:_____

Date Saved: 5/28/2019

Drawn Heather Patterson
Date 5/28/2019
Checked
Approved

SMA

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains

P:\15-Marathon MSA 2019 (5E27950)\GIS\ARCGIS\MARATHON_MIT.aprx

TABLES

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	420	NMOSE
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	<1/2 mile	Figure 1
Hortizontal Distance to Nearest Significant Watercourse (ft)	900	Figure 1

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'		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					
Water Well or Water Source						
<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
Flowmaster 24 34 15 SB #4H (1RP-5431)

Sample ID	Sample Date	Depth (feet bgs)	Action	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	Total TPH mg/Kg	Cl- mg/Kg	Field screening Cl- (mg/kg)
NMOCD Closure Criteria				50	10	1000			2,500	600*	
INITIAL SAMPLING											
L1	3/14/2019	0.5	excavated	<0.206	<0.023	<4.6	<9.3	<47	<60.9	**2,000**	--
L2	3/14/2019	0.5	excavated	--	--	--	--	--	--	**1,400**	--
L3	3/14/2019	0.5	excavated	--	--	--	--	--	--	**3,300**	--
L4	3/14/2019	0.5	excavated	--	--	--	--	--	--	<60	--
L5	3/14/2019	0.5	excavated	--	--	--	--	--	--	180	--
CONFIRMATION CLOSURE SAMPLING											
BH1	5/28/2019	1	excavated	<0.23	<0.025	<4.9	180	69	249	2600	2800
		2	excavated	--	--	--	--	--	--	--	2320
		2.5	excavated	--	--	--	--	--	--	--	2220
		4	in-situ	--	--	--	--	--	--	4600	4500
		5.5	in-situ	--	--	--	--	--	--	--	3910
		9	sample	--	--	--	--	--	--	2300	1770
		11	sample	--	--	--	--	--	--	--	1190
		11.5	sample	--	--	--	--	--	--	560	380
BH2		1	sample	<0.23	<0.025	<5.0	<9.2	<46	<61	<60	<130
BH3		1	sample	<0.23	<0.025	<5.0	<9.7	<48	<63	480	390
BH4		1	sample	<0.23	<0.025	<5.0	<9.7	<48	<63	320	240
SW1		0-4	sample	<0.23	<0.025	<5.0	<10	<50	<65	280	<130
SW2		0-1	sample	<0.23	<0.024	<4.8	<9.5	<48	<63	<60	<130
SW3		0-1	sample	<0.23	<0.024	<4.8	<9.2	<46	<61	75	<130

"--" = Not Analyzed

* = per Reclamation Standard (19.15.29.13.D(1) NMAC)

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	NDHR1910836261
District RP	1RP-5431
Facility ID	
Application ID	pDHR1910830573

Release Notification

Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 372098
Contact Name Callie Karrigan	Contact Telephone 575-297-0956
Contact email cnkarrigan@marathonoil.com	Incident # *NDHR1910836261*
Contact mailing address 4111 Tidwell Road, Carlsbad New Mexico, 88220	

Location of Release Source

Latitude 32.22385978 Longitude 103.46239037
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Flowmaster 24 34 15 SB No. 4H	Site Type Oil and gas drilling facility
Date Release Discovered 3/11/19	API# *(if applicable)* 30-025-43666

Unit Letter	Section	Township	Range	County
D	15	24S	34E	Lea

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☑ Private (*Name:* _____)

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) 686	Volume Recovered (bbls) 400
	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

Prior to opening up to flowback wells on an adjacent pad, a leak was discovered at the above ground storage tank (AST) at approximately 4:00 am. Upon investigation, a tear was discovered in the liner on the AST east side wall, causing produced fluid to be released onto the engineered pad. An earthen berm was built to contain the flow of fluid and vac trucks were used to remove the free standing liquids on location. The source of the leak has been stopped. Approximately 626 barrels of produced water was released with 400 barrels recovered. A crew was immediately dispatched to perform a scrape on location to recover saturated soil.

State of New Mexico
Oil Conservation Division

Incident ID	NDHR1910836261
District RP	1RP-5431
Facility ID	
Application ID	pDHR1910830573

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? Release exceeded 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Yes to Jim Griswold and D1 via email on 3/11/19 at 4:12 pm.

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:

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: 3/26/19

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

OCD Only

Received by: Dylan Rose-Coss Date: 04/18/2019

State of New Mexico
Oil Conservation Division

Incident ID	nDHR1910836261
District RP	1RP-5431
Facility ID	
Application ID	pDHR1910830573

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?	420 (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	nDHR1910836261
District RP	1RP-5431
Facility ID	
Application ID	pDHR1910830573

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: ___6/10/2019_____

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

OCD Only

Received by: _____ Date**:** _____

State of New Mexico
Oil Conservation Division

Incident ID	nDHR1910836261
District RP	1RP-5431
Facility ID	
Application ID	pDHR1910830573

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: __6/10/2019_____

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

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
S15-BH-03	C 03932
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Bryce Krager % Parkhill, Smith & Cooper Attention: R.H. Holder	
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
4222 85th Street	Lubbock / Texas / 79423

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	12	50.55	N
	LONGITUDE	103	27	28.96	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SW 1/4 of SW 1/4 of NW 1/4 of SE 1/4 of Section 15, Township 24S, Range 34E

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER			NAME OF WELL DRILLING COMPANY
WD-1222	Lee Peterson			Peterson Drilling & Testing, Inc.
DRILLING STARTED	**DRILLING ENDED**	**DEPTH OF COMPLETED WELL (FT)**	**BORE HOLE DEPTH (FT)**	**DEPTH WATER FIRST ENCOUNTERED (FT)**
02/10/16	02/11/16		90'	

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT)

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 10/29/15)

FILE NUMBER	C-3932	POD NUMBER	13	TRN NUMBER	581433
LOCATION	24S.34E.15.4.2.3		EXPL		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	6	6	Light Reddish Brown Fine Sand	Y ✓ N	
6	13	7	Light Reddish Brown Sand with Caliche	Y ✓ N	
13	19	6	Light Reddish Brown Fine Sand	Y ✓ N	
19	29	10	Tan-White Caliche with Light Reddish Brown Sand	Y ✓ N	
29	39	10	Light Reddish Brown Sand	Y ✓ N	
39	45	6	Gray to Dark Gray Sand	Y ✓ N	
45	54	9	Gray-Dark Gray Sand with Sandstone Pebbles	Y ✓ N	
54	55	1	Dark Reddish Brown to Light Reddish Brown Silty Claystone	Y ✓ N	
55	58	3	Green to Gray Shale	Y ✓ N	
58	62	4	Dark Reddish Brown Silty Claystone	Y ✓ N	
62	74	12	Dark Reddish Brown Claystone	Y ✓ N	
74	75	1	Light Brown to Gray Silty Clay	Y ✓ N	
75	77	2	Dark Reddish Brown Claystone	Y ✓ N	
77	79	2	Light Brown to Gray Silty Clay	Y ✓ N	
79	80	1	Dark Reddish Brown Claystone	Y ✓ N	
80	82	2	Light Brown to Gray Sandy Silt	Y ✓ N	
82	87	5	Dark Reddish Brown Clayey Silt	Y ✓ N	
87	90	3	Light Brown to Gray Silty Sand	Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

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

MISCELLANEOUS INFORMATION: Boring location drilled only as a soil boring and plugged after completion per well plugging plan.

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. 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:

Lee Patterson — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

2/26/16 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	C-3932	POD NUMBER	13	TRN NUMBER	581433
LOCATION	24S.34E.13.4.2.3		EXPL		PAGE 2 OF 2

Tom Blaine, P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 581433
File Nbr: C 03932
Well File Nbr: C 03932 POD13

Mar. 28, 2016

ROBERT H HOLDER
BRYCE KRAGER
4222 85TH ST
LUBBOCK, TX 79423

Greetings:

The above numbered permit was issued in your name on 01/27/2016.

The Well Record was received in this office on 03/01/2016, stating that it had been completed on 02/11/2016, and was a dry well. The well is to be plugged or capped or otherwise maintained in a manner satisfactory to the State Engineer.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 01/14/2017.

If you have any questions, please feel free to contact us.

Sincerely,

Deborah Dunaway
(575)622-6521

drywell

National Water Information System: Web Interface

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 322844104183001

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

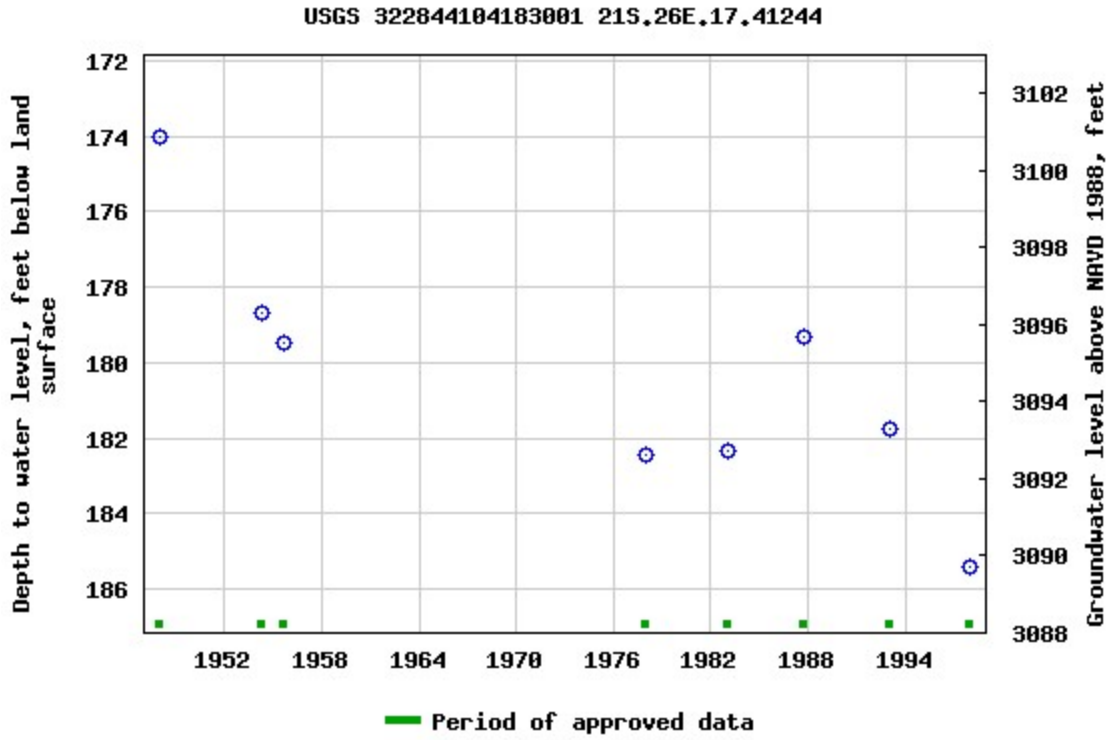
USGS 322844104183001 21S.26E.17.41244

Available data for this site Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code --
Latitude 32°28'44", Longitude 104°18'30" NAD27
Land-surface elevation 3,275 feet above NAVD88
The depth of the well is 187 feet below land surface.
This well is completed in the Yates Formation, Guadalupe Group (313YATS) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility Plug-Ins FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2019-05-20 19:53:11 EDT
1.06 0.95 nadww01

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	POD Sub-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 03932 POD13	CUB	LE	4	2	3	15	24S	34E	645314	3565203	1163	90		
C 03943 POD1	CUB	LE	2	4	2	21	24S	34E	644523	3564266	2052	610	431	179
C 02387	CUB	LE			1	11	24S	34E	646513	3567613*	2097	62	40	22
C 02386	CUB	LE	4	1	2	04	24S	34E	643962	3569290*	3143	575	475	100
C 02397	CUB	LE	4	1	2	04	24S	34E	643962	3569290*	3143	575	475	100

Average Depth to Water: **355 feet**

Minimum Depth: **40 feet**

Maximum Depth: **475 feet**

Record Count: 5

UTMNAD83 Radius Search (in meters):

Easting (X): 644889 **Northing (Y):** 3566286.15 **Radius:** 3216

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

APPENDIX C
VSP SAMPLING PROTOCOL

VSP Sample Design Report for Using Stratified Sampling to Estimate the Population Proportion

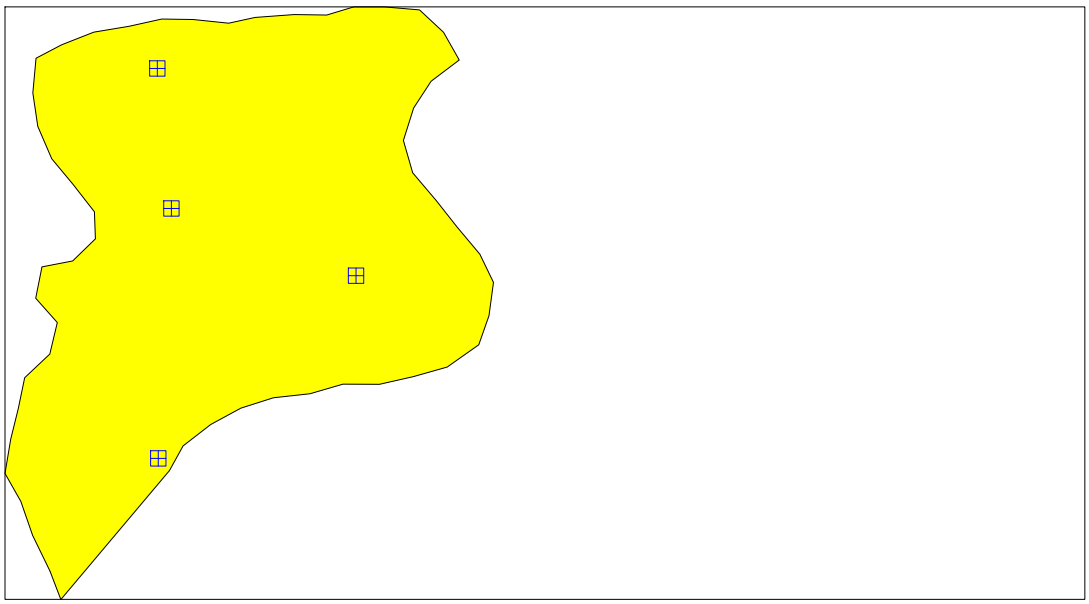
Summary

This report summarizes the stratified sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan. It is important to note that the decision for sample size calculation is determined for the combined strata, rather than any individual strata.

The following table summarizes the proportion stratified sampling design developed. A figure that shows sampling locations in the field and a table that lists sampling location coordinates are also provided below.

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Estimate the population proportion of all strata combined
Criteria for Determining Total Number of Samples	Achieve pre-specified precision of the estimated proportion for specified stratum costs, but no restriction on total costs
Sample Placement (Location) in the Field	Random sampling within grids within each stratum
Formula for calculating number of sampling locations	From Gilbert (1987, page 51)
Method for calculating number of sampling locations in each stratum	Optimal Allocation
Calculated total number of samples	4
Stratum 1	4
Total area of all strata	23735.26 ft^2

[a] Including measurement analyses and fixed overhead costs. See the Cost of Sampling section for an explanation of the costs presented here.



Area: Area 1

X Coord	Y Coord	Label	Value	Type	Historical	Sample Area
810447.5025	446277.2614			Random in Grid		
810452.3939	446370.0862			Random in Grid		
810520.9171	446345.1441			Random in Grid		
810447.1445	446422.0536			Random in Grid		

Primary Sampling Objective
The primary purpose of sampling at this site is to estimate the proportion for the entire site, i.e., for all strata combined, such that the estimated proportion has the minimum possible standard deviation under the condition that the sampling and measurement costs cannot exceed a specified amount. Preexisting information was used to divide the site into 1 non-overlapping strata that were expected to be more homogeneous internally than for the entire site (all strata combined). The expected variability of values within each stratum was estimated or approximated, and the stratum weights, W_h, were determined so that the total number of samples could be allocated appropriately among the strata.

Number of Total Samples: Calculation Equation and Inputs
The total number of samples is computed to achieve the pre-specified precision of the estimated population proportion for specified stratum costs, but no restriction on total costs. *Note that the calculation is for the total number of samples, i.e., for combined strata, rather than individual strata.*

The formula used to calculate the total number of samples is:

$$n = \frac{\left(\sum_{h=1}^{L} W_h \sqrt{P_h(1-P_h)}\sqrt{c_h}\right)\sum_{h=1}^{L}\frac{W_h\sqrt{P_h(1-P_h)}}{\sqrt{c_h}}}{V + \frac{1}{N}\sum_{h=1}^{L} W_h P_h(1-P_h)}$$

where
L is the number of strata, $h=1,2,...,L$,
P_h is the estimated proportion of measurements in stratum h,
$W_h = N_h / N$ is the weight associated with stratum h,
N_h is the total number of possible sampling locations (units) in stratum h,
N is the total number of possible units in all strata combined, $N = \sum_{h=1}^{L} N_h$
V is the pre-specified variance or precision, and
c_h is the cost of collecting and measuring a sample in stratum h.

The values of these inputs that result in the calculated number of sampling locations are:

Parameter	Stratum
	1
P_h	0.2
W_h	23735.3

Parameter	Input Value
V	1

Allocation of Samples to Strata
The total number of samples is allocated to the individual strata on an optimal basis using the formula:

$$n_h = n \frac{N_h \sqrt{P_h(1-P_h)} / \sqrt{c_h}}{\sum_{h=1}^{L} N_h \sqrt{P_h(1-P_h)} / \sqrt{c_h}}$$

where

n_h is the number of samples allocated to stratum h,
L is the number of strata,
N_h is the total number of units in stratum h,
P_h is the proportion in stratum h,
c_h is the cost per population unit in stratum h.

n is the total number of units sampled in all strata, $n = \sum_{h=1}^{L} n_h$

Using this formula, the number of samples allocated to each stratum is:

Stratum	Number of Samples
1	4
Total Samples	4

Method for Determining Sampling Locations

Five methods for determining sample locations are provided in VSP: 1) simple random sampling, 2) random sampling within grids, 3) systematic sampling with a random start, 4) systematic sampling with a fixed start and 5) adaptive grid sampling. One may use a different method for each stratum, based on the conceptual site model and decision to be made for a given stratum. For this site, sample locations were chosen using random sampling within grids in each stratum.

Locating the sample points using a random sampling within grids method combines appealing aspects of both the random and the systematic grid methods. It provides data that are separated by many distances, providing information about the spatial structure of the potential contamination. It also ensures good coverage of the entire site, although not as completely as if systematic grid sampling were performed.

Statistical Assumptions

The assumptions associated with the formulas for computing the number of samples are:

1. The estimated stratum proportions, P_h, are reasonable and representative of the stratum populations being sampled.
2. The sampling locations are selected using simple random sampling.
3. The stratum costs, C_h, and the fixed cost C_0, are accurate.

The first and third assumptions will be assessed in a post data collection analysis. The second assumption, although not strictly valid for strata where systematic grid sampling was used rather than simple random sampling, is not expected to significantly affect conclusions of the study because (1) the gridded sample locations were selected based on a random start and (2) any patterns of contamination in the field that may exist are not expected to coincide with the regularity of the grid sampling pattern.

Recommended Data Analysis Activities

Post data collection activities generally follow those outlined in EPA's Guidance for Data Quality Assessment (EPA, 2000). The data analysts will become familiar with the context of the problem and goals for data collection and assessment. The data will be verified and validated before being subjected to statistical or other analyses. Graphical and analytical tools will be used to verify to the extent possible the assumptions of any statistical analyses that are performed as well as to achieve a general understanding of the data. The data will be assessed to determine whether they are adequate in both quality and quantity to support the primary objective of sampling.

Estimates for the proportion of the population values will be calculated using the formulas appropriate for stratified sampling; these formulas are found in EPA QA/G-5S (EPA, 2001). Results of the exploratory and quantitative assessments of the data will be reported, along with conclusions that may be supported by them.

APPENDIX D

LABORATORY ANALYTICAL REPORTS

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

March 26, 2019

Heather Patterson

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

RE: Flowmaster OrderNo.: 1903791

Dear Heather Patterson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/16/2019 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: L1-0.5
Project: Flowmaster
Collection Date: 3/14/2019 3:35:00 PM
Lab ID: 1903791-001 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2000	60		mg/Kg	20	3/22/2019 11:35:16 PM	43837
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	3/19/2019 10:10:14 PM	43741
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/19/2019 10:10:14 PM	43741
Surr: DNOP	119	70-130		%Rec	1	3/19/2019 10:10:14 PM	43741
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Surr: BFB	97.7	73.8-119		%Rec	1	3/20/2019 2:25:55 AM	43727
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Toluene	ND	0.046		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Ethylbenzene	ND	0.046		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Xylenes, Total	ND	0.091		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	3/20/2019 2:25:55 AM	43727

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: Flowmaster
Collection Date: 3/14/2019 3:39:00 PM
Lab ID: 1903791-002 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	1400	60		mg/Kg	20	3/22/2019 11:47:41 PM	43837

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: Flowmaster
Collection Date: 3/14/2019 3:43:00 PM
Lab ID: 1903791-003 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3300	150		mg/Kg	50	3/25/2019 4:13:20 PM	43834

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: L4-0.5
Project: Flowmaster
Collection Date: 3/14/2019 3:47:00 PM
Lab ID: 1903791-004 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	3/22/2019 3:56:06 PM	43834

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: L5-0.5
Project: Flowmaster
Collection Date: 3/14/2019 3:54:00 PM
Lab ID: 1903791-005 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	180	60		mg/Kg	20	3/22/2019 4:08:30 PM	43834

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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **MB-43834**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43834**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967075** Units: **mg/Kg**

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

Sample ID: **LCS-43834**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43834**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967076** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.8	90	110			

Sample ID: **MB-43837**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43837**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967112** Units: **mg/Kg**

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

Sample ID: **LCS-43837**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43837**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967113** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.4	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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **LCS-43721**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **43721**	RunNo: **58453**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1961839** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.8		5.000		115	70	130			

Sample ID: **MB-43721**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **43721**	RunNo: **58453**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1961840** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		114	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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **MB-43727**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962672** 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	980		1000		97.6	73.8	119			

Sample ID: **LCS-43727**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962673** 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	102	80.1	123			
Surr: BFB	1100		1000		111	73.8	119			

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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **MB-43727**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962711** 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	1.0		1.000		103	80	120			

Sample ID: **LCS-43727**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962712** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	99.5	80	120			
Toluene	1.0	0.050	1.000	0	102	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.1	0.10	3.000	0	105	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

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: **1903791** RcptNo: **1**

Received By: **Erin Melendrez** **3/16/2019 10:50:00 AM**

Completed By: **Erin Melendrez** **3/18/2019 8:40:35 AM**

Reviewed By: 3/18/19

LB: DAD 3/18/19

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: DAD 3/18/19

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	3.7	Good	Yes			

Chain-of-Custody Record

Client: SMA, Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day turn
☐ Standard ☐ **Rush**

Project Name: Flowmaster

Project #:

Project Manager: Heather Patterson

Sampler: HP

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.7°c

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1903791	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
3/14/19	3:55	Soil	L1-0.5	4oz		-001	X	X					X			
	3:59		L2-0.5			-002							X			
	3:43		L3-0.5			-003							X			
	3:47		L4-0.5			-004							X			
	3:54		L5-0.5			-005							X			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time	Remarks:
3/15/19	8:00				3/15/19	0800	Marathon
3/15/19	1940			Via: Courier	3/16/19	1050	

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

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

March 26, 2019

Heather Patterson

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

RE: Flowmaster OrderNo.: 1903791

Dear Heather Patterson:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/16/2019 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: L1-0.5
Project: Flowmaster
Collection Date: 3/14/2019 3:35:00 PM
Lab ID: 1903791-001 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2000	60		mg/Kg	20	3/22/2019 11:35:16 PM	43837
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	3/19/2019 10:10:14 PM	43741
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/19/2019 10:10:14 PM	43741
Surr: DNOP	119	70-130		%Rec	1	3/19/2019 10:10:14 PM	43741
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Surr: BFB	97.7	73.8-119		%Rec	1	3/20/2019 2:25:55 AM	43727
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Toluene	ND	0.046		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Ethylbenzene	ND	0.046		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Xylenes, Total	ND	0.091		mg/Kg	1	3/20/2019 2:25:55 AM	43727
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	3/20/2019 2:25:55 AM	43727

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: Flowmaster
Collection Date: 3/14/2019 3:39:00 PM
Lab ID: 1903791-002 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	1400	60		mg/Kg	20	3/22/2019 11:47:41 PM	43837

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: Flowmaster
Collection Date: 3/14/2019 3:43:00 PM
Lab ID: 1903791-003 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3300	150		mg/Kg	50	3/25/2019 4:13:20 PM	43834

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: L4-0.5
Project: Flowmaster
Collection Date: 3/14/2019 3:47:00 PM
Lab ID: 1903791-004 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	3/22/2019 3:56:06 PM	43834

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: L5-0.5
Project: Flowmaster
Collection Date: 3/14/2019 3:54:00 PM
Lab ID: 1903791-005 **Matrix:** SOIL **Received Date:** 3/16/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	180	60		mg/Kg	20	3/22/2019 4:08:30 PM	43834

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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **MB-43834**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43834**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967075** Units: **mg/Kg**

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

Sample ID: **LCS-43834**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43834**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967076** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.8	90	110			

Sample ID: **MB-43837**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43837**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967112** Units: **mg/Kg**

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

Sample ID: **LCS-43837**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43837**	RunNo: **58569**
Prep Date: **3/22/2019**	Analysis Date: **3/22/2019**	SeqNo: **1967113** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.4	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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **LCS-43721**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **43721**	RunNo: **58453**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1961839** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.8		5.000		115	70	130			

Sample ID: **MB-43721**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **43721**	RunNo: **58453**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1961840** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		114	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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **MB-43727**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962672** 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	980		1000		97.6	73.8	119			

Sample ID: **LCS-43727**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962673** 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	102	80.1	123			
Surr: BFB	1100		1000		111	73.8	119			

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#: **1903791**

26-Mar-19

Client: Souder, Miller & Associates

Project: Flowmaster

Sample ID: **MB-43727**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962711** 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	1.0		1.000		103	80	120			

Sample ID: **LCS-43727**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **43727**	RunNo: **58461**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962712** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	99.5	80	120			
Toluene	1.0	0.050	1.000	0	102	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.1	0.10	3.000	0	105	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

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: **1903791** RcptNo: **1**

Received By: **Erin Melendrez** **3/16/2019 10:50:00 AM**

Completed By: **Erin Melendrez** **3/18/2019 8:40:35 AM**

Reviewed By: 3/18/19

LB: DAD 3/18/19

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: DAD 3/18/19

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	3.7	Good	Yes			

Chain-of-Custody Record

Client: SMA, Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 day turn
☐ Standard ☐ **Rush**

Project Name: Flowmaster

Project #:

Project Manager: Heather Patterson

Sampler: HP

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.7°c

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1903791	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
3/14/19	3:55	Soil	L1-0.5	4oz		-001	X	X					X			
	3:59		L2-0.5			-002							X			
	3:43		L3-0.5			-003							X			
	3:47		L4-0.5			-004							X			
	3:54		L5-0.5			-005							X			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time	Remarks:
3/15/19	8:00				3/15/19	0800	Marathon
3/15/19	1940			Via: Courier	3/16/19	1050	

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

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

June 06, 2019

Heather Patterson

Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL:
FAX:

RE: Flowmaster BH1 OrderNo.: 1905E04

Dear Heather Patterson:

Hall Environmental Analysis Laboratory received 4 sample(s) on 5/30/2019 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: BH1 @1'
Project: Flowmaster BH1
Collection Date: 5/28/2019 9:30:00 AM
Lab ID: 1905E04-001 **Matrix:** SOIL **Received Date:** 5/30/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2600	150		mg/Kg	50	6/3/2019 6:10:03 PM	45301
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	180	9.2		mg/Kg	1	5/31/2019 9:40:00 PM	45272
Motor Oil Range Organics (MRO)	69	46		mg/Kg	1	5/31/2019 9:40:00 PM	45272
Surr: DNOP	102	70-130		%Rec	1	5/31/2019 9:40:00 PM	45272
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/31/2019 3:23:03 PM	45276
Surr: BFB	93.6	73.8-119		%Rec	1	5/31/2019 3:23:03 PM	45276
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	5/31/2019 3:23:03 PM	45276
Toluene	ND	0.049		mg/Kg	1	5/31/2019 3:23:03 PM	45276
Ethylbenzene	ND	0.049		mg/Kg	1	5/31/2019 3:23:03 PM	45276
Xylenes, Total	ND	0.099		mg/Kg	1	5/31/2019 3:23:03 PM	45276
Surr: 4-Bromofluorobenzene	97.9	80-120		%Rec	1	5/31/2019 3:23:03 PM	45276

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 Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH1 @4'
Project: Flowmaster BH1
Collection Date: 5/28/2019 11:05:00 AM
Lab ID: 1905E04-002 **Matrix:** SOIL **Received Date:** 5/30/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	4600	150		mg/Kg	50	6/3/2019 6:22:27 PM	45301

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 Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH1 @9'
Project: Flowmaster BH1
Collection Date: 5/28/2019 11:15:00 AM
Lab ID: 1905E04-003 **Matrix:** SOIL **Received Date:** 5/30/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	2300	60		mg/Kg	20	5/31/2019 7:21:34 PM	45301

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 Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH1 @11.5'
Project: Flowmaster BH1
Collection Date: 5/28/2019 12:05:00 PM
Lab ID: 1905E04-004 **Matrix:** SOIL **Received Date:** 5/30/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	560	60		mg/Kg	20	5/31/2019 7:33:58 PM	45301

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 Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1905E04**
06-Jun-19

Client: Souder, Miller & Associates
Project: Flowmaster BH1

Sample ID: **MB-45301**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **45301**	RunNo: **60337**							
Prep Date: **5/31/2019**	Analysis Date: **5/31/2019**	SeqNo: **2039845**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-45301**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **45301**	RunNo: **60337**							
Prep Date: **5/31/2019**	Analysis Date: **5/31/2019**	SeqNo: **2039846**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.7	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1905E04**

06-Jun-19

Client: Souder, Miller & Associates

Project: Flowmaster BH1

Sample ID: **LCS-45272**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **45272**	RunNo: **60295**
Prep Date: **5/30/2019**	Analysis Date: **5/31/2019**	SeqNo: **2038175** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.3	63.9	124			
Surr: DNOP	4.4		5.000		88.7	70	130			

Sample ID: **MB-45272**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **45272**	RunNo: **60295**
Prep Date: **5/30/2019**	Analysis Date: **5/31/2019**	SeqNo: **2038176** 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		106	70	130			

Sample ID: **LCS-45309**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **45309**	RunNo: **60335**
Prep Date: **5/31/2019**	Analysis Date: **6/3/2019**	SeqNo: **2040607** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		89.1	70	130			

Sample ID: **MB-45309**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **45309**	RunNo: **60335**
Prep Date: **5/31/2019**	Analysis Date: **6/3/2019**	SeqNo: **2040609** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		105	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1905E04**
06-Jun-19

Client: Souder, Miller & Associates
Project: Flowmaster BH1

Sample ID: **MB-45276** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **45276** RunNo: **60312**
Prep Date: **5/30/2019** Analysis Date: **5/31/2019** SeqNo: **2039133** 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	940		1000		93.8	73.8	119			

Sample ID: **LCS-45276** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **45276** RunNo: **60312**
Prep Date: **5/30/2019** Analysis Date: **5/31/2019** SeqNo: **2039134** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.4	80.1	123			
Surr: BFB	1000		1000		105	73.8	119			

Sample ID: **1905E04-001AMS** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH1 @1'** Batch ID: **45276** RunNo: **60312**
Prep Date: **5/30/2019** Analysis Date: **5/31/2019** SeqNo: **2039142** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.46	0	96.9	69.1	142			
Surr: BFB	1000		978.5		106	73.8	119			

Sample ID: **1905E04-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH1 @1'** Batch ID: **45276** RunNo: **60312**
Prep Date: **5/30/2019** Analysis Date: **5/31/2019** SeqNo: **2039143** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.8	24.25	0	104	69.1	142	5.98	20	
Surr: BFB	1000		969.9		105	73.8	119	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1905E04**

06-Jun-19

Client: Souder, Miller & Associates

Project: Flowmaster BH1

Sample ID: **MB-45276**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **45276**	RunNo: **60312**
Prep Date: **5/30/2019**	Analysis Date: **5/31/2019**	SeqNo: **2039171** 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	1.0		1.000		99.8	80	120			

Sample ID: **LCS-45276**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **45276**	RunNo: **60312**
Prep Date: **5/30/2019**	Analysis Date: **5/31/2019**	SeqNo: **2039172** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	105	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	0.98	0.050	1.000	0	98.4	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.6	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Qualifiers:

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

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: **1905E04** RcptNo: **1**

Received By: **Leah Baca** **5/30/2019 8:45:00 AM** Leah Baca

Completed By: **Leah Baca** **5/30/2019 11:06:09 AM** Leah Baca

Reviewed By: YG 5/30/19

~~Labeled by~~ YG 5/30/19

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: DAD 5/30/19

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	2.1	Good	Yes			

Chain-of-Custody Record

Client: SMA-Carlsbad.

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 5 day

Project Name: Plowmaster BH1

Project #:

Project Manager: Heather Patterson

Sampler: MRS/HTP

On Ice: ☒ Yes ☐ No

# of Coolers: (1)

Cooler Temp(including CF): 1.9 + CF0.2 = 2.1C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1905E04
5/28	9:30	Soil	BH1 @ 1'	4oz		-001
	11:05		@ 4'			-002
	11:15		@ 9'			-003
	12:05		@ 11.5'			-004

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
✓	✓					✓			
						✓			
						✓			
						✓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
5.29.19	8:30				5/29/19	1400
5/29/19	1900		Leahr	Courier	5/30/19	0845

Remarks: 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.

APPENDIX E
PHOTO LOG AND FIELD NOTES

Photo Log

Photo Taken May 29, 2019

Facing south

32.22405, -103.46317

Photo Taken May 29, 2019

Facing North

32.22380, -103.46319

Field Screening

Location Name: Flowmaster

Date: 5/28

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
BH1-1'	9:30	2.14 (3200)	25.3		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
-2'	9:45	1.8	25.0		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
-3.5'	9:50	1.57	24.0		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH2-1'	10:00	0.10 ND	24.5		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH3-1'	10:30	0.44 390	29.5		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH4-1'	11:00	0.34 290	24.5		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH1-4'	11:05	3.34	26.3		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH1-5.5'		2.9	25.		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH1-9'	11:30	1.5	27.8		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	

BG JD

Field Screening

Location Name: Flowmaster

Date: 5/28

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
BH1-1'	12:00	1.07	27.6		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
BH1-11.5 broken up rock/ caliche		0.57	29.		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
SW3	12:15	0.11	31		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
SW2	12:25	0.08	26.9		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
SW1		1.01	31.7		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
6' laterally SW1-1	12:30	0.28	31.3		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
					Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
					Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	
					Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	