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

August 17, 2018

#5E27408-BG7

NMOCD District II
Mike Bratcher
1301 W Grand Ave
Artesia, NM 88210

SUBJECT: SOIL REMEDIATION CLOSURE REPORT FOR THE CYPRESS #5 (2RP-4720) , EDDY COUNTY, NEW MEXICO

Dear Mr. Bratcher:

On behalf of Marathon Oil Company (Marathon), Souder, Miller & Associates (SMA) has prepared this CLOSURE REPORT that describes the assessment and confirmation of remediation for a release associated with the Cypress #5. The site is in UNIT M, SECTION 9, TOWNSHIP 23S, RANGE 27E, NMPM, Eddy County, New Mexico, on private land. Figure 1 illustrates the vicinity and location of the site. Table 1 summarizes information regarding the release.

Table 1: Release information and Site Ranking

Name	Cypress #5
Company	Marathon Oil Company
Incident Number	2RP-4720
API Number	30-015-36313
Location	32.313875, -104.201094
Estimated Date of Release	April 11, 2018
Date Reported to NMOCD	April 24, 2018
Land Owner	Private
Reported To	NMOCD
Source of Release	Flare stack
Released Material	Oil
Released Volume	5 Gallons
Recovered Volume	0 Gallons
Net Release	5 Gallons
Nearest Waterway	An irrigation canal is located 0.89 miles east of location
Depth to Groundwater	Estimated to be greater than 100 feet
Nearest Domestic Water Source	Greater than 1,000 feet
NMOCD Ranking	0
SMA Response Dates	7/6/2018

1.0 Background

On April 11, 2018, while performing a tank switch, the onsite Flowback Operator did not verify that a secondary production valve was closed. This resulted in oil from the heater treater to reach the high level and release fluids to the flare gas scrubber. The scrubber then filled with oil and the release occurred from the flare stack. Approximately 5 gallons of oil was released from the flare stack, igniting a small fire around the base of the flare stack. Overspray traveled approximately 160 feet.

2.0 Site Ranking and Land Jurisdiction

The release site is located approximately 7.4 miles south west of Carlsbad, with an elevation of approximately 3,158 feet above sea level. SMA searched the New Mexico State Engineer's Office (NMOSE) online water well database for water wells in the vicinity of the release. Two wells were used to determine the depth to groundwater at this location. Wells C04044 and C00195 show that after elevation correction was performed using topographic maps and aerial photography, the estimated depth to groundwater is between 114 and 161 feet below ground surface (bgs).

Recommended Remediation Action Levels (RRALs) are determined by the site ranking according to the NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (1993). Below in Table 2 are the remediation standards and the site ranking for this location. Justification for this site ranking is found in Figure 1 and Appendix B.

Table 2.

Soil Remediation Standards	0 to 9	10 to 19	>19
Benzene	10 PPM	10 PPM	10 PPM
BTEX	50 PPM	50 PPM	50 PPM
TPH	5000 PPM	1000 PPM	100 PPM

Depth to Groundwater	NMOCD Numeric Rank
< 50 BGS = 20	
50' to 99' = 10	
>100' = 0	0
Distance to Nearest Surface Water	**NMOCD Numeric Rank**
< 200' = 20	
200' - 1000' = 10	
>1000' = 0	0
Well Head Protection	**NMOCD Numeric Rank**
<1000' (or <200' domestic) = 20	
> 1000' = 0	0
Total Site Ranking	**0**

3.0 Release Characterization

During emergency response actions, Marathon operations scraped the surrounding area and the removed impacted caliche. On July 6, 2018, SMA field personnel assessed the release and effectiveness of remedial actions. Samples from three locations in the impacted area were collected at 6 inches bgs. All samples were collected and processed according to NMOCD soil sampling procedures. The samples were sent under chain-of-custody protocols to Hall Environmental Analysis Laboratory for analysis for MRO, DRO, and GRO by EPA Method 8015D, BTEX by EPA Method 8021, and Chlorides by Method 300. Sample locations are depicted on Figure 2. All laboratory results are summarized in Table 3. Laboratory reports are included in Appendix C.

Laboratory samples returned chloride and hydrocarbon concentrations below NMOCD RRALs.

4.0 Soil Remediation

Sampling performed by SMA indicates that initial actions taken by Marathon effectively removed contaminated soils to within NMOCD RRAL's. Slightly elevated chlorides at L3 were left in place due to the extremely high truck traffic on this location and the depth to groundwater exceeding 100 bgs. No further action is recommended at this time.

5.0 Scope and Limitations

The scope of our services consisted of the performance of assessment sampling, verification of release stabilization, regulatory liaison, and preparation of 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 Austin Weyant at 575-689-8801 or Shawna Chubbuck at 505-325-7535.

Submitted by:

SOUDER, MILLER & ASSOCIATES

J. Austin Weyant

Austin Weyant
Project Scientist

Reviewed by:

Shawna Chubbuck

Shawna Chubbuck
Senior Scientist

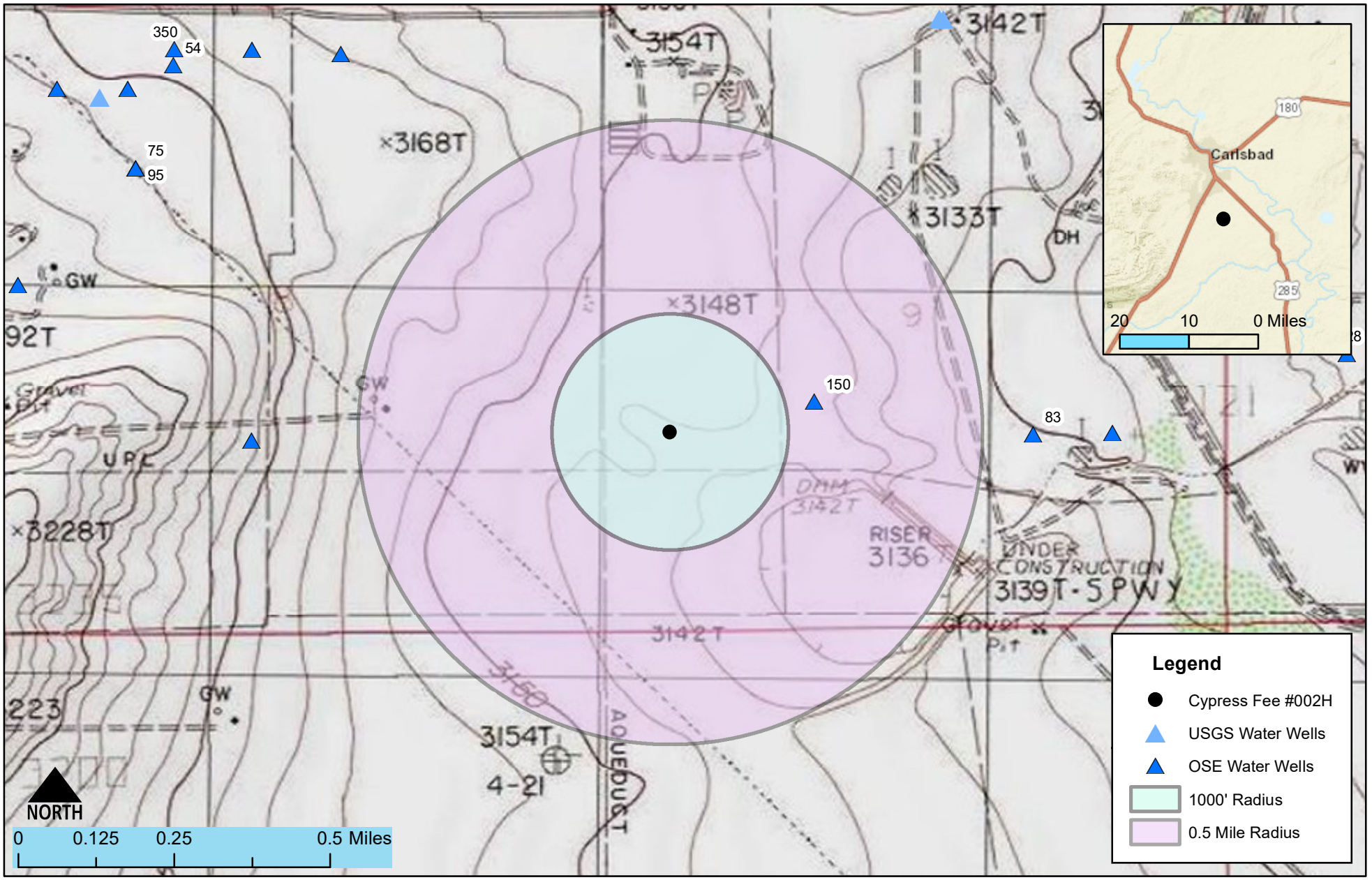
ATTACHMENTS:

Figures:

Tables:

Appendices:

FIGURE 1
VICINITY AND NMOSE DATA MAP



OSE & USGS Vicinity & Well Head Protection Map
Cypress Fee - Marathon
Eddy County, New Mexico

Figure 1

Document: C:\Users\mrs\Documents\GISdata\Maps\cypress fee.mxd
Date Saved: 6/19/2018

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

Drawn Melodie Sanjari
Checked
Approved

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

FIGURE 2
SITE AND SAMPLE LOCATION MAP

Site and Sample Location Map
Cypress #5 - Marathon
S 9-T23S-R27E, New Mexico

Figure 2

Date Saved: 8/7/2018

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

Drawn Heather Patterson
Checked
Approved

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TABLE 3
SUMMARY SAMPLE RESULTS

Cypress #5

Table 3.

Sample Number on Figure 2	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- Laboratory mg/Kg
NMOCD RRAL's for Site Ranking 0				50 mg/Kg	10 mg/Kg				5000 mg/Kg	
L1	7/6/2018	0.5	in-situ	<0.23	<0.024	<4.8	95	97	192	150
L2	7/6/2018	0.5	in-situ	<0.23	<0.024	<4.9	37	51	88	570
L3	7/6/2018	0.5	in-situ	<0.23	<0.023	<4.6	240	310	550	770

APPENDIX A
FORM C141 INITIAL AND FINAL

RECEIVED

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

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

APR 24 2018

DISTRICT II-ARTESIA O.C.D.

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

NAB1811556120

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Marathon Oil Permian LLC 372098	Contact Callie Karrigan
Address 5555 San Felipe Street, Houston, Texas 77056	Telephone No. 405-202-1028 (cell) 575-297-0956 (office)
Facility Name: Cypress #5	Facility Type Oil and gas production facilities

Surface: Owner: private	Mineral: Owner: private	API No. : 30-015-36313

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	9	23S	27E	660	south	660	west	Eddy

Latitude 32.313875.**Longitude** -104.201094

NATURE OF RELEASE

Type of Release: oil	Volume of Release 5 gallons	Volume Recovered: 0 gallons
Source of Release: flare	Date and Hour of Occurrence 04/11/2018 9:30 am	Date and Hour of Discovery 04/11/2018 9:30 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Eddy County – Mike Bratcher and Crystal Weaver	
By Whom? Callie Karrigan	Date and Hour 04/11/2018 5:02 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
Not applicable.

Describe Cause of Problem and Remedial Action Taken.*
While performing a tank switch, onsite Flowback Operator did not verify that a secondary production valve was closed. This resulted in oil from the heater treater to high level and release fluids to the flare gas scrubber, filling the scrubber and releasing from the flare stack. Approximately 5 gallons of oil was released from the flare stack, igniting a small fire around the base of the flare stack. Overspray traveled approximately 160 feet.

Describe Area Affected and Cleanup Action Taken.*
Overspray traveled approximately 160 feet and remained on location before the well was shut in and flow to the flare stopped. The affected area will be scraped and affected material will be hauled to R360 for disposal. Confirmation samples for lab analysis will be taken. New material will be raked in the area once lab analysis is complete.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Callie Karrigan Signature:	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: Callie Karrigan		
Title: HES Environmental Professional	Approval Date: 4/24/18	Expiration Date: N/A
E-mail Address: cnkarrigan@marathonoil.com	Conditions of Approval:	Attached ☐
Date: 04/24/2018 Phone: 405-202-1028(cell) 575-297-0956 (office)	See attached	3RP-4720

* Attach Additional Sheets If Necessary

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 4/24/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4720 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 5/24/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

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

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

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company Marathon Oil Permian LLC	Contact Callie Karrigan
Address 5555 San Felipe Street, Houston, Texas 77056	Telephone No. 405-202-1028 (cell) 575-297-0956 (office)
Facility Name: Cypress #5	Facility Type Oil and gas production facilities

Surface: Owner: Fee	Mineral: Owner: Fee	API No.: 30-015-36313

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	9	23S	27E	660	South	660	West	Eddy

Latitude 32.313875N **Longitude** -104.201094W

NATURE OF RELEASE

Type of Release: oil	Volume of Release: 5 gallons	Volume Recovered: 0
Source of Release:flare	Date and Hour of Occurrence 04/11/2018 9:30 am	Date and Hour of Discovery 04/11/2018 9:30 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Crystal Weaver and Mike Bratcher – Eddy County	
By Whom? Callie Karrigan	Date and Hour 04/11/2018 5:02 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*
Not applicable.

Describe Cause of Problem and Remedial Action Taken.*
While performing a tank switch, onsite Flowback Operator did not verify that a secondary production valve was closed. This resulted in oil from the heater treater to high level and release fluids to the flare gas scrubber, filling the scrubber and releasing from the flare stack. Approximately 5 gallons of oil was released from the flare stack, igniting a small fire around the base of the flare stack. Overspray traveled approximately 160 feet.

Describe Area Affected and Cleanup Action Taken.*
Affected material was removed from the well pad. Site was remediated as per attached closure report.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature: *Callie Karrigan*	OIL CONSERVATION DIVISION	
Printed Name: Callie Karrigan	Approved by Environmental Specialist:	
Title: HES Environmental Professional	Approval Date:	Expiration Date:
E-mail Address: cnkarrigan@marathonoil.com	Conditions of Approval:	Attached ☐
Date: 8/17/18 Phone: 405-202-1028 (cell) 575-297-0956 (office)		

* Attach Additional Sheets If Necessary

2RP-4720

APPENDIX B
NMOSE WELLS REPORT

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

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

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

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

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 04044 POD1		CUB	ED	3	2	3	09	23S	27E	575504	3575907	381	290	150	140
C 00195		CUB	ED	4	1	4	09	23S	27E	576069	3575827*	938	128	83	45
C 00420	C	CUB	ED		4	2	09	23S	27E	576370	3576337*	1339	2151		
C 00323		C	ED		4	4	05	23S	27E	574750	3577122*	1348	200		
C 02711		C	ED		4	4	05	23S	27E	574750	3577122*	1348	170	75	95
C 03020		C	ED		4	4	05	23S	27E	574750	3577122*	1348	176	135	41
C 03799 POD1		C	ED	1	3	3	04	23S	27E	574981	3577170	1350	200	51	149
C 00109 CLW203096	O		ED	1	3	3	04	23S	27E	575051	3577226*	1400	260		
C 03056		C	ED	1	3	3	04	23S	27E	575051	3577226*	1400	60	31	29
C 01071		C	ED			1	08	23S	27E	573751	3576499*	1534	279	95	184
C 02191		C	ED			1	08	23S	27E	573751	3576499*	1534	252	75	177
C 03653 POD1		C	ED	2	4	4	05	23S	27E	574757	3577331	1549	220	180	40
C 03892 POD1		C	ED	1	2	1	08	23S	27E	573846	3576764	1590	148	54	94
C 00068 CLW193190	O		ED	3	3	1	10	23S	27E	576673	3576241*	1596	175		
C 02710		C	ED			4	05	23S	27E	574550	3577318*	1599	200	72	128

Average Depth to Water: **91 feet**

Minimum Depth: **31 feet**

Maximum Depth: **180 feet**

Record Count: 15

UTMNAD83 Radius Search (in meters):

Easting (X): 575131 **Northing (Y):** 3575828 **Radius:** 1600

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

APPENDIX C

LABORATORY ANALYTICAL REPORTS

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

July 18, 2018

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

RE: Cypress 5 OrderNo.: 1807358

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 3 sample(s) on 7/10/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1807358**
Date Reported: **7/18/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L1-0.5
Project: Cypress 5
Collection Date: 7/6/2018 10:21:00 AM
Lab ID: 1807358-001 **Matrix:** SOIL **Received Date:** 7/10/2018 9:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	150	30		mg/Kg	20	7/17/2018 6:29:46 AM	39212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	95	10		mg/Kg	1	7/14/2018 3:41:39 AM	39125
Motor Oil Range Organics (MRO)	97	50		mg/Kg	1	7/14/2018 3:41:39 AM	39125
Surr: DNOP	98.5	70-130		%Rec	1	7/14/2018 3:41:39 AM	39125
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/11/2018 10:02:16 PM	39133
Surr: BFB	80.8	15-316		%Rec	1	7/11/2018 10:02:16 PM	39133
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	7/11/2018 10:02:16 PM	39133
Benzene	ND	0.024		mg/Kg	1	7/11/2018 10:02:16 PM	39133
Toluene	ND	0.048		mg/Kg	1	7/11/2018 10:02:16 PM	39133
Ethylbenzene	ND	0.048		mg/Kg	1	7/11/2018 10:02:16 PM	39133
Xylenes, Total	ND	0.096		mg/Kg	1	7/11/2018 10:02:16 PM	39133
Surr: 4-Bromofluorobenzene	90.0	80-120		%Rec	1	7/11/2018 10:02:16 PM	39133

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: Cypress 5
Collection Date: 7/6/2018 10:29:00 AM
Lab ID: 1807358-002 **Matrix:** SOIL **Received Date:** 7/10/2018 9:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**CJS**
Chloride	570	30		mg/Kg	20	7/17/2018 7:07:00 AM	39212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**lrm**
Diesel Range Organics (DRO)	37	9.9		mg/Kg	1	7/14/2018 4:04:00 AM	39125
Motor Oil Range Organics (MRO)	51	50		mg/Kg	1	7/14/2018 4:04:00 AM	39125
Surr: DNOP	113	70-130		%Rec	1	7/14/2018 4:04:00 AM	39125
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/11/2018 10:25:36 PM	39133
Surr: BFB	81.4	15-316		%Rec	1	7/11/2018 10:25:36 PM	39133
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Methyl tert-butyl ether (MTBE)	ND	0.098		mg/Kg	1	7/11/2018 10:25:36 PM	39133
Benzene	ND	0.024		mg/Kg	1	7/11/2018 10:25:36 PM	39133
Toluene	ND	0.049		mg/Kg	1	7/11/2018 10:25:36 PM	39133
Ethylbenzene	ND	0.049		mg/Kg	1	7/11/2018 10:25:36 PM	39133
Xylenes, Total	ND	0.098		mg/Kg	1	7/11/2018 10:25:36 PM	39133
Surr: 4-Bromofluorobenzene	91.0	80-120		%Rec	1	7/11/2018 10:25:36 PM	39133

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: Cypress 5
Collection Date: 7/6/2018 10:35:00 AM
Lab ID: 1807358-003 **Matrix:** SOIL **Received Date:** 7/10/2018 9:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CJS**	
Chloride	770	30		mg/Kg	20	7/17/2018 7:19:24 AM	39212
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	240	9.9		mg/Kg	1	7/14/2018 4:26:14 AM	39125
Motor Oil Range Organics (MRO)	310	49		mg/Kg	1	7/14/2018 4:26:14 AM	39125
Surr: DNOP	128	70-130		%Rec	1	7/14/2018 4:26:14 AM	39125
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/11/2018 10:48:46 PM	39133
Surr: BFB	79.5	15-316		%Rec	1	7/11/2018 10:48:46 PM	39133
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.091		mg/Kg	1	7/11/2018 10:48:46 PM	39133
Benzene	ND	0.023		mg/Kg	1	7/11/2018 10:48:46 PM	39133
Toluene	ND	0.046		mg/Kg	1	7/11/2018 10:48:46 PM	39133
Ethylbenzene	ND	0.046		mg/Kg	1	7/11/2018 10:48:46 PM	39133
Xylenes, Total	ND	0.091		mg/Kg	1	7/11/2018 10:48:46 PM	39133
Surr: 4-Bromofluorobenzene	88.8	80-120		%Rec	1	7/11/2018 10:48:46 PM	39133

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#: **1807358**

18-Jul-18

Client: Souder, Miller & Associates

Project: Cypress 5

Sample ID	**MB-39212**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**39212**	RunNo:	**52749**					
Prep Date:	**7/16/2018**	Analysis Date:	**7/17/2018**	SeqNo:	**1732696**	Units:	**mg/Kg**			

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

Sample ID	**LCS-39212**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**39212**	RunNo:	**52749**					
Prep Date:	**7/16/2018**	Analysis Date:	**7/17/2018**	SeqNo:	**1732697**	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			

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#: **1807358**

18-Jul-18

Client: Souder, Miller & Associates

Project: Cypress 5

Sample ID	**MB-39125**	SampType:	**MBLK**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**
Client ID:	**PBS**	Batch ID:	**39125**	RunNo:	**52618**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1726901** 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	8.6		10.00		86.0	70	130			

Sample ID	**LCS-39125**	SampType:	**LCS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**
Client ID:	**LCSS**	Batch ID:	**39125**	RunNo:	**52618**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1726902** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	103	70	130			
Surr: DNOP	4.1		5.000		82.3	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#: **1807358**

18-Jul-18

Client: Souder, Miller & Associates

Project: Cypress 5

Sample ID	**MB-39133**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**39133**	RunNo:	**52630**					
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727188**	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	1000		1000		101	15	316			

Sample ID	**LCS-39133**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**39133**	RunNo:	**52630**					
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727189**	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	75.9	131			
Surr: BFB	1000		1000		104	15	316			

Sample ID	**1807358-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**L1-0.5**	Batch ID:	**39133**	RunNo:	**52630**					
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727191**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.8	23.97	0	115	77.8	128			
Surr: BFB	1100		958.8		115	15	316			

Sample ID	**1807358-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**L1-0.5**	Batch ID:	**39133**	RunNo:	**52630**					
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727192**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.7	23.30	0	116	77.8	128	1.55	20	
Surr: BFB	1100		932.0		113	15	316	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1807358**

18-Jul-18

Client: Souder, Miller & Associates

Project: Cypress 5

Sample ID	**MB-39133**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**PBS**	Batch ID:	**39133**	RunNo:	**52630**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727221** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Sample ID	**LCS-39133**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**LCSS**	Batch ID:	**39133**	RunNo:	**52630**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727222** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.92	0.10	1.000	0	92.2	70.1	121			
Benzene	0.97	0.025	1.000	0	97.0	77.3	128			
Toluene	0.99	0.050	1.000	0	99.4	79.2	125			
Ethylbenzene	0.99	0.050	1.000	0	98.6	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	101	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		109	80	120			

Sample ID	**1807358-002AMS**	SampType:	**MS**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**L2-0.5**	Batch ID:	**39133**	RunNo:	**52630**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727225** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.92	0.093	0.9311	0	98.7	56.9	130			
Benzene	0.93	0.023	0.9311	0	99.6	68.5	133			
Toluene	0.97	0.047	0.9311	0	104	75	130			
Ethylbenzene	0.97	0.047	0.9311	0	104	79.4	128			
Xylenes, Total	3.0	0.093	2.793	0	107	77.3	131			
Surr: 4-Bromofluorobenzene	1.0		0.9311		110	80	120			

Sample ID	**1807358-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**L2-0.5**	Batch ID:	**39133**	RunNo:	**52630**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727226** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.0	0.097	0.9671	0	103	56.9	130	8.18	20	
Benzene	1.0	0.024	0.9671	0	104	68.5	133	8.29	20	
Toluene	1.1	0.048	0.9671	0	110	75	130	8.76	20	
Ethylbenzene	1.1	0.048	0.9671	0	110	79.4	128	9.05	20	

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#: **1807358**

18-Jul-18

Client: Souder, Miller & Associates

Project: Cypress 5

Sample ID	**1807358-002AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**L2-0.5**	Batch ID:	**39133**	RunNo:	**52630**
Prep Date:	**7/10/2018**	Analysis Date:	**7/11/2018**	SeqNo:	**1727226** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	3.3	0.097	2.901	0	112	77.3	131	8.95	20	
Surr: 4-Bromofluorobenzene	1.1		0.9671		110	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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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: 1807358 RcptNo: 1

Received By: **Isaiah Ortiz** 7/10/2018 9:00:00 AM IO

Completed By: **Ashley Gallegos** 7/10/2018 9:59:22 AM AG

Reviewed By: IO 7/10/18 Labeled by: ENM 7/10/18

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

ENM 7/10/18

Checked by: _____

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	0.3	Good	Yes			

Chain-of-Custody Record

Client: SMA-Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 5 day

Project Name: Cypress #5

Project #:

Project Manager: Austin Weyant

Sampler: HM

On Ice: ☑ Yes ☐ No

Sample Temperature: 0.3

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 Request ID	Container Type and #	Preservative Type	HEAL No. 1807358	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
7/6/18	10:21	soil	L1-0.5			-001	X		X					X								
	10:29		L2-0.5			-002	X		X					X								
	10:35		L3-0.5			-003	X		X					X								
			TO 7/10/18																			

Remarks:

Date	Time	Relinquished by:	Received by:	Date	Time
7/9/18	1400			7/9/18	1400
7/9/18	1900		FedEx courier	7/10/18	0900