



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

December 7, 2020

#5E28980-BG12

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

SUBJECT: Remediation Closure Report for the Cypress #001H Release (NRM2026943478), Eddy County, New Mexico

To Whom it May Concern:

On behalf of Marathon Oil, Permian LLC, Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes the subsequent release of liquids related to oil and gas production activities at the Cypress #001H site. The site is in Unit Letter M, Section 09, Township 23S, Range 27E, Eddy County, New Mexico, on private land. Figure 1 illustrates the vicinity and site location on an USGS 7.5 minute quadrangle map.

Table 1 summarizes release information and Closure Criteria.

Table 1: Release Information and Closure Criteria			
Name	Cypress #001H	Company	Marathon Oil, Permian LLC
API Number	30-015-44046	Location	32.313848 -104.202477
Tracking Number	NRM2026943478		
Estimated Date of Release	September 9, 2020	Date Reported to NMOCD	September 17, 2020
Land Owner	Private	Reported To	District 2 NMOCD
Source of Release	Flare		
Released Volume	0.37 BBL	Released Material	Crude Oil
Recovered Volume	0	Net Release	0.37 BBL
NMOCD Closure Criteria	>100 feet to groundwater		
SMA Response Dates	11/6/2020		

## **1.0 Background**

On September 16, 2020, a programming error on the inlet separator caused 0.37 bbl. of crude oil to upset from the flare and self-extinguish before hitting the engineered pad. The affected area was approximately a 50 x 50 foot area impacted by an ultra-fine mist. Initial response activities were conducted by Marathon Oil, and included source elimination, containment and site stabilization activities. Figure 1 illustrates the vicinity and site location, Figure 2 illustrates the sample locations. The C-141 form is included in Appendix A.

## **2.0 Site Information and Closure Criteria**

The Cypress #001H is an active production facility located approximately 10 miles south of Carlsbad, New Mexico on privately-owned land at an elevation of approximately 3148 feet above mean sea level (amsl).

### Depth to Groundwater

Based upon New Mexico Office of the State Engineer (Appendix B), depth to groundwater in the area is estimated to be 150 feet below grade surface (bgs).

### Wellhead Protection Area

There is one known water source within ½-mile of the location, according to the New Mexico Office of the State Engineer (NMOSE) online water well database.

### Distance to Nearest Significant Watercourse

The nearest significant watercourse is a FEMA flood zone, located approximately 460 feet to the south.

Table 2 demonstrates the Closure Criteria applicable to this location. 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.

## **3.0 Release Characterization and Remediation Activities**

On November 6, 2020, SMA arrived on site to confirm that the impacted soil from the flare burp did not exceed the applicable NMOCD Closure Criteria. SMA confirmed this by collecting soil samples that were screened for chloride using an electrical conductivity (EC) meter and for hydrocarbon impacts using a calibrated MiniRAE 3000 photoionization detector (PID) equipped with a 10.6 eV lamp. NMOCD was notified on November 3, 2020 that closure samples were expected to be collected in two (2) business days.

In accordance with the proposed confirmation sampling plan submitted to NMOCD on October 13, 2020 (Appendix C), SMA collected soil samples from the four cardinal directions surrounding the source of the release (CSL1 – CSL4). From each sample location, samples were collected at the surface and at 0.5 feet bgs.

A total of eight (8) samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D. 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).

Cypress #001H (NRM2026943478) Remediation Closure Report  
December 7, 2020

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Figure 3 shows the extent of the area and confirmation sample locations. Laboratory results are summarized in Table 3. Laboratory reports are included in Appendix D.

#### **4.0 Site Recommendations**

As demonstrated in Table 3, all confirmation samples meet the applicable Closure Criteria and the standards of Table I of 19.15.29.12 NMAC.

SMA recommends no further action and requests closure of Incident Number NRM2026943478.

#### **5.0 Scope and Limitations**

The scope of our services included: assessment sampling; verifying release stabilization; regulatory liaison; remediation; and preparation of this 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 Ashley Maxwell at 505-320-8975 or Shawna Chubbuck at 505-325-7535.

Submitted by:  
SOUDER, MILLER & ASSOCIATES

Reviewed by:



Ashley Maxwell  
Project Scientist



Shawna Chubbuck  
Senior Scientist

Cypress #001H (NRM2026943478) Remediation Closure Report  
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## REFERENCES:

New Mexico Office of the State Engineer (NMOSE) online water well database  
[https://gis.ose.state.nm.us/gisapps/ose\\_pod\\_locations/](https://gis.ose.state.nm.us/gisapps/ose_pod_locations/); accessed 11/21/2020

New Mexico Oil Conservation Division  
<http://www.emnrd.state.nm.us/OCD/>

## ATTACHMENTS:

### Figures:

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

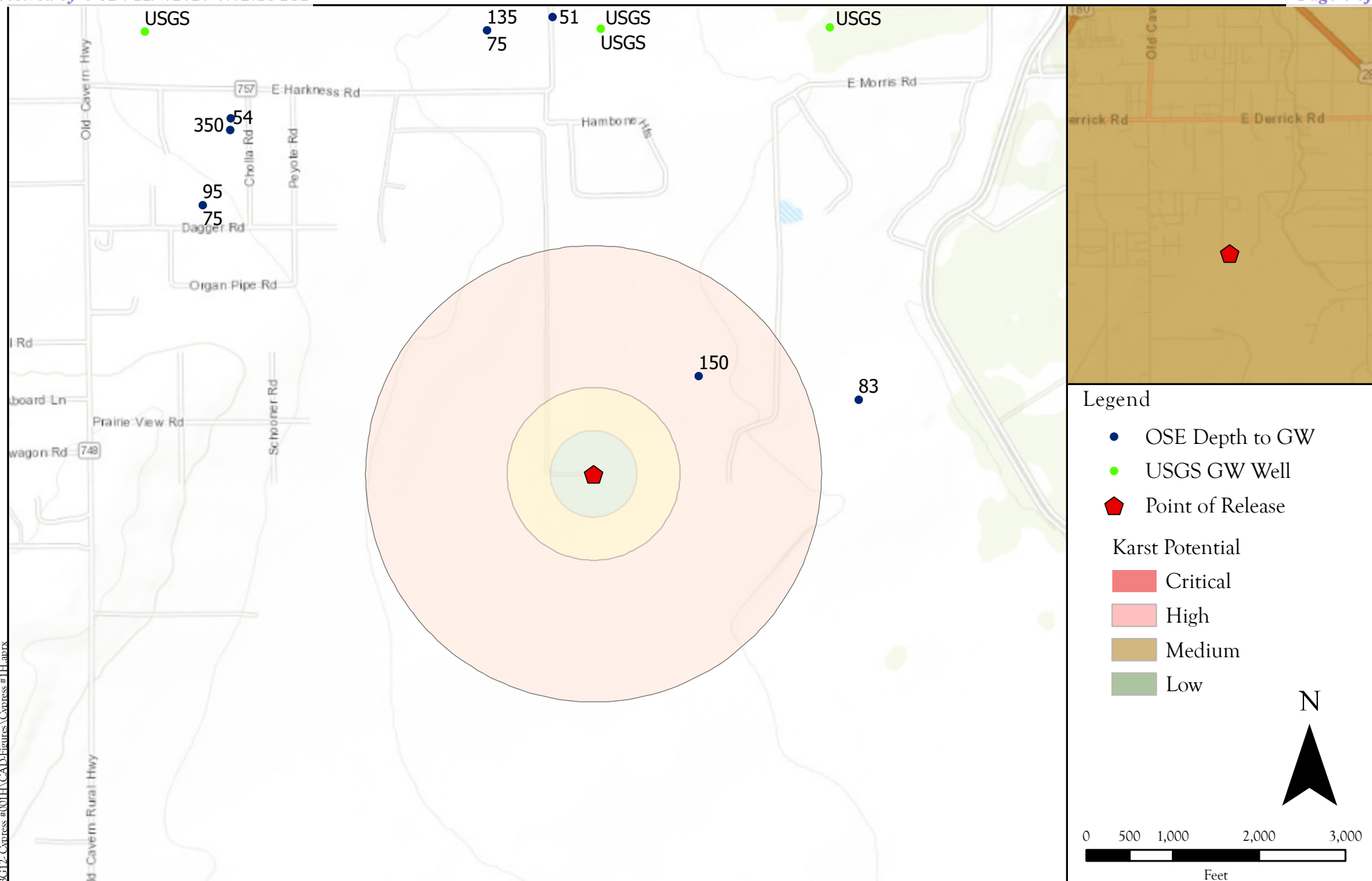
### Tables:

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

### Appendices:

Appendix A: Form C141  
Appendix B: NMOSE Wells Report  
Appendix C: Sampling Plan, Photo Log  
Appendix D: Laboratory Analytical Reports

# FIGURES



Site Map  
Cypress #001H - Marathon Oil, Permian LLC  
UL: M S: 09 T: 23S R: 27E Eddy County, New Mexico

Figure 1

P:\5-Marathon MSA 2020 (5F28980).RGI2-Cypress #001H\CAD\Figures\Cypress #1H.mxd  
Date Saved: 11/18/2020

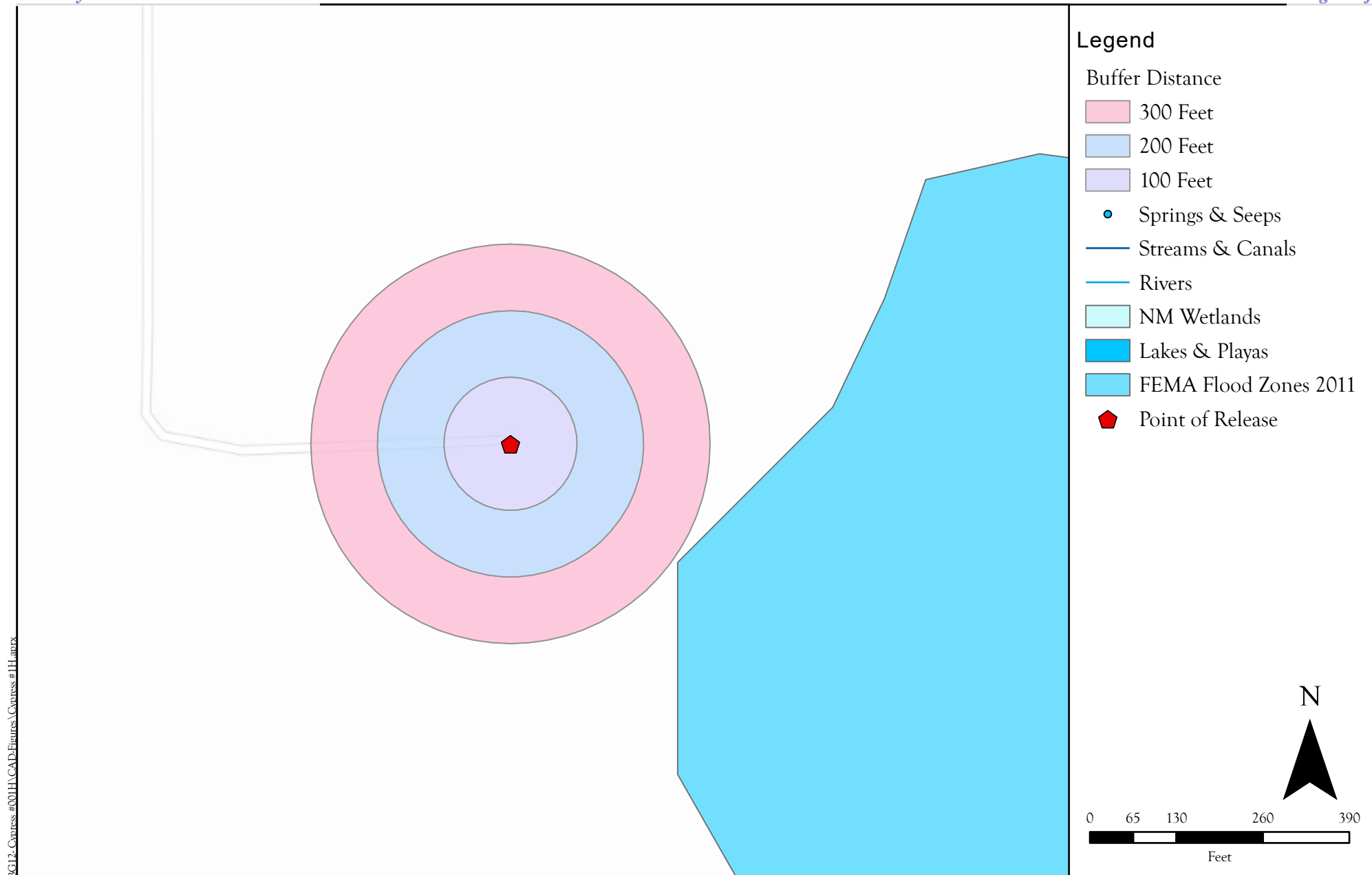
Revisions		
By: _____	Date: _____	Descr: _____
By: _____	Date: _____	Descr: _____

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Drawn	Lynn A. Acosta
Date	11/18/2020
Checked	_____
Approved	_____



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



Surface Water Protection Map  
 Cypress #001H - Marathon Oil, Permian LLC  
 UL: M S: 09 T: 23S R: 27E, Eddy County, New Mexico

Figure 2

P:\5-Marathon MSA 2020 (5F28980).RGI2-Corress #001H\CAD\Figures\Corress #1H.mxd  
 Date Saved:  
 11/18/2020

Revisions  
 By: \_\_\_\_\_ Date: \_\_\_\_\_ Descr: \_\_\_\_\_  
 By: \_\_\_\_\_ Date: \_\_\_\_\_ Descr: \_\_\_\_\_

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Drawn Lynn A. Acosta  
 Date 11/18/2020  
 Checked \_\_\_\_\_  
 Approved \_\_\_\_\_



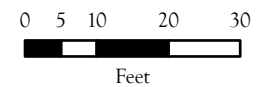
201 South Halaguena Street  
 Carlsbad, New Mexico 88221  
 (575) 689-7040  
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## Legend

-  Point of Release
-  Release Area
-  Soil Sample

N



Site and Sample Location Map  
Cypress #001H- Marathon Oil, Permian LLC  
UL: M S: 09 T: 23S R: 27E Eddy County, New Mexico

Figure 3

## Revisions

By: \_\_\_\_\_ Date: \_\_\_\_\_ Descr: \_\_\_\_\_  
By: \_\_\_\_\_ Date: \_\_\_\_\_ Descr: \_\_\_\_\_

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Drawn \_\_\_\_\_  
Date 11/21/2020  
Checked \_\_\_\_\_  
Approved \_\_\_\_\_



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# TABLES

Table 2:  
NMOCD Closure CriteriaMarathon Oil, Permian LLC  
Cypress #001H  
NRM2026943478

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	150	New Mexico Office of the State Engineer
Horizontal Distance From All Water Sources Within 1/2 Mile (ft)	1900	United States Geological Survey Topo Map
Horizontal Distance to Nearest Significant Watercourse (ft)	450	United States Geological Survey Topo Map

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'	X	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					

SMA #

Table 3:  
Summary of Sample Results

Marathon Oil Permian, LLC  
Cypress #001H  
NRM2026943478

Sample ID	Sample Date	Depth of Sample (feet bgs)	Action Taken	Method 8021B		Method 8015D				Method 300.0
				BTEX	Benzene	GRO	DRO	MRO	Total TPH	CI-
				mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
NMOCD Closure Criteria				50	10	1000			2500	20,000
Confirmation Sampling Event										
CSL1	11/6/2020	Surface	In-Situ	<0.221	<0.025	<4.9	130	140	270	<60
		0.5		<0.225	<0.025	<5.0	13	<45	13	66
CSL2	11/6/2020	Surface		<0.220	<0.024	<4.9	<10	<50	<64.9	<60
		0.5		<0.216	<0.024	<4.8	<9.6	<48	<62.4	120
CSL3	11/6/2020	Surface		<0.224	<0.025	<5.0	<9.6	<48	<62.6	1300
		0.5		<0.218	<0.024	<4.8	<9.3	<46	<60.1	1400
CSL4	11/6/2020	Surface		<0.219	<0.024	<4.9	27	<48	27	<59
		0.5		<0.221	<0.025	<4.9	<9.4	<47	<61.3	<60

SMA #

# 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	NRM2026943478
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 372098
Contact Name Melodie Sanjari	Contact Telephone 575-988-8753
Contact email <a href="mailto:msanjari@marathonoil.com">msanjari@marathonoil.com</a>	Incident # (assigned by OCD)
Contact mailing address 4111 S. Tidwell Rd., Carlsbad, NM 8220	

### Location of Release Source

Latitude 32.313848

Longitude -104.202477  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Cypress #001H	Site Type: Oil & Gas Facility
Date Release Discovered: 9/16/2020	API# (if applicable) 30-015-44046

Unit Letter	Section	Township	Range	County
M	09	23S	27E	Eddy

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)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 0.37 bbl.	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

#### Cause of Release

A programming error on the inlet separator resulted in 0.37 bbl. of oil upsetting from the flare, igniting and self-extinguishing before hitting the ground as a 50 x 50' ultrafine mist on the engineered pad.

State of New Mexico  
Oil Conservation Division

Incident ID	NRM2026943478
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? 19.15.29.7(A)2(a) (Fire)
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes by MOC on 9/17 via email to District 2 Staff	

**Initial Response**

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> 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. <del>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</del> 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: <u>Melodie Sanjari</u>	Title: <u>Environmental Professional</u>
Signature: <u>Melodie Sanjari</u>	Date: <u>9/22/20</u>
email: <u>msanjari@marathonoil.com</u>	Telephone: <u>575-988-8753</u>
<b><u>OCD Only</u></b>  Received by: <u>Ramona Marcus</u> Date: <u>9/25/2020</u>	

Incident ID	NRM2026943478
District RP	
Facility ID	
Application ID	

## 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?	<u>150</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.

Incident ID	NRM2026943478
District RP	
Facility ID	
Application ID	

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: \_\_\_\_\_ Melodie Sanjari \_\_\_\_\_ Title: \_\_\_\_\_ Environmental Professional \_\_\_\_\_

Signature: Melodie Sanjari Date: 12/7/2020

email: msanjari@marathonoil.com Telephone: 575-988-8753

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_



Incident ID	NRM2026943478
District RP	
Facility ID	
Application ID	

## 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: Melodie Sanjari - Environmental Professional

Signature: Melodie Sanjari Date: 12/7/2020

email: msanjari@marathonoil.com Telephone: 575-988-8753

**OCD Only**

Received by: Chad Hensley Date: 02/25/2021

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: Chad Hensley Date: 02/25/2021

Printed Name: Chad Hensley Title: Environmental Specialist Advanced

# 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	DepthWell	DepthWater	Water Column
<a href="#">C_04044 POD1</a>		CUB	ED	3	2	3	09	23S	27E	575504	3575907	589	290	150	140

Average Depth to Water: **150 feet**

Minimum Depth: **150 feet**

Maximum Depth: **150 feet**

**Record Count:** 1

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 575073.63

**Northing (Y):** 3575503.55

**Radius:** 804.67

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

2/29/20 11:22 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

# APPENDIX C

## SAMPLING PLAN, PHOTO LOG

**From:** [Ashley Maxwell](#)  
**To:** [Sanjari, Melodie \(MRO\)](#); [Hamlet, Robert, EMNRD](#); [Venegas, Victoria, EMNRD](#); [Bratcher, Mike, EMNRD](#)  
**Cc:** [Lynn Acosta](#)  
**Subject:** Re:- Cypress 1H - NRM2026943478  
**Date:** Tuesday, November 3, 2020 8:12:41 PM  
**Attachments:** [image005.png](#)

---

Good Evening,

SMA will be collecting closure samples at Cypress 1H (NRM[2026943478](#)) the on Friday, November 6, 2020 at 8:00am. Please consider this your 48-hour notification.

Thank you,  
Ashley

Ashley Maxwell  
Project Scientist

Corporate Registrations: AZ Engineering/Geology/Surveying Firm (14070), ID Engineering/Surveying Firm (C-3564), SD Surveying Firm (C-7436), TX Engineering Firm (8877), TX Geology Firm (50254), TX Surveying Firm (10162200), WY Engineering/Surveying Firm (S-1704)



**Souder, Miller & Associates**

Engineering ♦ Environmental ♦ Geomatics

401 W Broadway  
Farmington, New Mexico 87401

[www.soudermiller.com](http://www.soudermiller.com)

(505) 320-8975 (mobile)

(505) 325-7535 (office)

(505) 326-0045 (fax)



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---

**From:** Sanjari, Melodie (MRO)  
**Sent:** Tuesday, October 13, 2020 9:49 AM  
**To:** Venegas, Victoria, EMNRD <[Victoria.Venegas@state.nm.us](mailto:Victoria.Venegas@state.nm.us)>; Hamlet, Robert, EMNRD <[Robert.Hamlet@state.nm.us](mailto:Robert.Hamlet@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Subject:** Marathon Oil Company - Proposed Sampling Plan/Variance - Cypress 1H - NRM2026943478

Good Morning,

In attempt to increase communication and awareness prior to requesting closure, I'm proposing a sampling plan/variance for incident NRM2026943478 associated with the flare burp at the Cypress 1H. As the 0.37 bbl. of oil that was released from the flare self-extinguished before reaching the ground, I am confident that the samples that will be collected to characterize the incident would be under the remedial action levels and could therefor also potentially serve as closure confirmation samples as well. Sample locations L1-L4, illustrated below, will be collected all four cardinal directions around the source (flare) at the surface and at 0.5' and will be sent to the lab and analyzed for Chloride, BTEX and TPH.



Please let me know your thoughts as the sampling event is scheduled for November 2<sup>nd</sup>.

Thank you

**Melodie Sanjari**

Environmental Professional

Permian Basin

Mobile: (575) 988-8753





# Cypress #001H

## NRM2026943478





# APPENDIX D

## LABORATORY ANALYTICAL REPORTS



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [clients.hallenvironmental.com](http://clients.hallenvironmental.com)

November 16, 2020

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

RE: Cypress 1H

OrderNo.: 2011463

Dear Ashley Maxwell:

Hall Environmental Analysis Laboratory received 8 sample(s) on 11/7/2020 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](http://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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL1

Project: Cypress 1H

Collection Date: 11/6/2020 8:15:00 AM

Lab ID: 2011463-001

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/14/2020 9:26:59 AM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	130	9.4		mg/Kg	1	11/11/2020 9:39:13 AM	56302
Motor Oil Range Organics (MRO)	140	47		mg/Kg	1	11/11/2020 9:39:13 AM	56302
Surr: DNOP	73.7	30.4-154		%Rec	1	11/11/2020 9:39:13 AM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/11/2020 9:45:08 PM	56286
Surr: BFB	87.2	75.3-105		%Rec	1	11/11/2020 9:45:08 PM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	11/11/2020 9:45:08 PM	56286
Toluene	ND	0.049		mg/Kg	1	11/11/2020 9:45:08 PM	56286
Ethylbenzene	ND	0.049		mg/Kg	1	11/11/2020 9:45:08 PM	56286
Xylenes, Total	ND	0.098		mg/Kg	1	11/11/2020 9:45:08 PM	56286
Surr: 4-Bromofluorobenzene	94.7	80-120		%Rec	1	11/11/2020 9:45:08 PM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL1

Project: Cypress 1H

Collection Date: 11/6/2020 8:15:00 AM

Lab ID: 2011463-002

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	66	61		mg/Kg	20	11/14/2020 10:04:13 AM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	13	9.1		mg/Kg	1	11/11/2020 10:51:19 AM	56302
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	11/11/2020 10:51:19 AM	56302
Surr: DNOP	56.9	30.4-154		%Rec	1	11/11/2020 10:51:19 AM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/11/2020 10:55:17 PM	56286
Surr: BFB	89.7	75.3-105		%Rec	1	11/11/2020 10:55:17 PM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	11/11/2020 10:55:17 PM	56286
Toluene	ND	0.050		mg/Kg	1	11/11/2020 10:55:17 PM	56286
Ethylbenzene	ND	0.050		mg/Kg	1	11/11/2020 10:55:17 PM	56286
Xylenes, Total	ND	0.10		mg/Kg	1	11/11/2020 10:55:17 PM	56286
Surr: 4-Bromofluorobenzene	98.4	80-120		%Rec	1	11/11/2020 10:55:17 PM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL2

Project: Cypress 1H

Collection Date: 11/6/2020 8:29:00 AM

Lab ID: 2011463-003

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/14/2020 10:16:37 AM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/11/2020 11:15:22 AM	56302
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/11/2020 11:15:22 AM	56302
Surr: DNOP	45.5	30.4-154		%Rec	1	11/11/2020 11:15:22 AM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/12/2020 12:05:11 AM	56286
Surr: BFB	87.4	75.3-105		%Rec	1	11/12/2020 12:05:11 AM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	11/12/2020 12:05:11 AM	56286
Toluene	ND	0.049		mg/Kg	1	11/12/2020 12:05:11 AM	56286
Ethylbenzene	ND	0.049		mg/Kg	1	11/12/2020 12:05:11 AM	56286
Xylenes, Total	ND	0.098		mg/Kg	1	11/12/2020 12:05:11 AM	56286
Surr: 4-Bromofluorobenzene	97.1	80-120		%Rec	1	11/12/2020 12:05:11 AM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL2

Project: Cypress 1H

Collection Date: 11/6/2020 8:31:00 AM

Lab ID: 2011463-004

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	120	60		mg/Kg	20	11/13/2020 7:23:35 PM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/11/2020 12:03:24 PM	56302
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/11/2020 12:03:24 PM	56302
Surr: DNOP	45.9	30.4-154		%Rec	1	11/11/2020 12:03:24 PM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/12/2020 12:28:28 AM	56286
Surr: BFB	89.2	75.3-105		%Rec	1	11/12/2020 12:28:28 AM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	11/12/2020 12:28:28 AM	56286
Toluene	ND	0.048		mg/Kg	1	11/12/2020 12:28:28 AM	56286
Ethylbenzene	ND	0.048		mg/Kg	1	11/12/2020 12:28:28 AM	56286
Xylenes, Total	ND	0.096		mg/Kg	1	11/12/2020 12:28:28 AM	56286
Surr: 4-Bromofluorobenzene	97.4	80-120		%Rec	1	11/12/2020 12:28:28 AM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL3

Project: Cypress 1H

Collection Date: 11/6/2020 8:35:00 AM

Lab ID: 2011463-005

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	1300	61		mg/Kg	20	11/13/2020 7:36:00 PM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/11/2020 12:27:17 PM	56302
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/11/2020 12:27:17 PM	56302
Surr: DNOP	40.4	30.4-154		%Rec	1	11/11/2020 12:27:17 PM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/12/2020 12:51:41 AM	56286
Surr: BFB	88.5	75.3-105		%Rec	1	11/12/2020 12:51:41 AM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	11/12/2020 12:51:41 AM	56286
Toluene	ND	0.050		mg/Kg	1	11/12/2020 12:51:41 AM	56286
Ethylbenzene	ND	0.050		mg/Kg	1	11/12/2020 12:51:41 AM	56286
Xylenes, Total	ND	0.099		mg/Kg	1	11/12/2020 12:51:41 AM	56286
Surr: 4-Bromofluorobenzene	96.5	80-120		%Rec	1	11/12/2020 12:51:41 AM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL3

Project: Cypress 1H

Collection Date: 11/6/2020 8:35:00 AM

Lab ID: 2011463-006

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	1400	60		mg/Kg	20	11/13/2020 7:48:24 PM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/11/2020 12:51:19 PM	56302
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/11/2020 12:51:19 PM	56302
Surr: DNOP	25.4	30.4-154	S	%Rec	1	11/11/2020 12:51:19 PM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/12/2020 1:14:58 AM	56286
Surr: BFB	88.4	75.3-105		%Rec	1	11/12/2020 1:14:58 AM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	11/12/2020 1:14:58 AM	56286
Toluene	ND	0.048		mg/Kg	1	11/12/2020 1:14:58 AM	56286
Ethylbenzene	ND	0.048		mg/Kg	1	11/12/2020 1:14:58 AM	56286
Xylenes, Total	ND	0.096		mg/Kg	1	11/12/2020 1:14:58 AM	56286
Surr: 4-Bromofluorobenzene	96.6	80-120		%Rec	1	11/12/2020 1:14:58 AM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL4

Project: Cypress 1H

Collection Date: 11/6/2020 8:40:00 AM

Lab ID: 2011463-007

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	59		mg/Kg	20	11/13/2020 8:00:49 PM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	27	9.6		mg/Kg	1	11/11/2020 1:15:02 PM	56302
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/11/2020 1:15:02 PM	56302
Surr: DNOP	37.9	30.4-154		%Rec	1	11/11/2020 1:15:02 PM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/12/2020 1:38:12 AM	56286
Surr: BFB	86.9	75.3-105		%Rec	1	11/12/2020 1:38:12 AM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	11/12/2020 1:38:12 AM	56286
Toluene	ND	0.049		mg/Kg	1	11/12/2020 1:38:12 AM	56286
Ethylbenzene	ND	0.049		mg/Kg	1	11/12/2020 1:38:12 AM	56286
Xylenes, Total	ND	0.097		mg/Kg	1	11/12/2020 1:38:12 AM	56286
Surr: 4-Bromofluorobenzene	95.7	80-120		%Rec	1	11/12/2020 1:38:12 AM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2011463

Date Reported: 11/16/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: CSL4

Project: Cypress 1H

Collection Date: 11/6/2020 8:40:00 AM

Lab ID: 2011463-008

Matrix: SOIL

Received Date: 11/7/2020 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>VP</b>
Chloride	ND	60		mg/Kg	20	11/13/2020 8:13:13 PM	56427
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	11/11/2020 1:39:07 PM	56302
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/11/2020 1:39:07 PM	56302
Surr: DNOP	28.4	30.4-154	S	%Rec	1	11/11/2020 1:39:07 PM	56302
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/12/2020 2:01:26 AM	56286
Surr: BFB	86.7	75.3-105		%Rec	1	11/12/2020 2:01:26 AM	56286
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	11/12/2020 2:01:26 AM	56286
Toluene	ND	0.049		mg/Kg	1	11/12/2020 2:01:26 AM	56286
Ethylbenzene	ND	0.049		mg/Kg	1	11/12/2020 2:01:26 AM	56286
Xylenes, Total	ND	0.098		mg/Kg	1	11/12/2020 2:01:26 AM	56286
Surr: 4-Bromofluorobenzene	95.8	80-120		%Rec	1	11/12/2020 2:01:26 AM	56286

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2011463

16-Nov-20

**Client:** Souder, Miller & Associates**Project:** Cypress 1H

Sample ID: <b>MB-56427</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56427</b>	RunNo: <b>73318</b>								
Prep Date: <b>11/13/2020</b>	Analysis Date: <b>11/13/2020</b>	SeqNo: <b>2582284</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-56427</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56427</b>	RunNo: <b>73318</b>								
Prep Date: <b>11/13/2020</b>	Analysis Date: <b>11/13/2020</b>	SeqNo: <b>2582285</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.5	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 Quantitative 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

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2011463

16-Nov-20

**Client:** Souder, Miller & Associates**Project:** Cypress 1H

Sample ID: <b>LCS-56300</b>	SampType: <b>LCS</b>			TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>56300</b>			RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>	Analysis Date: <b>11/10/2020</b>			SeqNo: <b>2577615</b>		Units: <b>%Rec</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.6		5.000		71.9	30.4	154			

Sample ID: <b>LCS-56302</b>	SampType: <b>LCS</b>			TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>56302</b>			RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>	Analysis Date: <b>11/11/2020</b>			SeqNo: <b>2577616</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	92.2	70	130			
Surr: DNOP	2.7		5.000		54.8	30.4	154			

Sample ID: <b>MB-56300</b>	SampType: <b>MBLK</b>			TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>PBS</b>	Batch ID: <b>56300</b>			RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>	Analysis Date: <b>11/10/2020</b>			SeqNo: <b>2577617</b>		Units: <b>%Rec</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	7.9		10.00		79.4	30.4	154			

Sample ID: <b>MB-56302</b>	SampType: <b>MBLK</b>			TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>PBS</b>	Batch ID: <b>56302</b>			RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>	Analysis Date: <b>11/11/2020</b>			SeqNo: <b>2577618</b>		Units: <b>mg/Kg</b>				
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	7.0		10.00		69.9	30.4	154			

Sample ID: <b>2011463-001AMS</b>	SampType: <b>MS</b>			TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>CSL1</b>	Batch ID: <b>56302</b>			RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>	Analysis Date: <b>11/11/2020</b>			SeqNo: <b>2578962</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	160	9.4	47.13	128.9	70.1	15	184			
Surr: DNOP	3.7		4.713		78.8	30.4	154			

Sample ID: <b>2011463-001AMSD</b>	SampType: <b>MSD</b>			TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>CSL1</b>	Batch ID: <b>56302</b>			RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>	Analysis Date: <b>11/11/2020</b>			SeqNo: <b>2578963</b>		Units: <b>mg/Kg</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	220	9.3	46.69	128.9	195	15	184	30.4	23.9	RS

**Qualifiers:**

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PQL Practical Quantitative 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

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2011463

16-Nov-20

**Client:** Souder, Miller & Associates**Project:** Cypress 1H

Sample ID: <b>2011463-001AMSD</b>		SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>						
Client ID: <b>CSL1</b>		Batch ID: <b>56302</b>		RunNo: <b>73215</b>						
Prep Date: <b>11/9/2020</b>		Analysis Date: <b>11/11/2020</b>		SeqNo: <b>2578963</b>			Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.7		4.669		79.8	30.4	154	0	0	

**Qualifiers:**

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PQL Practical Quantitative 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

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2011463

16-Nov-20

**Client:** Souder, Miller & Associates**Project:** Cypress 1H

Sample ID: <b>mb-56286</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578666</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		90.8	75.3	105			

Sample ID: <b>lcs-56286</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578667</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	5.0	25.00	0	82.0	72.5	106			
Surr: BFB	1000		1000		102	75.3	105			

Sample ID: <b>2011463-001ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>CSL1</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578669</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	5.0	24.88	0	79.4	61.3	114			
Surr: BFB	990		995.0		99.4	75.3	105			

Sample ID: <b>2011463-001amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>CSL1</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578670</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.9	24.32	0	83.5	61.3	114	2.70	20	
Surr: BFB	980		972.8		101	75.3	105	0	0	

Sample ID: <b>mb-56363</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56363</b>	RunNo: <b>73309</b>								
Prep Date: <b>11/11/2020</b>	Analysis Date: <b>11/12/2020</b>	SeqNo: <b>2579913</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	920		1000		91.6	75.3	105			

Sample ID: <b>lcs-56363</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56363</b>	RunNo: <b>73309</b>								
Prep Date: <b>11/11/2020</b>	Analysis Date: <b>11/12/2020</b>	SeqNo: <b>2579914</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	990		1000		99.4	75.3	105			

**Qualifiers:**

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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

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2011463

16-Nov-20

**Client:** Souder, Miller & Associates**Project:** Cypress 1H

Sample ID: <b>mb-56286</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578713</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.98		1.000		98.1	80	120			

Sample ID: <b>LCS-56286</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578714</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.8	80	120			
Toluene	0.93	0.050	1.000	0	93.2	80	120			
Ethylbenzene	0.93	0.050	1.000	0	93.2	80	120			
Xylenes, Total	2.8	0.10	3.000	0	93.0	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		99.8	80	120			

Sample ID: <b>2011463-002ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>CSL1</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578717</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.023	0.9381	0	91.7	76.3	120			
Toluene	0.90	0.047	0.9381	0.01020	95.4	78.5	120			
Ethylbenzene	0.91	0.047	0.9381	0	96.8	78.1	124			
Xylenes, Total	2.7	0.094	2.814	0	96.9	79.3	125			
Surr: 4-Bromofluorobenzene	0.92		0.9381		98.5	80	120			

Sample ID: <b>2011463-002amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>CSL1</b>	Batch ID: <b>56286</b>	RunNo: <b>73283</b>								
Prep Date: <b>11/7/2020</b>	Analysis Date: <b>11/11/2020</b>	SeqNo: <b>2578718</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	0.9862	0	92.6	76.3	120	5.92	20	
Toluene	0.96	0.049	0.9862	0.01020	96.5	78.5	120	6.17	20	
Ethylbenzene	0.96	0.049	0.9862	0	97.5	78.1	124	5.75	20	
Xylenes, Total	2.9	0.099	2.959	0	97.5	79.3	125	5.64	20	
Surr: 4-Bromofluorobenzene	0.98		0.9862		99.4	80	120	0	0	

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P Sample pH Not In Range  
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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2011463

16-Nov-20

**Client:** Souder, Miller & Associates**Project:** Cypress 1H

Sample ID: <b>mb-56363</b>	SampType: <b>MBLK</b>				TestCode: <b>EPA Method 8021B: Volatiles</b>					
Client ID: <b>PBS</b>	Batch ID: <b>56363</b>				RunNo: <b>73309</b>					
Prep Date: <b>11/11/2020</b>	Analysis Date: <b>11/12/2020</b>				SeqNo: <b>2579960</b>	Units: <b>%Rec</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		100	80	120			

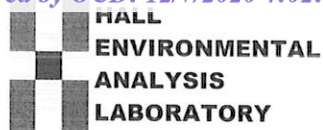
Sample ID: <b>LCS-56363</b>	SampType: <b>LCS</b>				TestCode: <b>EPA Method 8021B: Volatiles</b>					
Client ID: <b>LCSS</b>	Batch ID: <b>56363</b>				RunNo: <b>73309</b>					
Prep Date: <b>11/11/2020</b>	Analysis Date: <b>11/12/2020</b>				SeqNo: <b>2579961</b>	Units: <b>%Rec</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
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ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
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J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit





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

## Sample Log-In Check List

Client Name: Souder, Miller &amp; Associat

Work Order Number: 2011463

RcptNo: 1

Received By: Isaiah Ortiz

11/7/2020 7:40:00 AM

I-OX

Completed By: Isaiah Ortiz

11/7/2020 9:23:42 AM

I-OX

Reviewed By:

Muller

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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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. Received at least 1 vial with headspace  $<1/4$ " for AQ VOA? Yes ☐ No ☐ NA ☒
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:

( $\leq 2$  or  $>12$  unless noted)

Adjusted?

Checked by:

IO

11/7/20

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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good	Yes			
2	3.0	Good	Yes			



**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
  
Action 11458

CONDITIONS OF APPROVAL

Operator: MARATHON OIL PERMIAN LLC Permian Regulatory Team	5555 San Felipe St. Houston, TX77056	OGRID: 372098	Action Number: 11458	Action Type: C-141
OCD Reviewer rmarcus	Condition None			